Growing Young Minds

HOW MUSEUMS AND LIBRARIES CREATE LIFELONG LEARNERS

INSTITUTE of Museum and Library SERVICES

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Printed June 2013 in the United States of America

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Dear Colleague,

It is a pleasure to present *Growing Young Minds: How Museums and Libraries Create Lifelong Learners.* This report issues a call to action: Now is the time for policy makers and practitioners to fully use the capacity of libraries and museums in their early learning efforts. This is critical because we must work together to reach the all-too-many children who are still left out of effective community early learning opportunities and resources, and disconnected from the powerful programs for children, parents, and caregivers that you will read about in this report.

Libraries and museums reach millions of children each year. It is exciting to bring that capacity into focus so that libraries and museums can more effectively engage in early learning strategies at the community, state, and national levels.

This is the right moment to act. We know about the importance of early childhood learning to school and career success; we know that learning happens at home, in the community, all day and every day, and that rich learning experiences for parents, children, and their caregivers make a difference; and we know that to ignore the role of libraries and museums would be a tremendous loss.

Many of the programs you will read about in this report are supported by the Institute of Museum and Library Services (IMLS). We have a long history of identifying and funding innovative approaches that put young learners at the center and help social, civic, cultural, and educational organizations work in partnership in communities and at the state and national levels.

One example is the partnership with the Campaign for Grade-Level Reading that is making this report possible. The Campaign—a collaborative effort among foundations, nonprofit partners, states, and communities—has made early literacy a key focus of its efforts to increase the number of low-income students reading proficiently by the end of third grade. The Campaign is currently working with 134 communities nationwide to address the challenges of school readiness, chronic absenteeism, and summer learning loss. Libraries and museums are playing a role in helping many of these communities—and others—meet these challenges.

I thank Ralph Smith, Ron Fairchild, and other members of the Campaign staff, as well as the many early learning policy makers, funders, and practitioners—within and outside of libraries and museums—who have contributed to this report. This work has been enriched immeasurably by your knowledge and perspectives.

With this report IMLS is deepening and expanding its commitment to the youngest and most at-risk children in the United States. We will be pursuing special efforts to assure that libraries and museums can reach underserved children and provide opportunities that can make a difference that will last a lifetime.

Sincerely,

Susan H. Hildreth
Director

THE IMLS COMMITMENT TO EARLY LEARNING

- A partnership with the Campaign for Grade-Level Reading focusing on the role of libraries and museums as vital partners in the 134 communities that are members of the Grade-Level Reading Communities Network.
- More than $2.5 million in grants to libraries and museums in FY 2012 to help children from low-income families reach the goal of reading on grade level by the end of third grade and a similar funding priority in FY 2013.
- A 2012 information memorandum developed with the U.S. Department of Health and Human Services' Offices of Child Care and Head Start to encourage partnerships with public libraries.
- A 2012 IMLS research brief, "Children's Services at Public Libraries: A Port in the Storm," published by the Urban Institute, MetroTrends.
- In their 2013–2017 Five-Year Plans, 100 percent of state library agencies are funding lifelong learning programs; 80 percent plan a focus on early learning.
- A symposium and report, "The Twenty-First Century Learner: The Continuum Begins with Early Learning," funded by IMLS and the Civil Society Institute and organized by the Association of Children's Museums, the Association of Library Services for Young Children, and the Families and Work Institute (2003).

Study after study shows that the sooner a child begins learning, the better he or she does down the road ... So let's do what works, and make sure none of our children start the race of life already behind. Let's give our kids that chance.

–President Barack Obama, State of the Union Address, February 12, 2013

A CALL TO ACTION

Libraries and museums can play a stronger role in early learning for all children. As our nation commits to early learning as a national priority essential to our economic and civic future,[1] it is time to become more intentional about deploying these vital community resources to this challenge.

Libraries and museums are trusted, welcoming places where children make discoveries, deepen common interests, expand words and knowledge, and connect their natural curiosity to the wider world. Neuroscientists tell us that the type of learning that occurs in these institutions—self-directed, experiential, content-rich—promotes executive function skills that can shape a child's success in school and life. The experiences, resources, and interactions provided by libraries and museums build brains and fuel a love of learning.

Parents know this and flock to museums and libraries not only to support their child's learning but also to bolster their important role as their child's first teacher. The Pew Research Center's recent report, *Parents' and Children's Special Relationship with Reading and Libraries*, documents that an overwhelming percentage of parents of young children, especially those with annual incomes under $50,000, believe that libraries are "very important" for their children, and are eager for more and varied family library services.[2]

We have to work to ensure that more children and parents, especially those at low socioeconomic levels, can tap into the learning resources of libraries and museums. According to a recent IMLS analysis, only 36 percent of children with the lowest socioeconomic status visited libraries in their kindergarten year, compared to 66 percent of children in the highest; for museums, these figures are 43 percent versus 65 percent.[3] Recent research points out that the disparity of access to learning resources between children of affluence and those in poverty has created a knowledge gap with serious

implications for students' economic prosperity and social mobility.[4]

These data underscore the urgency of this report. Libraries—public and school—and museums of all types—art, history, and children's museums; science centers; nature centers and gardens; aquaria; and zoos—form an extensive, diverse infrastructure of informal learning that is equipped to deliver critical early learning resources to young children and families, especially those most in need. Yet, in too many communities, museums and libraries are not "at the table" helping to craft the policies and practices that link children and their families to early learning resources.

It is critical to act now to incorporate, and leverage, our well-established informal learning system as an essential component of our nation's early learning network. It is a wise use of limited resources, both funding and human capital, that will help our nation develop the potential of every child and result in a stronger economy, a more effective workforce, and a nation of learners. With an increased focus on their capacity, these institutions can be more essential early learning partners at the community, state, and national levels.

This report calls upon communities to engage libraries and museums as a key partner in comprehensive early learning strategies to grow young minds. It highlights the exciting work these institutions are doing around the country in partnership with communities to shape children's outcomes in school and in life. We need to do more, especially for those low-income children who need more. If we can strengthen the country's network of museums and libraries to be a greater force for early learning, effective learning opportunities for all children can deepen and grow.

Libraries and museums in communities across the country are expanding learning opportunities that prepare our youngest children for a lifetime of learning and success.

IN NEW YORK CITY, recess becomes a scientific experience: playground equipment created at the New York Hall of Science allows children to learn about the science of light in the walk-in kaleidoscope or the physics of sound sending messages on the giant telephone tubes.

IN COLUMBUS, immigrant families attend at-home parties where, among peers, public library staff present reading readiness materials for parents to use with their children at home.

IN MINNEAPOLIS, after hearing the story "Dog's Colorful Day: A Messy Story about Colors and Counting," children tour the Institute of Arts, hunt for a really big dog in a work of art and play with colors and counting.

IN ATLANTA, children visiting the Children's Garden at the Atlanta Botanical Gardens participate in cooking classes in the Edible Garden outside kitchen.

IN SALT LAKE CITY, children check out backpacks at the Utah Museum of Fine Arts full of puzzles, games, and activities and explore exhibits about Egypt, India, Europe, and America.

IN RICHMOND, young readers are maintaining and gaining skills, and beating the odds against summer slide, as they participate in the public library's research-based summer reading program.

IN WASHINGTON, D.C., at the Smithsonian Early Enrichment Center (SEEC), educators take babies into different Smithsonian museums every day, exposing them to the objects, artifacts, artwork, and exhibitions to help build connections between the children's known worlds and the larger world around them.

IN CHARLOTTE, North Carolina's ImaginOn Center Story Lab, a joint venture of the Charlotte-Mecklenburg Public Library and the Children's Theater of Charlotte, young readers gather at workstations and use software that guides them through the process of creating a theatrical scene, inventing a storyline, and designing the set and costumes.

IN CHICAGO, at the Hamill Family Play Zoo, part of Chicago's Brookfield Zoo, children and families touch animals, build habitats, paint murals, examine animal x-rays, and dress up like birds while building new understandings of animals.

AS WE WORK TOGETHER TO MEET EARLY LEARNING CHALLENGES, OUR NATION'S 123,000 LIBRARIES AND 17,500 MUSEUMS ARE:

- *Community anchors,* cornerstones of our democracy, that provide safe and accessible civic spaces promoting lifelong learning, cultural enrichment, and civic engagement, especially for underserved and vulnerable families and their children.

- *Connectors* that bridge the generations and bring children, their parents, and their families together in fun and nonthreatening settings that build mutual knowledge, skills, and self-efficacy.

- *Innovative learning specialists* that create "teachable moments" through exhibits, outreach programs, and environments that invite hands-on experiential learning.

- *Stewards* of rich cultural, scientific, environmental, and historical heritages, which offer robust collections of resources appealing to all disciplines and levels of learners.

- *Digital hubs* that provide guidance for navigating new technologies and identify trusted online resources to help close the digital divide for all children, their parents, and caregivers.

CHILDREN'S EMOTIONAL DEVELOPMENT IS BUILT INTO THE ARCHITECTURE OF THEIR BRAINS

A growing body of scientific evidence demonstrates that emotional development begins early in life and is closely connected with the emergence of cognitive, language, and social skills. Early emotional development lays the foundation for later academic performance, mental health, and the capacity to form successful relationships. Despite this knowledge, most policies related to early childhood focus exclusively on cognitive development as it relates to school readiness, neglecting the importance of such capacities as the ability to regulate one's own emotions and behavior and to manage successful interactions with other people. A report from the National Scientific Council on the Developing Child presents an overview of the scientific research on how a child's capacity to regulate emotions develops in a complex interaction with his or her environment and ongoing cognitive, motor, and social development. It then discusses the implications of this research for policies affecting young children, their caregivers, and service providers.

Source: National Scientific Council on the Developing Child. (2004). *Children's Emotional Development Is Built into the Architecture of Their Brains: Working Paper No. 2.* Retrieved from www.developingchild.harvard.edu

AMERICA'S NEW LEARNING LANDSCAPE

Libraries and museums have a long history of serving young children. They are virtually everywhere—from the smallest tribal community to the largest metropolitan area. As community repositories of literature, science, and heritage, museums and libraries build on how children learn best, by designing and delivering content-rich, play-based experiences that link early learning best practice to books, exhibits, and collections. Their resources prompt parents and caregivers to explore, pose questions, make connections, exchange information and ideas, and instill in young children not only a love of learning, but also the skills for learning. It is this established expertise that makes museums and libraries such valuable assets in community-wide efforts to promote early learning. The emerging learning landscape makes their participation imperative.

This new landscape redefines where, when, and how learning occurs, calling for innovative environments where skills are developed across domains and knowledge is transferred from one situation to another, ultimately building the capacity to work in a world where "how to know" is as important as "what to know."[5]

New Skills for Learning

Contributing to this expanded view of where, when, and how learning takes place is a growing body of research that draws attention to an important set of foundation skills, anchored in children's early social-emotional development. Known as executive function, these skills are key to a child's earliest brain development, building focus and self-control, perspective taking, communication, and making connections. In the process of developing these executive function skills, children use their social, emotional, and cognitive capacities in pursuit of goals. These skills are the "how" of learning, enabling children to master the "what" of learning—reading, writing, social studies, and science, technology, engineering, and mathematics (STEM) concepts. Taken together, they help children become self-directed, engaged learners.

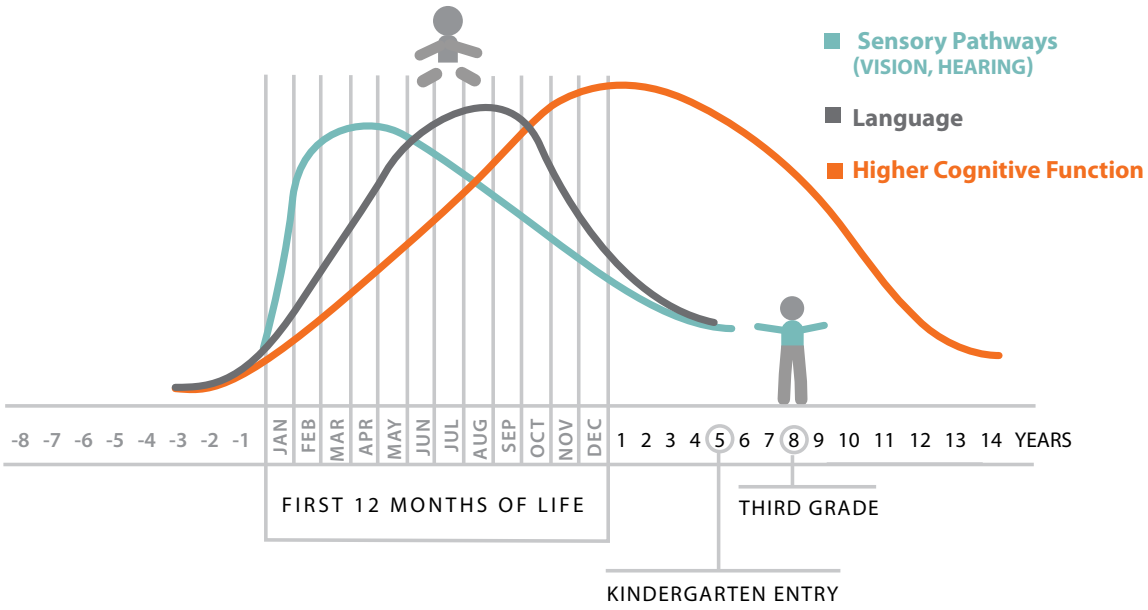
Libraries and museums can tackle barriers to reading proficiency. As trusted local institutions, museums and libraries have the convening and staying power to help communities do the hard work of surfacing, connecting, linking, and replicating best practice and building local capacity.

–Ralph Smith, Managing Director,
The Campaign for Grade-Level Reading and Senior Vice President, The Annie E. Casey Foundation

WHY START AT BIRTH?

Human Brain Development

Neural Connections for Different Functions Develop Sequentially



Source: Harvard University Center on the Developing Child

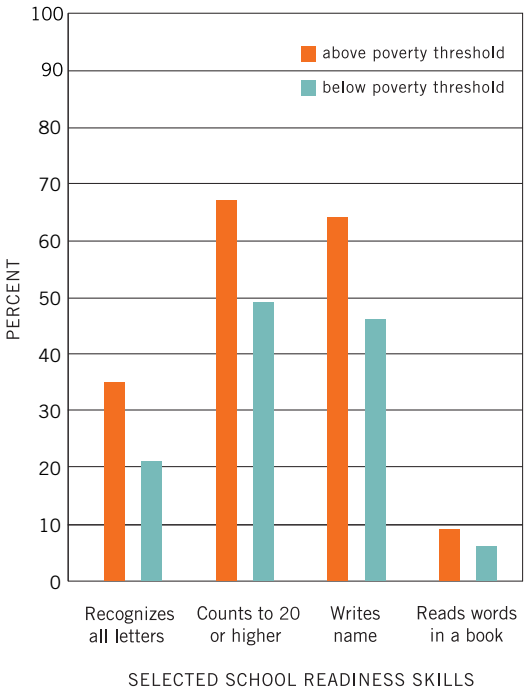
A Widening Gap

In spite of our growing understanding that the early years are pivotal for later success and the recognition that important foundational skills and knowledge must be supported and nurtured during this critical period, too many children—especially those who are most disadvantaged and vulnerable—continue to fall behind. Too many children are starting school without the language, cognitive, social, and emotional tools needed to succeed, and too many are reaching the critical third-grade mark unable to meet the expectations for ongoing success.

Research shows that children who start behind will stay behind and in many cases continue to lose ground, making it more likely they will need costly remediation, be retained, or even drop out of school.[6]

These conditions disproportionately impact poor and minority children. Children who are poor—more than one out of five American children (22 percent) in 2010 and 2011—are most likely to live in single-mother homes and be under the age of five.[7] The result: a large and growing segment of young children are growing up in under-resourced environments with striking gaps between resources and supports available to them as opposed to their more affluent peers. The stark disparities in both human and material resources between poor and more affluent populations has resulted in what Susan Neuman and Donna Celano, *Giving Our Children a Fighting Chance* (2012), call a "knowledge gap" and what David Brooks, (*New York Times*, 2012) and others are calling an "opportunity gap."[8] By whatever name, it is an issue that must be addressed, and museums and libraries should be part of the solution.

Percentage of Children Ages 3–6 With Selected School Readiness Skills, by Poverty Status



Source: O'Donnell, Kevin. Parents' Reports of the School Readiness of Young Children from the National Household Education Surveys Program of 2007, Table 2. National Center for Education Statistics. August 2008. www.childtrendsdatabank.org/?q=node/291

SAME CITY, WORLDS APART

In their 10-year analysis of conditions impacting learning and literacy development in two Philadelphia neighborhoods, Neuman and Celano (2012) identified enormous disparities in resources and opportunities between a poor community and an affluent community, including:

- Children who have early access to print and technology continue to build and gain knowledge. Children who don't have early access enter school far behind and are taught the "basics."
- Children who read a lot know a lot. Those who don't read as much lack reading speed and comprehension, reducing knowledge acquisition.
- Children with easy and regular access to computers are comfortable using search engines, filtering and comparing information sources, and using computers to support learning. Children without such access are unfamiliar with how to navigate and make decisions about the quality of information.

The Challenge

The challenge now for educators, families, policy makers, civic leaders, community-based institutions, and grant makers is to work together to find solutions. How can we create a coordinated set of services and supports that intentionally uses all learning entry points to effectively move children—especially those most at risk—successfully through the education continuum?

Efforts to find solutions and implement strategies are taking place at every level of educational leadership and policy development. At the federal and state levels, new policies are being implemented to support children's early learning success through broad-based systems-building efforts and, in communities, these policies are being put into practice.

Research provides strong evidence of the critical importance of community- or place-based efforts in supporting children's growth and development, especially in the earliest learning years.[9] Local conditions can have a major impact on whether children succeed, and challenges must be addressed within the context of the community to assure effective solutions are reached. To that end, communities across the nation are coming together to develop plans to address problems and put policy strategies into action.

At the heart of these efforts is an understanding that real change will only be accomplished through broad-based, multi-sector collaboration. Libraries and museums are well-positioned to be integral parts of coordinated efforts, but are too often untapped or disconnected resources in community efforts to support more positive outcomes for families and children.

Museums and Libraries—Essential Community and Education Partners

Librarians and museum professionals are important facilitators of learning, working with families and caregivers and transforming visits to museums and libraries into "teachable moments" that connect children's experience to deeper learning and knowledge. They are anchoring practices in research and partnering with other community service providers to provide generation-spanning, high-quality, informal learning opportunities. They are creating environments, programs, and experiences that expand and deepen the abilities of our youngest learners, their families, and caregivers. In turn, communities are beginning to recognize museums and libraries as key components of their early learning infrastructure, and school leaders are recognizing that engaging museums and libraries, including school librarians, can improve children's outcomes in school.

PUBLIC LIBRARIES SURVEY IN THE UNITED STATES: CHILDREN'S PROGRAMS AND COLLECTIONS

- In the most recent national survey (2010), public libraries offered 3.75 million programs to the public. The majority of these programs (61.5 percent or 2.31 million) are designed for children aged 11 and younger. Attendance at programs increased 21.9 percent since FY 2005.
- Public libraries' circulation continues to increase with 2.46 billion materials circulated in FY 2010, the highest circulation in 10 years. Circulation of children's materials has increased by 28.3 percent in the last 10 years and comprises over one-third of all materials circulated in public libraries.[10]

10 WAYS

1 2 3 4 5 6 7 8 9 10

MUSEUMS AND LIBRARIES SUPPORT COMMUNITY EFFORTS

There are ten key ways in which museums and libraries are currently supporting communities' efforts to develop a strong start for young children's learning. Each way works to leverage the unique assets that libraries and museums offer to nurture the passion and skills for learning, promote seamless linkages between formal and informal learning, and engage children from low-income families so that they, too, can participate in the new learning landscape.

1 INCREASING HIGH-QUALITY EARLY LEARNING EXPERIENCES

Libraries and museums provide easily accessible, high-quality early learning experiences to families and those who care for children outside the home. These institutions support the quality improvement efforts of many early learning programs; yet they play a particularly critical role for parents and providers caring for children in home-based programs, often called family, friend, and neighbor care. For many poor and vulnerable children, libraries and museums function as community "touch points," providing engaging pathways into knowledge- and skill-building.

Every Child Ready to Read (ECRR), developed by the Public Library Association and the Association for Library Service to Children, is a research-based training model for parents and caregivers that supports early literacy development in children from birth to five. Grounded in six early literacy skills, the training uses basic, user-friendly activities to guide caregivers' and parents' abilities to understand and support early literacy development. The program has been successfully implemented by libraries across the country and is being enhanced with interactive online content for home use.

The **Anchorage Public Library's** Ready to Read Resource Center mails books, puppets, CDs, and other literacy-based materials to child care providers and families in remote areas of Alaska. The **Minnesota Children's Museum** partnered with the **St. Paul Public Library** system to install children's exhibits in two underserved libraries to assure that families and those caring for children in family, friend, and neighbor care settings have local access to literacy-based interactive experiences. The **California Science Center** in Los Angeles has created Discovery Rooms, which include interactive exhibits, storytelling, hands-on Discovery Boxes, animal displays, and space for self-directed explorations of artifacts, models, and other materials.

For many poor and vulnerable children, libraries and museums function as community "touch points," providing engaging pathways into knowledge- and skill-building.

2 ENGAGING AND SUPPORTING FAMILIES AS THEIR CHILD'S FIRST TEACHERS

As trusted community anchors, museums and libraries are natural and safe places for families to go to learn together and access important resources. For families who do not have other links to community information, museums and libraries are places—and in some communities, the only places—where they can borrow books, learning backpacks, and other materials for home use; learn firsthand how to actively engage in age-appropriate ways with their children; or locate high-quality child and health care providers and other local services.

Museums and libraries are natural and safe places for families to go to learn together and access important resources.

Family Place Libraries™, originating in New York's Middle Country Public Library, uses an asset-based approach to address the needs of families and caregivers with very young children. Research-based, Family Place focuses on the whole child and the role of parents as first teachers. As centers for early childhood information, parent education, early literacy, socialization, and family support, these full-service libraries serve as community destinations for families and caregivers. The Family Place model has been replicated in over 375 libraries in 26 states and continues to expand.

The **Dallas Museum of Art's** mascot, Arturo the parrot, and his giant nest, welcomes young children and their families to the museum and its collections, with on-site story times, tours, art classes, and parent and family workshops and a rich collection of online resources. In partnership with four school districts and the National Council of Jewish Women, the museum hosts parents and preschoolers participating in the Home Instruction of Parents and Preschool Youngsters (HIPPY), a nationally recognized, research-based home visiting program targeting families speaking English as a second language.

PARENTS AND CHILDREN'S SPECIAL RELATIONSHIP WITH READING AND LIBRARIES, PEW RESEARCH CENTER

Parents have a special relationship with libraries; 84 percent of parents with a child 5 years or younger say libraries are "very important." Most parents (86 percent) say libraries should coordinate more closely with schools to offer resources for children and offer free early literacy programs to help young children prepare for school.

Major reasons libraries are important to parents of children under 6 years:

- 86 percent say libraries help develop a love of reading and books;
- 81 percent say libraries provide access to information and resources not available at home; and
- 71 percent say libraries are a safe place for children.

For parents earning less than $50,000 per year, libraries play an especially important role. In addition to the reasons above, a larger percentage of these parents cite the role of the librarian to help find information, free access to the Internet, quiet study spaces, broader selections of e-books, and more interactive learning experiences.[11]

3 SUPPORTING DEVELOPMENT OF EXECUTIVE FUNCTION AND "DEEPER LEARNING" SKILLS THROUGH LITERACY AND STEM-BASED EXPERIENCES

Museums and libraries help lay the foundations for later learning and academic and career success, including basic literacy, reading, and science, technology, engineering, and mathematics (STEM). They are adept "brain builders," offering learning environments that address the important social, emotional, and cognitive aspects of learning that include persistence, self-direction, critical thinking, and problem solving. Through these skills, children learn to communicate effectively with others, improve reading comprehension, and apply what they know to new situations.

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The **New York Hall of Science** has created a "Little Makers" program for children aged 3 to 6. The program melds STEM learning and the arts through hands-on investigations and problem-based activities where children share what they have made through storytelling, a technique that solidifies scientific concepts and promotes the development of literacy and communication skills.

The **Yew Dell Botanical Gardens** in Crestwood, Kentucky, offers nature and garden backpacks containing bug catchers, magnifiers, nature guides, and sketch books; "Books and Blankets" baskets that include children's books and blankets for families to read with children in the gardens; and scavenger hunts to develop vocabulary and problem-solving skills.

CREATING SEAMLESS LINKS ACROSS EARLY LEARNING AND THE EARLY GRADES

4

Libraries and museums support a growing number of school-based efforts to build a coordinated set of learning experiences and effective transition practices that span preschool through third grade. A P–3 continuum is increasingly recognized as an important component in assuring academic success beyond grade three.[12] Museums and libraries are developing multi-level curricula that scaffold increasingly advancing skills and knowledge as well as partnerships that promote a smooth transition into kindergarten.[13]

The **Long Island Children's Museum's** "Juntos al Kinder/Together to Kindergarten" helps local immigrant families with limited English proficiency acclimate to the culture of the American classroom and navigate the school registration process. This program began serving area Spanish-speaking families and now also works with new Haitian immigrants.

The **Dayton Metro Library system** is a partner in the city's "Passport to Kindergarten" program, designed to help preschoolers prepare for kindergarten through a focus on building oral language skills and vocabulary.

The **Normal Park Museum Magnet School** in Chattanooga, Tennessee, serves children from pre-K through eighth grade. Since 2001, the school has dramatically increased student proficiency in reading and language arts. Key to its success has been the school's partnership with seven local museums. Each unit of study involves children in a nine-week inquiry in which they ask questions, pursue answers through direct experience, and share what they learn through the creation of museum-quality exhibits.

A P–3 continuum is increasingly recognized as an important component in assuring academic success beyond grade three.

5 POSITIONING CHILDREN FOR MEETING EXPECTATIONS OF THE COMMON CORE STATE STANDARDS

Museums and libraries are stewards of cultural, scientific, historical, and environmental heritage, offering rich collections of books and objects that span all disciplines and knowledge levels. They offer exhibits, environments, and programs that foster the interest-driven and project-based learning that is emphasized in the new K–12 Common Core State Standards for Literacy and Math and the Next Generation Science Standards. Museum and library staffs are experienced in the inquiry-based pedagogy that the standards demand and serve as "knowledge navigators" who can support teachers in meeting these new learning benchmarks. School librarians play a particularly significant role. They can identify valuable resources for fellow educators, co-teach lessons, and help design project-based learning experiences.

Museums and libraries offer exhibits, environments, and programs that foster interest-driven and project-based learning.

The **Nashville Public Library's** Limitless Libraries program works with all elementary school students in the city. The program builds strong multilingual, multi-format collections; "curated" digital collections for young children; and resources for school librarians and teachers through cross-format literacy supplemental kits that focus on common nonfiction themes that support the Common Core curriculum.

At The **Henry Ford** in Dearborn, Michigan, the "Be an Innovator Like…Henry Ford or…Rosa Parks" activity book series (and related web-based Innovation 101 resources) combines history, STEM, and literacy. Using visual thinking strategies (VTS), mapping, vocabulary-building, spelling, comprehension, and creative writing, young children are encouraged to think critically across these disciplines. With the successful completion of a pilot phase, the program is now expanding its national reach.

The **Birmingham Civil Rights Institute's** "Heritage Alive" incorporates reading and literature-based activities as tools for building problem-solving, critical thinking, and broad-based communication skills. Monthly, classroom teachers receive a book based on the civil rights movement and its leaders, a corresponding syllabus that includes project-based activities, and a bibliography of related texts to build content knowledge and disciplinary literacy.

ADDRESSING THE SUMMER SLIDE 6

Libraries and museums are important partners in efforts to help children sustain learning during the summer months when too many children are losing ground as a result of not having access to resources.[14] Visitation at museums increases over the summer months, and many offer special programs for children that continue content and skill learning and provide motivation to read. School and public libraries help assure that children have access to materials they need to maintain and even advance their reading skills over the summer months. Public libraries have long been anchors for community-wide activities to address summer reading loss. Today's efforts are tailored to school expectations, standards, and student progress, with strong evaluation components. School libraries work with local public libraries to promote summer reading and implement a number of school-based efforts. Library/museum innovations include creating "pop-up" libraries in places such as farmers' markets and shopping centers; offering summer museum programs that align with school curricula; and providing focused individualized tutoring in neighborhood libraries.

The **Collaborative Summer Library Program** is a consortium of all 50 states, the District of Columbia, and the territories, working together to provide high-quality summer reading materials for children at the lowest cost to libraries. By selecting a common theme each year, participating libraries leverage resources while planning programs that address the needs of their local patrons.

The **Southern Pines, North Carolina, Public Library** is a core partner in an intensive program run by the school system, local Boys and Girls clubs, and a local neighborhood revitalization group. The school system identifies youth participants for the six-week, full-day program at the local Boys and Girls Club. Morning activities are academically focused, while the afternoon includes experiential activities.

The **Franklin Institute** partners with the **Free Library of Philadelphia** and educators in multiple informal settings to deliver "LEAP into Science," a project that integrates hands-on science learning and early literacy. Workshops for children in grades preK–5 and caregivers include book selections and hands-on activities explicitly linked to content and strategies for engaging children in science and literacy. "LEAP into Science" is now being piloted nationally at 11 sites, including 27 partnering organizations nationwide.

School and public libraries help assure that children have access to materials they need to maintain and even advance their reading skills over the summer months.

7 LINKING NEW DIGITAL TECHNOLOGIES TO LEARNING

With their free public access to the Internet, libraries are important community digital hubs, with expertise in promoting digital, media, and information literacy. Museums and school and public libraries are rich sources of accessible digital media, educational apps, videos, and audio- and e-books, with staff trained to help parents and youth select age-appropriate, content-based, curriculum-linked materials. They help close the digital divide for children, families, and caregivers who lack alternate sources of access. The growth of digital resource use in schools, aligned with the Common Core State Standards for Literacy and Math, points to an enhanced role for school librarians. They can help classroom teachers integrate technology into their course design and work with students to hone their digital and media literacy competencies, thus building new digital citizens.

At the **Museum of Modern Art** in New York (MoMA), children and their families visit and explore the collections at the museum through a digital application called Destination Modern Art. Led by a friendly alien guide, this interactive online tour of MoMA's galleries and affiliate MoMA PS1 gives children the opportunity to learn about the collections; take a guided, detailed look at each work of art; hear facts and stories about the artists and their techniques; and engage in online and at-home activities.

The **Casa Grande Public Library,** in Casa Grande, Arizona, has created a program for children and families that encourages early literacy and familiarity with child-appropriate digital resources. The library offers more than 1,200 e-books on 25 digital e-readers and schedules regular Digital Story Times for families and children aged 3 and older. Each adult and child receives an e-reader, and, sitting together, they follow along as the librarian reads the story.

Museums and school and public libraries are rich sources of accessible digital media, educational apps, videos, and audio- and e-books.

IMPROVING FAMILY HEALTH AND NUTRITION

8

Children's learning is inextricably linked to their health, with research demonstrating that health disparities for low-income families directly impact development and school performance.[15] Museums and libraries help ensure that all families have access to needed health information and resources. Many offer developmental screenings and vaccination programs that can impact such school-related issues as chronic absence; as well as advice and programs on nutrition, exercise, and gardening; and healthy activities for family members of all ages.

The **Association of Children's Museums'** *Good to Grow®* initiative provides a framework for museums to provide healthy choices and activities for children and families. The Association's "Going Wild in Children's Museums" program has supported, in partnership with the National Wildlife Federation, pilot sites that create outdoor spaces to connect children and families to natural outdoor settings. The sites include a Driftwood Fort on Puget Sound (Hands On Children's Museum, Olympia, Washington) and stream tables and water play, berm tunnels, a monarch watch site, and a native medicinal plants garden in Topeka (Kansas Children's Discovery Center).

Through the *Let's Move! Museums & Gardens* initiative, more than 600 museums and gardens across the country are contributing to First Lady Michelle Obama's Let's Move! campaign to combat childhood obesity. The Institute of Museum and Library Services has joined forces with seven national museum associations in support of the initiative. Participating museums and gardens work to offer exhibits, programs, and visitor services that promote healthy habits, nutritious eating, and physical activity. In addition to its heirloom vegetable garden and related workshops, **Old World Wisconsin**—a Wisconsin historic site in Eagle—offers many opportunities for improving health through physical exercise. Activities include the "Bustle-Hustle" 5K, children's games, Eagle Diamond vintage baseball, and barn dances.

Museums and libraries help ensure that all families have access to needed health information and resources.

9 LEVERAGING COMMUNITY PARTNERSHIPS

Libraries and museums have long recognized the importance of establishing cross-sector partnerships to map and address gaps in early learning service provision and programs. They have worked with schools and extended day and early learning programs, including co-locating Head Start centers in many museums and libraries. They also partner with family health centers and home visiting programs, as well as public housing authorities, municipal governments, corporations, universities, and local public broadcasting stations.

Reflecting a strong state and community focus on third-grade reading, evidenced by the recent Ohio Third Grade Reading Guarantee legislation, the **Columbus Metropolitan Library** has created a comprehensive Young Minds initiative, focused on kindergarten readiness, third-grade reading, and high school graduation. Building on its significant early learning work, the library will soon launch the SPARK school readiness program with Columbus Public Schools and Learn4Life, linking home visiting for 4-year-olds with effective transitions and ongoing support in kindergarten and beyond.

Fifteen Denver arts and cultural organizations are partnering with the City of Denver in the 5 By 5 Program, providing Denver's young children and their families free access to at least five cultural experiences by the age of five. Programs are offered in 15 Denver museums, libraries, the zoo, aquarium, botanic gardens, performing arts events, and recreation centers.

Libraries and museums have long recognized the importance of establishing cross-sector partnerships to map and address gaps in early learning service provision and programs.

ADDING CAPACITY TO EARLY LEARNING NETWORKS

10

State library administrative agencies and, in many states, museum associations can help link libraries and museums with state-based policies and programs. They stand ready to participate actively as a growing number of states build shared, seamless, outcomes-based systems of care, services, education, and family supports for young children. Taking the lead from federal initiatives, these efforts include both policy and practice that promote comprehensive early learning systems-building for all children.

In response to the devastation left by Hurricane Katrina, the **Louisiana Children's Museum** is expanding its role through the creation of the Early Learning Village. This project brings together a diverse group of state- and local-level partners. The Village will co-locate the museum with centers for literacy, parenting, early childhood research, nature, health, and child care.

In 2011, the head of the **Colorado State Library System** joined the Governor, Lt. Governor, and a number of other state leaders on a bus tour designed to collect community input on the state of early literacy in Colorado. This statewide tour launched the Colorado Reads: Early Literacy Initiative that continues to guide state policy to boost early literacy efforts throughout the state.

The **Arlington, Texas, Public Library** is leading a planning effort to create a more coordinated approach to school readiness. The library is bringing together leaders from the school districts, United Way, Head Start, and other organizations to address low readiness scores and fragmented services. Using the National Neighborhood Indicators Partnership (NNIP) model, they are analyzing neighborhood data to fill gaps in services and programs.

Libraries and museums stand ready to participate actively as a growing number of states build shared, seamless, outcomes-based systems of care, services, education, and family supports for young children.

MORE TO BE DONE: TOWARD AN AGENDA FOR FURTHER RESEARCH

Although this report references a number of completed and ongoing research and evaluation studies about the scope and impact of libraries and museums on the development of young children, there is still much we do not know. Here are some questions for further study:

- What effect do libraries and museums exert on the developing child? Is the effect more pronounced for certain domains of development?
- How long lasting is the effect of an isolated visit to a library or museum? What is the effect of multiple visits, whether clustered or spread out over time?
- What is the relationship between what children experience when they visit libraries and museums and their access to resources in their home and early care environment?
- Which programs offered by libraries and museums to their youngest patrons work to support school readiness and to improve learning outcomes? In particular, what programs work for children who are at risk?
- How often do children need to visit libraries and museums to benefit from the programs and resources offered by these environments? Is there a critical window during the early years in which earlier or repeated exposure that is associated with improved outcomes?
- What are the effects—short- and long-term—of library and museum visitation at a young age on the development of skills that children need to succeed in school and beyond?
- Is there an age at which it is critical that children gain exposure to the kinds of programs, resources, and experiences that are found in libraries and museums?

RECOMMENDATIONS FOR ACTION

Today, leaders from every sector of our society recognize that early learning is critical to our civic and economic future. Our country must strategically use its existing resources wisely in a collective effort to close knowledge and opportunity gaps and give all children a strong start in learning.

As this report illustrates, libraries and museums are up to the task. They have used their roles as trusted community anchors, family learning centers, innovative learning specialists, cultural stewards, and digital hubs to support and expand early learning opportunities. In communities across the country, museums and libraries provide safe, accessible learning spaces; engage parents and caregivers; and create fun and enriching programming for children to be ready for school, college, and career.

It is time now to tap their enormous potential as key contributors to federal, state, and community efforts to improve early learning outcomes, increase school readiness, and ensure that all children are reading and succeeding at grade three and beyond.

Everyone has a role to play.

Federal policy makers can:

- Leverage grants that support museums and libraries as learning partners by including them in funding priorities and recognizing their contributions to the development of and accessibility to digital resources.
- Support a research agenda to identify evidence-based best practices for early learning in museums and libraries and to create appropriate, valid, and reliable assessment tools to measure impact and child outcomes in informal learning settings.
- Invest in professional development and resources for museum and library staff that will enable them to align their early learning programs and priorities.

State policy makers can:

- Recognize museums and libraries in early learning policy decisions by including them in efforts to increase access to quality early learning opportunities and recognizing their unique potential to reach children being cared for at home or in family, friend, and neighbor care.
- Link museum and library services more intentionally to P–12 education by supporting partnerships to expand learning opportunities beyond the school room and the school year and to help smooth the transition from preschool to kindergarten.
- Incorporate museums and libraries into state-supported, community-based initiatives by recognizing them as resource hubs for health, education, and family support information and service delivery and as important members of cross-agency early learning planning teams.

Communities can:

- Include museums and libraries in initiatives designed to increase family engagement in school readiness and transition to kindergarten.
- Leverage community resources and services to make it possible for underserved, vulnerable families and children to access libraries and museums (e.g., transportation, reduced-fee structures).
- Use library and museum facilities as community gathering places and digital learning hubs.
- Launch public information campaigns that raise awareness of the roles museums and libraries play in supporting early learning.

Districts, schools, and early learning programs can:

- Offer joint professional development to teachers and museum and library staff to create a common understanding of standards, curricula, and instructional practices in schools and the available resources at museums and libraries.
- Establish partnerships with local libraries and museums to provide programs and services that support new expectations for building content knowledge.
- Fully engage school librarians as important learning and literacy resources.
- Consider leveraging family engagement expertise and programs in museums and libraries to supplement school-based efforts, including involving families in supporting their children's transition to kindergarten.

Museums and libraries can:

- Establish strong partnerships with a wide range of community organizations.
- Provide parental and family support and access to quality programs and services, especially for vulnerable populations.
- Create links to schools that support local education priorities and policies, including Common Core and other state standards.
- Incorporate recent research on the brain, executive function, and learning into exhibits and programs.
- Embed rigorous evaluation into program development and base programs on research and evidence.

Parents, grandparents, and caregivers can:

- Visit libraries and museums with their children to participate in activities that support child development and learning.
- Speak up to staff about the programs and services they would like to see in their local library and museum.
- Find out whether their local museum or library has resources that can help with their child's transition to kindergarten, homework, or health and nutrition needs.

Funders can:

- Endorse public-private partnerships to advance the role of museums and libraries in early learning.
- Develop grant initiatives to support innovative partnerships among libraries, museums, and other community organizations.
- Support research about the impact of libraries and museums on the development of young children.

To create a vibrant, engaging environment for our next generation of learners, especially for those young children most at risk, we will all need to:

- Recognize the important resources that museums and libraries can bring to advance an early learning agenda at the federal, state, and community levels.
- Pledge to include museums and libraries in new efforts to create strong and sustainable systems of early learning.
- Develop strategies that intentionally link the informal resources and services of museums and libraries to current early learning policies and priorities.

SUCCESS SPOTLIGHTS

LIBRARIES AND MUSEUMS AS KEY PARTNERS IN COMMUNITY EARLY LEARNING EFFORTS

The following profiles represent current work in museums and libraries to address our children's early learning needs.

CHILDREN'S MUSEUM OF MANHATTAN: PLACE-BASED SOLUTIONS TO NATIONAL ISSUES

The Children's Museum of Manhattan (CMOM) has developed a comprehensive model of community engagement that educates children and families by combining the arts, literacy, health, math, and early childhood education. Literacy is a central component in each program. CMOM connects government agencies and community-based efforts to leverage existing networks and align resources within individual neighborhoods to support low-income children and families.

CMOM's model of community engagement is exemplified by the EatPlayGrow™ Health Initiative. Launched in 2009, in cooperation with the National Institutes of Health (NIH) and a national advisory board of pediatric and health experts, researchers, and community partners, EatPlayGrow™ is an 11-lesson curriculum adapted from NIH's We Can obesity prevention program, and is designed specifically for children aged 6 and younger and their adult caregivers. Combining NIH science and research with CMOM's arts and literacy-based pedagogy, the curriculum is being implemented in both informal and formal learning environments where it provides:

- Parent and child engagement programs for low-income families (tested and evaluated at community centers in the South Bronx and New Orleans);
- Professional development for adults who work with young children from low-income families (piloted in Head Start with at-home care providers at CMOM);
- EatPlayGrow™ Building Health Every Day! interactive health exhibit at CMOM and accompanying programming; and
- Exhibit replication plans for small museums, libraries, and community centers.

CMOM works to deepen community engagement and enhance the impact of the EatPlayGrow™ curriculum in the community by building a network of community-based organizations and city agencies to expand health education to high-need communities. Community partners include: Community Health Care Association of NYC, United Way of NYC, Administration for Children's Services, Head Start, City University of New York's Professional Development Institute, School of Public Health at Hunter College, Lincoln Center Atrium, Department of Health and Mental Hygiene's Nurse Family Partnership and Women-Infants-Children Program, and the New York City Housing Authority.

In 2009, CMOM conducted a series of third-party pilot evaluations to assess the impact of the EatPlayGrow™ curriculum on participants' health knowledge, attitudes, and behaviors. Findings emphasized the importance of working with children at a young age. Across informal and formal settings, and with demographically diverse low-income audiences, participants indicated changes to their purchasing preferences and food habits, and showed positive shifts in attitudinal and behavioral changes about food, physical activity, and sleep.

In the coming years, CMOM will continue to replicate and disseminate the curriculum and conduct professional development trainings; establish a partnership with the City University of New York's School of Public Health at Hunter College to evaluate the EatPlayGrow™ exhibit; and work with the New York City Housing Authority to bring exhibits and programming to public housing in East Harlem, ideally transforming the facility into a community hub and a model for future museum and public housing collaborations. In 2013, the NIH will publish CMOM's EatPlayGrow™ curriculum as a federally approved health curriculum for early childhood audiences.

IDAHO: STATEWIDE APPROACH TO BUILDING EARLY LITERACY AND READING

There is growing consensus in Idaho that school-ready children reading at grade level require a statewide system of support. Libraries and their partners are building a collaborative effort to educate the public and unite stakeholders to increase early literacy for their youngest citizens.

The Idaho Commission for Libraries (ICfL) launched a statewide effort to increase the reading readiness of Idaho children by building the capacity of families and caregivers to nurture literacy skills and support children's development as independent readers and lifelong learners. Focused primarily on low-income rural families with young children, "Routes to Reading: Idaho Paves the Way with Access to Print" will address a critical need to increase access to books; provide information to families and caregivers on how to support early literacy development; and address the challenge of encouraging low-income families to check out books by building the institutional capacity to effectively serve families.

In Idaho, 43 percent of young children enter school unprepared, 31 percent of fourth graders score below the national basic reading level, and state funding for early learning is among the lowest in the country. To address those challenges, the Routes to Reading strategy includes services and supports for families and caregivers and the development of a statewide network of communities to sustain and increase place-based literacy plans. Services to families, caregivers, and children include:

- Books to Go, providing continuous, convenient, no-cost avenues to access themed book bags with extension activities available for check-out from local early learning programs (reading partners) including Head Start, child care centers, and family child care homes. Books to Go kits will be available statewide at 250 reading partner sites, ultimately reaching over 15,000 children;
- Virtual Story Time, a parent-friendly web-based resource to access e-books and activities in English and Spanish, video clips modeling use of fingerplays, rhymes, and songs, as well as other educational information; and
- Access to professional development and training for reading partners and other local providers. Through a partnership with the Idaho Association for the Education of Young Children, training participants can attain Idaho STARS credit—the state's early childhood quality rating and improvement system.

A third-party evaluator is working with the Books to Go program to conduct qualitative analysis of participant perspectives and a quasi-experimental evaluation measuring the impact on early literacy development.

CHILDREN'S MUSEUM OF HOUSTON: BUILDING COMMUNITY THROUGH PROGRAMS AND PARTNERSHIPS

To meet the learning challenges of Houston families most in need, the Children's Museum (CMH) takes an intentional approach to developing programming and services. The museum participates in the city's Campaign for Grade-Level Reading initiative and designs all of its programs for national replication and scalability.

Some of CMH's major programs and partnerships include:

- The Family Literacy Involvement Program (FLIP), developed in partnership with the Houston Public Library. FLIP is a citywide system to increase family learning by circulating 2,040 literacy kits that include a book and hands-on activities to build literacy skills. Developed with support from the Children's Learning Institute at the University of Texas, the kits are research-based and now used in cities across the country. An evaluation of the FLIP kits on home reading practices and parental understanding of children's skills and interests showed significant differences between the treatment and control families. Currently, the museum and library are partnering to use FLIP kits as part of a Pop-Up Library program designed to address summer learning loss.
- Parent Stars, developed in partnership with the Houston Independent School District, provides adults with activities and strategies to support children's math, reading, and science learning out of school. All activities align with state standards and specific elementary levels. School administrators choose from options to design their own programs, which are then directed by CMH staff. Programs include both family learning events and parent workshops.
- A'STEAM (Afterschool Science, Technology, Engineering, Art, and Math) trains after-school program facilitators to engage children in over 40 CMH Investigations that include a series of challenges to apply their knowledge and collaboratively solve real-world style problems. The museum partners with the YMCA of Greater Houston to implement curriculum units over the summer months.
- CMH, in partnership with the Houston Public Library, designed Para Los Niños workshops to help Spanish-speaking families engage their young children in educational activities. In Houston, the program serves 7,000 parents and children per year and is delivered in over 30 public libraries in the Houston area; it has been adopted by other libraries nationally.
- 21-Tech allows visitors to learn about exhibits through personal mobile technologies (PMT's). Trained museum facilitators use the technology to directly involve children and families in learning through a growing number of curated apps linked to museum exhibits, including "Tot Spot," an interactive play space for children under three.

WASHINGTON STATE: GETTING TO THE TABLE

By proactively responding to new initiatives and policy actions, libraries across Washington have secured their position as key players in statewide early learning efforts.

In 1998, the Governor's Commission on Early Learning convened to identify and address early learning challenges. Libraries sought but were unsuccessful in gaining a place on the Commission. Undeterred, a group of librarians obtained funds from the State Library to develop their own project, the Washington Early Learning Initiative (2000-2003), which built a strong foundation for early education in Washington libraries and established partnerships with other child-serving organizations. According to the program director, "We may not have been at the first table, the governor's commission. But we had succeeded in bringing members of this group and others to our table and opening a dialogue with organizations and agencies previously unfamiliar with public library service" (Nelson, 2001).

Additional funding enabled libraries to expand their role as partners in early literacy and learning initiatives, but they still desired more permanent partnerships in the statewide infrastructure. In 2007, the Early Learning Public Library Partnership (ELPLP) was formed. Members (26 public libraries) contribute an agreed-upon percentage of their annual operating budgets to contract with the Foundation for Early Learning, which, in turn, assists libraries and others to establish early learning partnerships and enter the mainstream of early learning efforts. Activities include: providing legislative testimony in support of continuing state early learning funding; providing input on the development of the Washington State Early Learning Plan; hosting Early Learning Community Fairs; serving as members of community early learning coalitions; and commissioning an evaluation study of the effectiveness of library story times.

In 2006, a task force of library directors identified the lack of outcome-based evaluation of library programs and documentation of best practices as a barrier to participation in state early learning and literacy initiatives. Assessment and monitoring of outcomes was a well-established priority for the state, and libraries recognized the need to find valid and reliable means to measure early literacy outcomes. The University of Washington Information School, in partnership with the with the ELPLP, the Foundation for Early Learning and the State Library, designed a rigorous assessment of library story times on child outcomes, which is currently underway.

The team first developed tools to measure outcomes for children in informal settings and then collected data in 40 libraries randomly chosen throughout the state. Using the results of the year-one data, in year two the team developed a research-based training and delivered it to a selected random sample of 20 librarians. After a second data collection, statistical analysis will compare the children and librarians in the experimental group with those in the control group to determine whether these children demonstrate more growth in early literacy skills. The project will also document improvements in story times specifically related to early learning. In year three of the project, stated outcomes will be used to strengthen partnerships around early literacy practices and findings and tools will be disseminated to other libraries and states.

RICHMOND PUBLIC LIBRARY: FROM SUMMER SLIDE TO SUMMER SUCCESS

The Richmond Public Library has a long history of identifying community needs and working with community partners to provide solutions. Based on this expertise, the library serves as the lead agency for Richmond's Campaign for Grade-Level Reading Initiative and as the coordinating agency for an innovative effort to reverse summer learning loss for young Richmond readers.

The "From Summer Slide to Summer Success" project is developing and evaluating a summer reading intervention implemented in five classrooms within four non-library summer recreation sites. The project was conceived to engage hard-to-reach non-library users over the summer. Library staff believed linking a literacy curriculum with recreational summer programs offered an effective and replicable outreach strategy.

The curriculum, developed in partnership with the Virginia Commonwealth University Literacy Institute, includes three components as well as an assessment. The components include a staff read-aloud, daily independent reading, and "buddy reading," with opportunities for daily writing, all tied to a summer theme, for example, "water." The library identifies popular book titles for each reading level to fit the theme. The thematic approach to the curriculum creates an easy bridge to the recreation programs. The library then serves as the hub for additional literacy-based activities, including participation in the library's Summer Reading Program.

Program evaluation uses a pre-/post-test approach. Prior to implementing the project, the evaluation team will assess individual child needs with standard evaluative tools, and the program will be adjusted accordingly to best meet the needs of participating children. In addition, project leaders will assess capacity of library staff and availability of other library resources to support recreation staff as literacy partners. By establishing a consistent baseline for participating children, the library will be able to determine whether children's' literacy skills decreased, stayed the same, or improved as a result of the program.

PITTSBURGH: A LIVING LEARNING COMMUNITY ALIVE WITH CREATIVITY AND OPPORTUNITY

The Greater Pittsburgh Region is developing a 21st century model to provide children of all ages with opportunities for creative, collaborative, and connected learning. Leading this regional effort is the Kids+Creativity Network, a consortium of more than 100 organizations, including university-based research labs, museums, libraries and informal learning institutions, school districts and educational start-ups, child-serving agencies, and civic leaders. Supported by the region's philanthropic community, and more recently through the The Sprout Fund, the network has been meeting, exchanging ideas, and collaborating since 2007.

To support early childhood education, The Fred Rogers Center maintains the Early Learning Environment, or Ele™, an online hub where educators, families, and others who care for young children can find and share quality digital resources that support early learning and development.

With a specific focus on early literacy, the United Way of Allegheny County is coordinating a new early childhood education affinity group to act as the early literacy task force supporting the Pittsburgh Campaign for Grade-Level Reading.

The Allegheny County Library Association (ACLA) supports the language and literacy development of young children through programs such as Questyinz, an online club that engages young readers in interactive challenges that connect their book learning with their lived experience. During summer 2012, children read for more than 2.5 million minutes and completed more than 150,000 learning activities.

The Carnegie Library of Pittsburgh has developed digital technologies like the My Story Maker program, a game-based tool that helps children compose stories by placing characters and objects on a storyboard template, bringing it to life with their own ideas. Kids then share their stories through digital publication and printing.
The Children's Museum of Pittsburgh has been a leader in supporting learning for young children and families throughout the Greater Pittsburgh region. The museum houses two Pittsburgh Public School Head Start classrooms and an office of the University of Pittsburgh Center for Learning in Out-of-School Environments (UPCLOSE), a research initiative studying informal learning institutions. The museum's MAKESHOP is a do-it-yourself maker space integrating hands-on and digital media and production experiences with inquiry-based learning, early literacy, and STEM.

The Children's Museum has also played a central role in the development of Pittsburgh's Northside neighborhood. The museum's Charm Bracelet project brought together over 20 cultural, recreational, and educational organizations to create a linked and easily navigated system of opportunities and experiences for families and children, including the Pittsburgh Mini-Maker Faire. The museum recently partnered with the Pittsburgh Association for the Education of Young Children (PAEYC) to offer members and families significantly reduced admission, a service also provided to those holding EBT public assistance cards.

MIAMI SCIENCE MUSEUM: EVALUATING THE IMPACT OF A COMPREHENSIVE EARLY LEARNING SCIENCE CURRICULUM ON CHILDREN AND TEACHERS

The Center for Interactive Learning at the Miami Science Museum is a joint venture with the University of Miami. Designed to link informal science education and the formal education and research community, the Center developed the Early Childhood Hands-on Science (ECHOS®) model, which includes a comprehensive early learning science curriculum, a set of assessment tools and a professional development program. ECHOS's goal is to investigate science as a domain for enhancing school readiness and to demonstrate that young children can learn fundamental science concepts and the process skills associated with higher-order thinking. The fully developed preschool science curriculum consists of nine units, each containing four guided week-long science lessons that are introduced in 20-minute segments to small groups of children. A teacher assistant and/or volunteer simultaneously works with the balance of the children using related integration cards in three domains: language/literacy, math, and creative arts.

The 36 ECHOS lessons follow a project-designed learning sequence providing teachers with a logical structure to deliver lessons that combines direct instruction with guided inquiry-based science experiences and exploration. The "E-I-E-I-O" learning framework offers teachers an instructional roadmap to walk children through a consistent series of steps: Excite…to create interest and generate curiosity; Introduce…to undertake the investigation; Explore…to deepen understanding through questioning, making prediction, recording data, and looking for patterns; Interact…as needed to respond to individual strengths and needs; and Outcomes…to observe evidence of learning and determine need to re-teach key concepts. The museum's website at www.miamisci.org/echos contains short videos of the program in action.

A quasi-experimental study conducted by the University of Miami in 30 Miami-Dade County Head Start classrooms examined the efficacy of the curriculum. Results found significant differences between teachers and children in ECHOS classrooms as opposed to classrooms where ECHOS was not implemented. Teachers in the ECHOS classrooms exhibited more science-related behavior and felt more comfortable teaching science. Children in the ECHOS classrooms also exhibited higher rates of science behavior and scored higher on science readiness tests. A subsequent two-year Randomized Control Trial in 90 Head Start classrooms is nearing completion.

Analyses at the end of the first year show preliminary evidence for the effectiveness of ECHOS that is consistent with the previous study. A series of repeated-measures analysis of variance (ANOVA) revealed that ECHOS teachers significantly improved their scores in use of instructional strategies associated with higher-order thinking skills, specifically predicting, investigating, and evaluating, across the year, while control group teachers did not.

BOSTON CHILDREN'S MUSEUM: FROM COMMUNITY-WIDE TO STATEWIDE IMPACT

The Boston Children's Museum, now celebrating its centenary, led museums nationwide in focusing on children zero to three. In 1998, the museum began a partnership with Action for Boston Community Development Head Start that led, in 2003, to Countdown to Kindergarten, a multi-institutional, private-public partnership that aims to enhance early learning opportunities with a focus on the transition to kindergarten.

In 2010, the museum opened a permanent Countdown to Kindergarten exhibit that simulates a kindergarten classroom. Children and families engage in hands-on activities while familiarizing themselves with the kindergarten environment. Adults can ask staff "teachers" questions about the kindergarten registration process, child development milestones, and school readiness. Children can practice taking turns, making a friend, or sitting in a group circle to hear a story. The classroom has areas for math and science, dramatic play, reading and writing, and creative arts. Since opening in August 2010, the exhibit has welcomed 1.7 million visitors. Over 6,000 people participated in the past three Countdown to Kindergarten celebrations and 5,000 people from community groups participated in 33 Friday School Readiness Friday nights.

The museum's leadership in Boston's early learning community has led to its major role in the Commonwealth of Massachusetts' Race to the Top Early Learning Challenge Grant. The Commonwealth's Department of Early Education and Care engaged the museum as a core partner in its family engagement and school readiness activities. The museum has mobilized 55 libraries and 68 museums across the state to bring their content, expertise, and programs to families and to strengthen connections with the Coordinated Family and Community Engagement (CFCE) specialists throughout the state to connect with the hardest to reach populations. (Public libraries currently house state-supported Early Childhood Resource Centers.) A state-level team led by Boston Children's Museum staff is conducting a series of regional meetings designed to facilitate connections across CFCE grantees and local libraries and museums to bring these communities the early learning and service supports they need.

The focus areas of the statewide museum and library activities (which build on the Boston Children's Museum expertise and professional development experience) have been STEM learning (with the Boston Children's Museum distributing STEM kits to all the partner organizations), school readiness, early literacy, and participation in the "Brain Building in Progress" public awareness campaign spearheaded by the State Department of Early Education and Care and the United Way of Massachusetts Bay and Merrimack Valley. Participating libraries and museums receive a "pop-up" kindergarten classroom kit in a box filled with resource sheets, DVDs, and graphics they can use to create a kindergarten classroom program in their institutions. In addition, the Boston Children's Museum's school readiness play, "DW Counts Down to Kindergarten," will be presented at several sites across the state.

BALTIMORE CITY: JOINING FORCES FOR SCHOOL READINESS

In Baltimore, libraries, museums, community agencies, city officials, schools, preschools, and Head Start programs are focused on making sure all young children, from birth, have the opportunities they need to start school ready to learn.

Together, the Enoch Pratt Library and The Walters Art Museum play active roles in community-based initiatives such as the annual Countdown to Kindergarten Celebration and PreK at Play event that brings young children and their families into the community to explore cultural, recreational, and neighborhood sites. Leaders from each institution routinely convene all library and museum providers in the city to plan ways to engage families. In addition, both have worked to align their programs and services with the Maryland Department of Education's Maryland Model for School Readiness.

The Enoch-Pratt's summer learning programs include a partnership with the Department of Parks and Recreation and the School District for the "Super Summer" program that targets underperforming readers. The program combines a half day of district-run summer school with wrap-around services from recreation centers to provide a full day of enrichment and targeted intervention. Other summer programs include an incentive-based reading program begun in the 1930s with a comprehensive set of enrichment opportunities, and an outreach program, "Summer Reading in a Kit," bringing books, reading logs, and incentives to community-based programs such as church-run day care programs that lack other access to literacy-based services and materials.

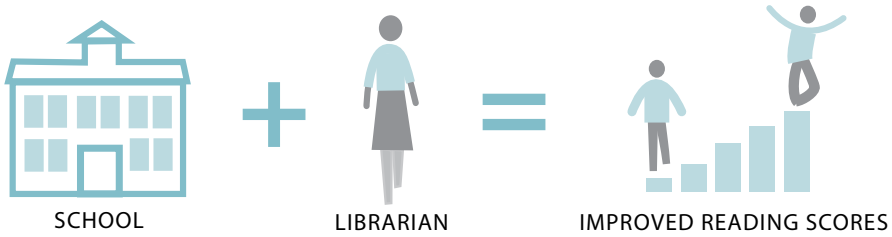
At the Walters, education programs are designed to "grow with families," offering a menu of offerings scaffolded across stages of child development. Children's developmental needs are supported through age-appropriate, object-based, and art-integrated learning experiences, including Waltee's Cubs Baby Programs, ArtTots Toddler Programs, ArtKids Preschool Programs, and Start with Art Preschool Programs.

Enoch Pratt Free Library and Baltimore Department of Health staff members co-chair the school readiness committee of Baltimore City's Campaign for Grade-Level Reading. This joint leadership grew out of a partnership between the two organizations, which targeted young first-time mothers to increase their abilities to support their children's early literacy development. Trained by library staff to deliver the Every Child Ready to Read model, home health care workers provide guidance and information to young parents during home visits.

SCHOOL LIBRARIES AND STUDENT ACHIEVEMENT

School Librarians Are Linked to Improved Standardized Reading Test Scores

Studies conducted over the past two decades, both in Colorado and nationwide, show that students in schools with endorsed librarians score better on standardized achievement tests in reading, compared with students in schools without endorsed librarians.

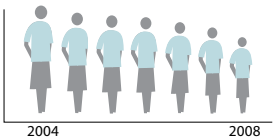


THIS INCREASE IN SCORES EXISTS REGARDLESS OF:

Student Poverty Level [1]

In a Colorado study, the presence of school librarians positively impacted students' standardized reading scores even when controlling for student poverty (free and reduced-cost meal status).

Overall Staffing Losses [2]



In a national study, even if schools had overall staff declines between 2004 and 2008, students' standardized reading scores were better in schools that maintained or gained a librarian during this time period.

WHAT OTHER SCHOOL LIBRARY CHARACTERISTICS ARE ASSOCIATED WITH BETTER TEST SCORES?

School Librarians Teaching Information Literacy Skills to Students [3]

Staffed by Endorsed Librarian [1]

Collaborative Planning Between School Librarians and Teachers [3,4]

Extended Library and Staff Hours [3]

School Librarians Providing In-Service Training to Teachers [3]

Larger and Newer Collections [3,4,5]

More Student Visits [5]

Flexible Scheduling [3]

Higher Expenditures [3,4,5]

ARLINGTON COUNTY, VIRGINIA: SCHOOL LIBRARIES MAKING A DIFFERENCE

School librarians in Arlington County Public Schools (APS) play an integral role in school-wide efforts to advance children's reading skills. Through collection planning and acquisition, school libraries support reading proficiency across the developmental continuum, reading and technology specialists working with librarians and teachers to address remedial and advanced reading needs. For children with special needs, library resources include oral reading, interactive technology, role play, and audio and video accommodations. Assessment data enable the librarian, teachers, and specialists to work together to guide instruction and offer special learning experiences, such as hosting visiting authors or implementing reading initiatives.

Schools have a strong relationship with local public libraries and museums, using their resources to enhance and expand school-based instruction. To address the issue of summer learning loss, school and public librarians jointly plan reading incentives and an end-of-the-year transition from the school library to the public library. Virginia is not a Common Core Standards (CCSS) state, but APS has established cross-system collaboration to link public school teachers, specialists, school librarians, and public librarians to provide children access to robust and relevant experiences and resources, called for in the state's Standards of Learning, which build needed skills and knowledge. As digital hubs, school libraries provide students access to high-quality technology resources. Librarians use technology to model knowledge integration across content areas and plan differentiated instruction approaches based on student needs and interests.

In one Arlington school, students are being introduced to a problem-based learning model (PBL) for teaching STEM (science, technology, engineering, and math) at the elementary level. Digital capacity and collections place school libraries at the center of this work. Collaboration between the librarian, technology specialist, teachers, and instructional specialists has resulted in a cultural shift in the school and increased students' abilities to document their learning through a variety of tools and apps.

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See www.lrs.org/data-tools/school-libraries/impact-studies for a list of school library impact studies.

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Special thanks to the Association of Library Service to Young Children for surveying their membership to support this report

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This report was made possible through our partnership with the Campaign for Grade-Level Reading, Ralph Smith, Managing Director.

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