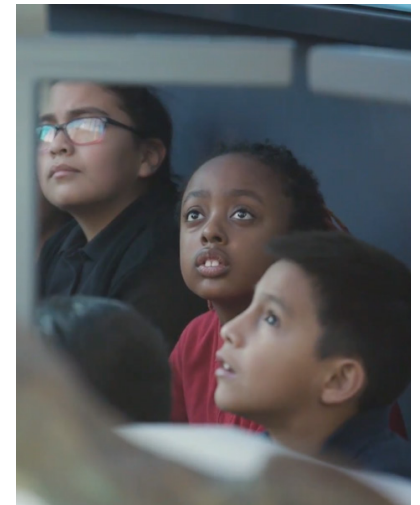




KC URBAN ADVANTAGE UPDATE

“Education is the most powerful weapon which you can use to change the world.” - Nelson Mandela



THE NEED

The need for more STEM-related education in American schools has been recognized for some time. According to the U.S. Department of Education, “In a world where success is driven not only by what you know, but by what you can do with what you know, it’s more important than ever for our youth to be equipped with the knowledge and skills to solve tough problems, gather and evaluate evidence, and make sense of information... Yet today, few American students pursue expertise in STEM fields—and we have an inadequate pipeline of teachers skilled in those subjects.”¹

Unfortunately, many schools don’t have the resources to bolster STEM education. When education budgets are cut, teachers look for outside resources to help provide the learning opportunities that will not only support their students’ academic achievement, but also prepare them to participate and thrive in the 21st century economy². This challenge is particularly exacerbated by the inequity of STEM resources in schools serving students of poverty. A recent study found students of high poverty schools are least likely to have access to STEM resources and experiences throughout K-12, with the greatest disparities in elementary education.³



KC Urban Advantage | Museum at Prairiefire

Kansas City Urban Advantage (KCUA) was founded to address this divide by providing quality, standards-based STEM learning experiences to Kansas City’s most under-served elementary schools. Kansas City benefits from a vibrant STEM economy, however many students lack access to the quality STEM learning experiences necessary to prepare them to participate in the rapidly expanding STEM workforce. For example, less than a quarter of KCMO 5th graders scored proficient or higher in science or mathematics in 2017.

THE NEED

KCUA is modeled after Urban Advantage programs in other U.S. cities that have a demonstrated record of making an impact on student achievement. For example, New York Urban Advantage schools went from performing below non-UA schools on the state science exams to exceeding non-UA schools by 5% in just a 3 year period⁴.

The Urban Advantage model relies upon informal and formal learning institution partnerships. The New York Urban Advantage program was jointly developed with the American Museum of Natural History and the Denver Urban Advantage program with the Denver Museum of Natural History to create measurable change within their partner schools. Natural history museums are meaningful partners for schools because the fascinating world of extinct animals and exploring outer space taps into the natural curiosity of children and provides an engaging foundation for applied lessons in STEM, the Arts, and English Language Arts. As such the Museum at Prairiefire founded, administers, and funds KCUA. Through 2018, the Museum at Prairiefire's KCUA program served over 4,000 students from 9 diverse schools in need. Each of these schools participates in a Title I program with high percentages for children living in poverty.

KC URBAN ADVANTAGE OVERVIEW

KC URBAN ADVANTAGE is a standards and research-based collaboration between under-served schools and youth, the Museum at Prairiefire and other Kansas City metro cultural and learning institutions such as museums, science centers, cultural organizations and zoos. Funded and administered by the Museum at Prairiefire, the cultural institutions collectively provide extraordinary STEM, Arts, and English Language Arts resources in direct support of student achievement at partner schools year after year – specific goals include:

1. High-quality professional development for teachers and administrators
2. Classroom materials and equipment that promote scientific inquiry and authentic investigations
3. Access to Urban Advantage Partner institutions through free school and family field trips
4. Outreach through family events, celebrations of student achievement, and parent coordinator workshops
5. Capacity-building and sustainability structures, including a network of demonstration schools and support for the development of lead teachers
6. Assessment of program goals, student learning, systems of delivery, and outcomes

KC URBAN PARTNERS AND BENEFACTORS 2019

KCUA PARTNER SCHOOLS AND ORGANIZATIONS

Mark Twain Elementary KCK (new fall 2018)
Quindaro Elementary KCK
Welborn Elementary KCK
J.A. Rogers Elementary KCMO (new winter 2019)
Phillis Wheatley Elementary KCMO
Troost Elementary KCMO
Wendell Phillips Elementary at Attucks KCMO
Kids TLC Olathe (new summer 2018)
Ridgeview Elementary Olathe
Apache Innovation School Shawnee Mission
Boys and Girls Clubs of Kansas City
Big Brothers Big Sisters
AmeriCorps City Year

KCUA PARTNER INSTITUTIONS

Johnson County Community College
Kansas City Zoo
KC Friends of Alvin Ailey
KC STEM Alliance
KU Natural History Museum
National World War I Museum and Memorial
Overland Park Arboretum & Botanical Gardens
Powell Gardens
Wildwood Outdoor Education Center

MAJOR KCUA BENEFACTORS

Black & Veatch | Global STEM Education Partner
The Sosland Foundation
Barton P. and Mary D. Cohen Charitable Trust
G. Kenneth and Ann Baum Philanthropic Fund
William T. Kemper Foundation
The Ronald D. Deffenbaugh Foundation

KCUA PROGRESS UPDATE

In 2018 KC Urban Advantage made progress toward its goals. The KCUA education team at the Museum at Prairiefire was successful in onboarding three (3) new KCUA partner schools: **J.A. Rogers Elementary (KCMO)**, **Mark Twain Elementary (KCK)** and **KidsTLC (Olathe)**. Adding schools is significant because it requires the full support of principals, educators and ultimately the school districts.

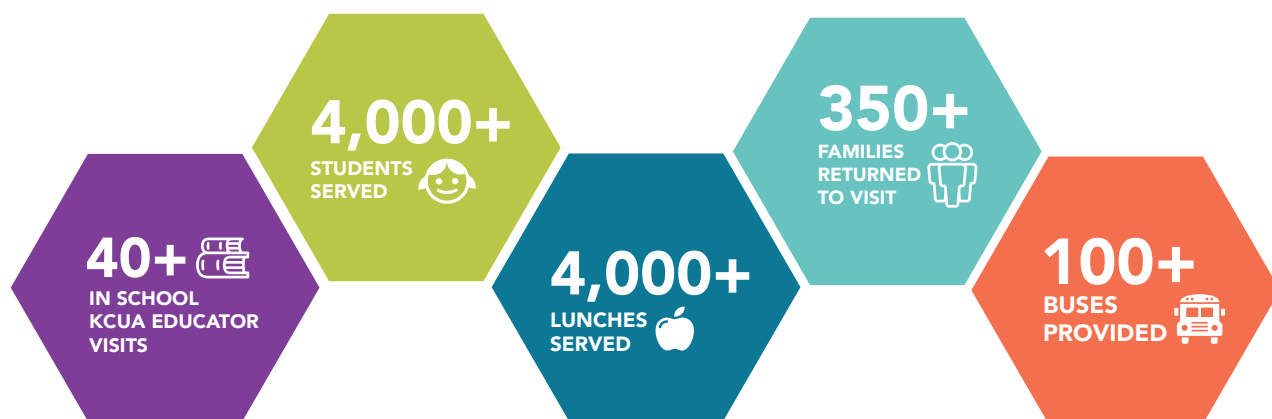
The Museum at Prairiefire also provided KCUA with its first **FREE Summer Camp opportunity, In Good Hands: Engineering Space Gloves**. In the spring of 2018 the MAP was one of only 14 institutions selected from a pool of 240 across the nation by the Museum of Science, Boston and NASA to pilot the engineering program. Providing this level of STEM opportunity to Kansas City's most under-served children is one of the key goals of KC Urban Advantage.

Another significant accomplishment was expanding the KCUA reach through new partnerships with non-school organizations that support under-served children in our community. Three of the organizations where KCUA partnerships have been established are **The Boys and Girls Clubs of Kansas City**, **Big Brothers Big Sisters** and **AmeriCorps City Year**. KCUA will provide FREE access to educational programs and events, designed to meet the needs of each organization. City Year teachers and students will have full access to the MAP and its programs all year.

While we made progress in 2018, there are four (4) significant new initiatives for 2019-2020:

- **Expand the program by adding five (5) new Partner Schools**
- **Successfully establish the KCUA After School Program, KCUA Extended (Goals 2, 4)**
- **Initiate the KCUA Bridges Scholarship Program for grades 7-12 (Goal 5)**
- **Establish new, meaningful partnerships that benefit from the KCUA program (Goals 1-6)**

KC URBAN ADVANTAGE IMPACT



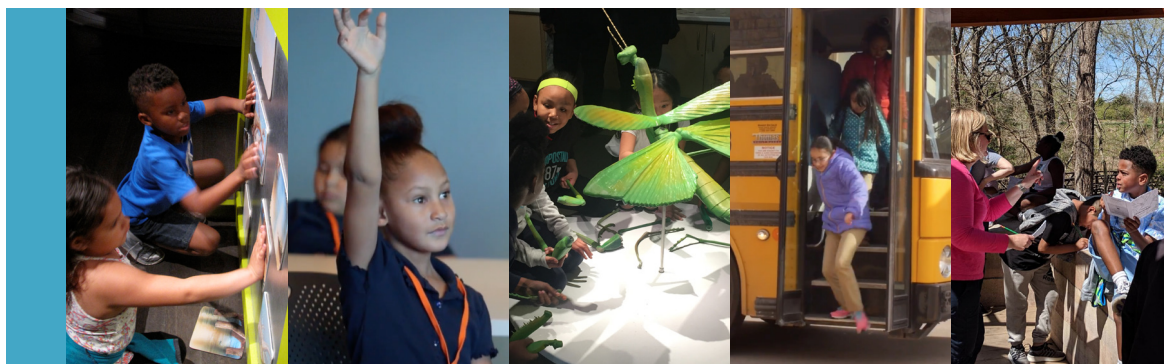
EXPANDING EDUCATION AND OPPORTUNITY | NEW INITIATIVES 2019-2020

LAUNCH KCUA NON-SCHOOL HOUR PROGRAMS, KCUA Extended

KCUA Extended will sponsor after school, weekend, and summer programs that provide diverse and regular opportunities for academic enrichment and family engagement in student learning. Working closely with school administrators, teachers, and students, the Museum at Prairiefire will select standards-based STEM programs infused with English Language Arts and the Arts for after school and weekend enrichment opportunities. Project Lead the Way Launch and Museum at Prairiefire programs - Little Explorers Club, JAM Sessions, and Paleontology Rocks! - will provide students opportunities to practice 21st century skills as they investigate authentic STEM topics and real-world challenges through project-based learning. After school and summer programs will provide take home materials and end-of-program learning showcases to encourage family engagement in student learning at every step. Weekend programs will provide meaningful learning opportunities for the student's family to enjoy together. The KCUA Extended initiative augments how the MAP supports the core KCUA goals to provide classroom materials that promote scientific inquiry and authentic investigations, provide outreach through family events and celebrations of student achievement, and assessment of student learning.

INITIATE KCUA BRIDGES SCHOLARSHIP PROGRAM

KCUA serves our partner elementary schools year after year in the mission of nurturing the natural curiosity of the under-served children who are least likely to have access to quality STEM education (Change the Equation, 2017). KCUA is building a pipeline to lead these students into the job market by partnering with organizations that support academic achievement for middle schoolers, high schoolers, and college bound students in Kansas City. KCUA is already in the process of forming a relationship with AmeriCorps City Year to provide educational bridges during grades 7-12 to improve attendance and graduation rates, as well as increase opportunities for post-graduate education. The KCUA Bridges initiative supports KCUA's core goal to provide sustainability structures and assess outcome goals.



KCUA ACCOMPLISHMENTS + THE FUTURE

The Museum at Prairiefire funds and administrates the development and implementation of KCUA programming, resources, and partnerships to provide comprehensive, ongoing, world-class STEM experiences for under-served students with the purpose of increasing their confidence and ability in academic achievement and future career opportunities.

In three short years KCUA made significant achievements in support of programmatic GOALS but there is still important work ahead to make a lasting impact in our community:

1. High-quality Professional Development for teachers and administrators

What we do:

- The Museum at Prairiefire provided Professional Development on Project-Based Learning for Ridgeview Elementary teachers and support staff.
- The Museum at Prairiefire provides pre-field trip, grade-specific educator consultations at KCUA schools regarding their KCUA visit and affiliated educational resources to help teachers effectively connect field trip experiences with classroom learning:

Wendell Phillips Elementary 5th and 6th grade teachers, October 30th, 2017

Ridgeview Elementary 1st grade teachers, November 16th, 2017

Troost Elementary 5th and 6th grade teachers, November 30th, 2017

Ridgeview Elementary 2nd grade teachers, December 8th, 2017

Quindaro Elementary, 1st grade teachers, February 2nd, 2018

Apache Innovation School, K-6th grade teachers, February 6th, 2018

Mark Twain Elementary, K-5th grade teachers, September 26th, 2018

Apache Innovation School, 5th grade teachers, October 9th, 2018

Mark Twain Elementary, 2nd grade teachers, October 22nd, 2018

Troost Elementary, 4th grade teachers, December 4th, 2018

Mark Twain Elementary, Kindergarten teachers, January 10th, 2019

J.A. Rogers Elementary, K-6th grade teachers, January 16th, 2019

Welborn Elementary, K-5th grade teachers, March 6th, 2019

Mark Twain Elementary, 1st grade teachers, March 8th, 2019

Mark Twain Elementary, 5th grade teachers, March 8th, 2019

Welborn Elementary, Kindergarten teachers, March 19th, 2019

Quindaro Elementary, K-5th grade teachers, March 20th, 2019

J.A. Rogers Elementary, Kindergarten teachers, April 3rd, 2019

KCUA ACCOMPLISHMENTS + THE FUTURE

1. High-quality Professional Development for teachers and administrators (cont.)

What we want to do:

Provide quality, ongoing professional development for ALL KCUA EDUCATORS. A shortage of teachers in STEM subjects leads to a shortage of young men and women who are able to step into the many STEM-related jobs that are growing in number every day. Nearly half of elementary school teachers feel unprepared to teach science and that could be why less than a quarter of KCMO elementary students demonstrate proficiency in science.⁵ Museum at Prairiefire educators will provide KCUA professional development workshops, offered at no cost to ALL KCUA educators, to enhance each teacher's knowledge and skill set for providing effective and engaging STEM integrated with classroom curriculum.

2. Classroom materials and equipment that promote scientific inquiry and authentic investigations

What we do:

- The Museum at Prairiefire provides print and digital resources for teaching essential STEM and English Language Arts concepts prior to the students' field trip and to reinforce essential concepts in the classroom after their field trip. Museum at Prairiefire educators work one-on-one with KCUA teachers to counsel them on implementation of these teaching and learning resources.
- The Museum at Prairiefire provides STEM lessons integrated with the Arts and English Language Arts to early childhood students in their classroom at KCUA schools. Early childhood educators select from a diverse list of lessons from the Museum at Prairiefire's Little Explorers Club program to connect the program to student needs and classroom learning.

What we want to do:

Utilize Museum at Prairiefire's Project Lead the Way (PLTW) Launch certification to implement PLTW Launch in the classroom during school and after school through KCUA ExtendedED, a non-school hour STEM program provided at no charge to KCUA schools and families. Dr. Kathryn McKinney, the Museum at Prairiefire's Executive Director, received Launch Lead Teacher certification after successfully completing 27 hours of instruction with the PLTW 2016 Core Training Institute at the Missouri University of Science and Technology.

PLTW Launch is standards-based, interdisciplinary curriculum and materials for K-5 students to address real world problems. PLTW Launch offers 24 modules, four per grade level, that bring learning to life. Each module provides ten hours of instruction that empowers students to develop essential 21st century skills as they build expertise in computer science, engineering, and biomedical science. The modules are grade specific and aligned to State Science, Math, and English Language Arts Standards.

KCUA ACCOMPLISHMENTS + THE FUTURE

2. Classroom materials and equipment that promote scientific inquiry and authentic investigations (cont.)

What we want to do (cont.):

PLTW Launch materials are provided in both English and Spanish to support Hispanic English Language Learners. PLTW is known for empowering students to adopt a design-thinking mindset through compelling activities, projects, and problems. PLTW has a demonstrated ability to engage K-5 students through programs that are relevant, inspiring, engaging, and foundational to their future success. PLTW is recognized among education and STEM industry professionals for transforming classrooms to student-led centers of inquiry and empowering students to become creative, collaborative problem solvers.

Research demonstrates PLTW students outperform their peers, are better prepared for post-secondary studies, and are more likely to consider STEM careers than non-PLTW peers. PLTW is a non-profit organization that provides K-12 curriculum intended to transform classrooms with professional development, step by step lesson plans, materials, and assessments that facilitate outstanding STEM teaching and learning opportunities.

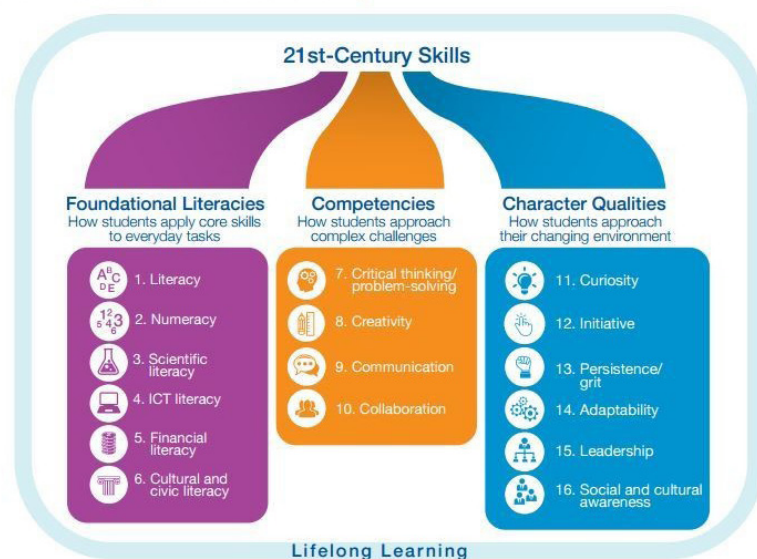


Image: World Economic Forum, New Vision for Education (2015) ⁶

3. Access to Urban Advantage Partner institutions through FREE school and family field trips

What we do:

Teachers select their KCUA field experience that includes a trip to the Museum at Prairiefire and/or a field trip to a partner institution (listed above). Students receive family passes to return with their entire family to the institutions at no charge. Museum at Prairiefire educators counsel teachers about the KCUA program field trip opportunities and how their visit connects to classroom learning prior to their trip.

What we want to do:

Expand KCUA partnerships to include as many metro area institutions as possible, thereby providing underserved students with comprehensive access to Kansas City's trove of world-class learning institutions.

KCUA ACCOMPLISHMENTS + THE FUTURE

4. Outreach through family events, celebrations of student achievement, and parent coordinator workshops

What we do:

The Museum at Prairiefire offers family programming outside of educational experiences during school. For example, the MAP hosts performances and learning events through the KC Friends of Alvin Ailey where students and parents are provided with transportation to the Museum for music and dance education from the New York Alvin Ailey troupe.

What we want to do:

Offer a wider variety of family learning experience opportunities outside of school, as well as facilitate student-directed STEAM events, particularly through KCUA Extended weekend family engagement events. Additionally, host family programs outside of school that empower parents and caregivers to facilitate their children's discovery of STEAM topics at home.



5. Capacity-building and sustainability structures, including a network of demonstration schools and support for the development of lead teachers

What we do:

The Museum at Prairiefire educators work closely with teachers and administrators of current KCUA schools to take stock of the needs of KCUA schools and how they are being supported by the KCUA program. This includes on-on-one conversations with teachers and administrators as well as group discussions. These touch-points take place 2-4 times each school year.

What we want to do:

Collaborate with KCUA educators and administrators to identify teachers within KCUA schools who have a passion and capacity to co-facilitate Professional Development sessions and support other science teachers. This will allow the KCUA program to develop deeper roots for long-term implementation in the KC Metro area. Initiate the KCUA Bridges Scholarship Program for grades 7-12. KCUA is forming a relationship with **AmeriCorps City Year** to provide educational bridges during grades 7-12 to improve attendance and graduation rates, as well as increase opportunities for post-graduate education.

KCUA ACCOMPLISHMENTS + THE FUTURE

6. Assessment of program goals, student learning, systems of delivery, and outcomes

What we do:

Related to the point above, Museum at Prairiefire educators work closely with teachers and administrators of KCUA schools to understand the needs of KCUA schools and how they are being supported by the KCUA program.

This school year we are piloting pre- and post-testing of grade-specific essential concepts related to state standards on which students are tested. The purpose of this process is to identify student learning outcomes from KCUA experiences.

What we want to do:

Track school performance on State science and math assessments to determine how students in KCUA schools perform relative to non-KCUA schools. This is one of the key elements of the program, but will require the ability to staff accordingly, as well as develop the appropriate processes that provide accurate information and further direction for achieving the desired outcomes.



ARIADNA

"Education is the key to empowerment and sustainability. Education is a right which is the key to the rest of the rights of life in society. Education is the key to social justice."

- Kailash Satyarthi

WHO WE ARE

OUR MISSION

The Museum of Prairiefire Foundation (Museum at Prairiefire) is committed to innovative learning in science, the arts and natural history. Through a founding collaboration with the American Museum of Natural History in New York City, as well as with other cultural and educational institutions in the nation, the Museum at Prairiefire (MAP) is a place that provides **ACCESS FOR ALL** to understand and celebrate natural history and science in our region and around the world. The MAP engages visitors and students of all ages with world-class exhibitions, important programming, and provides significant educational and STEAM opportunities for under-served children through **KC Urban Advantage**.



Dr. Kathryn McKinney
Executive Director



Terri M. Thompson
Director, Development
and Community Engagement

MUSEUM AT PRAIRIEFIRE EDUCATION TEAM

Tim Shaban, Education and Group Manager

Jessica Pettitt, Education Outreach

Dr. Allen Macfarlane, Instructional Design

Cathie O'Sullivan, Education Manager

Madeline Dasch, Education Coordinator

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MUSEUM AT PRAIRIEFIRE + KCUA PARTNERS

Global STEM Education Partner



1 U.S. Department of Education, 2015. "Science, Technology, Engineering and Math: Education for Global Leadership," at <http://www.ed.gov/stem>.

2 United States Government, 2018. "Charting a Course for Success: America's Strategy for STEM Education, A Report by the Committee on STEM Education of the National Science and Technology Council" at <https://www.whitehouse.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf>

3 Change the Equation, 2017. "Ending the Double Disadvantage: Ensuring STEM Opportunities in our Poorest Schools" at <http://ecs.force.com/studies/rstempg?id=a0r0g000009TLbE>

4 Evaluation Review, 2014. "Museums, Zoos, and Gardens: How Formal-Informal Partnerships Can Impact Urban Students' Performance in Science" at <https://www.urbanadvantagenyc.org/about-ua/academic-research/>

5 The Hechinger Report, 2018. "Will new standards improve elementary science education?" at <https://hechingerreport.org/will-new-standards-improve-elementary-science-education/>

6 World Economic Forum, 2016. "What are the 21st-century skills every student needs?" at <https://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-students/>