Folio 1: Key Components

This folio is one in a series of four designed to capture, discuss, and provide evidence of exemplary implementation of the Urban Advantage Middle School Science Initiative as documented by NCREST, (The National Center for Restructuring Education, Schools and Teaching, Teachers College), Columbia University in a sample of Urban Advantage Demonstration Schools. The focus of this folio is Key Components of Urban Advantage.

What is Urban Advantage (UA)?

Started in 2004, the Urban Advantage Middle School Science Exit Project Initiative, (UA), is a city-wide science education initiative that partners eight New York City science-rich cultural institutions with the New York City Department of Education. In addition to the American Museum of Natural History which houses Urban Advantage Administration, Urban Advantage Partners include the Brooklyn Botanic Gardens, New York Botanical Garden, New York Hall of Science, Queens Botanical Garden, Staten Island Zoo, Wildlife Conservation Society- Bronx Zoo, Wildlife Conservation Society New York Aquarium. Middle school students, particularly 8th graders, enrolled in NYC public schools, are the focus of this alliance and benefit directly from its efforts.

Funded by the New York City Council and a private donor, Urban Advantage captures, celebrates, and shares the wonder and excitement of scientific discovery by engaging learners in authentic inquiry-driven contexts. The teaching and learning experiences of children and adults participating in Urban Advantage are enriched through high quality teacher professional development, direct access to scientific knowledge through firsthand experiences at UA Partner institutions, classroom resources chosen for their value in promoting scientific inquiry, family participation, and direct support of students throughout the Exit Project process.

What are the key components of Urban Advantage?

The success of the Urban Advantage Initiative can be linked to four key components, these include: Purpose, People, Partners and Practices.

Purpose

The Urban Advantage Initiative began with an accurate assessment of the science education needs of NYC middle schools. UA responded to those needs with a focused intervention emphasizing inquiry, investigation and Exit Projects and clearly defined purpose: to improve the teaching and learning of science in NYC’s middle schools through leadership, professional development support, and resources. Urban Advantage is built upon existent structures in the
New York City Department of Education, such as the Parent Coordinator position and the required Exit Project. UA is a purposeful and relevant intervention – not “another layer” of requirements disenfranchised from need.

“UA contributes to teacher satisfaction and lessens the propensity to leave. There is a lot of ground lost when teachers leave—student performance is affected and learning communities are disrupted.”

UA Principal

People

Urban Advantage is a fluid mosaic consisting of six constituencies of UA People, each essential to maximizing the partnership between the NYC Department of Education and science-rich institutions the purpose of which is to strengthen science education of NYC middle school students. UA People include: UA Administration, UA Partners, UA Principals, UA Lead Teachers, UA Teachers, and UA Parent Coordinators. The success of Urban Advantage is dependent on effective and ongoing communication among these constituents, each with its primary area of focus— all members of a unified learning community committed to the continuous improvement of science education.

UA People are critical to the fidelity and success of the intervention. The day-to-day planning and implementation of Urban Advantage is coordinated by UA Administrators, housed at the American Museum of History. UA Administrators’ responsibilities range from planning and scheduling UA-related events, managing the UA Website, to the development and delivery of UA materials to their intended audience. UA Faculty are located at each of the Partner Institutions and directly plan and host UA sponsored family events and professional development training sessions for teachers that reflect the host institution’s strength. Together, UA Faculty form the Partners’ Network. The Partners’ Network meets frequently and promotes the alignment of partner institutions’ goals for education and family participation.

“[Before UA] we had a lot of good content—but needed to: add our inquiry-based approaches and better target a middle school audience…in fact, our future curriculum development for the Garden will focus on middle school. We have grown internally as a result of our participation in UA.”

Patty Kleinberg, Director of Education, Queens Botanical Garden
“What has really been great for the Staten Island Zoo is that two years ago we were just getting involved…adding middle school students is something that we hadn’t had before …now we have a lot of new [middle school] faces at the zoo.”

Excerpt UA Partners’ Meeting

UA Principals are integral in the identification and recruitment of NYC middle schools to join UA- a pivotal role in the city-wide growth of UA.

UA Lead Teachers are NYC middle school science teachers who provide on-site support and leadership to colleagues in their schools. UA Lead Teachers plan and co-teaching professional development training sessions for teachers at each partner institution. UA Principals provide the needed school-based conditions, support, resources, and endorsement.

UA Parent Coordinators, based in each NYC middle school, support Urban Advantage through their outreach efforts to involve students’ families in UA events including: Family Science Fieldtrips, Family Science Nights, Exit Project Workshops, and Science Fairs.

Partners

Urban Advantage partners eight New York City science-rich cultural institutions with the New York City Department of Education and many of its middle schools across the city. UA Partner Institutions include: the American Museum of Natural History, the Brooklyn Botanic Gardens, the New York Botanical Garden, the New York Hall of Science, the Queens Botanical Garden, the Staten Island Zoo, the Wildlife Conservation Society-Bronx Zoo, and the Wildlife Conservation Society New York Aquarium. Collaboration between UA Partners and the New York City Department of Education provides the framework for communications between schools, institutions and the department of education. Collaboration among UA Partners assists Partner Institution as they design and provide professional development, increase family and student participation at their facilities, focus on their unique areas of expertise, and bring their assets and areas of specialization to the Urban Advantage Initiative.
**Practices**

UA achieves its purpose to improve science education through its ongoing efforts to expand and update teachers’ scientific knowledge beyond their areas of certification, provide networking opportunities for teachers to share ideas and best practices, forge partnerships between informal and formal science education settings, cultivate students’ interests in science to ultimately eliminate the current shortage of science teachers, and extend students’ participation in the sciences. Urban Advantage does this by designing and providing professional development to UA Teachers, offering confidence-building science content sessions to UA Parent Coordinators, distributing inquiry-promoting materials to schools, providing families and schools with access to UA Partner Institutions through UA Vouchers, hosting the Annual Urban Advantage EXPO, at which students display the products of their scientific investigations and structuring a framework for ongoing communication and reflection between UA People and UA Partners.

**Professional Development**

Each of the partnering institutions offers professional development for UA teachers that highlight the specific content, resources, and pedagogical practices unique to the partner institution. Professional development is offered at each of the partnering institutions at four different levels designed to match teacher experience with the UA Program, these include: Cycle 1, Cycle 2, and Cycle 3 and Continuing Teacher Workshops.

**Parent Coordinator Training**

Parent Coordinator Meetings organized and facilitated by the Senior Coordinator of UA Communications and hosted at each of the UA Partner institutions. The agenda for these meetings includes review and explanation of voucher-use, trip planning and logistics, recommendations for outreach efforts, opportunities for networking with other UA Parent Coordinators and an interactive science experience specific to the hosting UA Partner. These hands-on experiences build science-confidence and provide background information for UA Parent Coordinators to share with parents during Family Science Fieldtrips, and Exit Project Workshops.

**Materials for Schools**

Urban Advantage provides approximately $2500 of materials to UA Schools in their first year of UA participation. Materials were selected by UA Partners and include general supplies to promote measurement and inquiry and specific materials that reflect the expertise of the Partner Institutions. Materials include: Grow Lab, Bottle Biology text, science notebooks, digital cameras, stopwatches, magnifying lenses, Capsella kits, rock kits with rocks indigenous to the NYC area, and a digital microscope.

**UA Vouchers: Access to Science Institutions**

To promote access to UA Partner Institutions, Urban Advantage provides vouchers to students and their families, teachers, parent coordinators, and schools. UA also provides one free bus per school per year for a family trip. The four types of vouchers valid for free
admission to UA Partner Institutions include: Student/Family Vouchers, Family Science Sunday Voucher, Family Field Trip Vouchers and EXPO Vouchers.

**What are Exit Projects?**
Exit Projects are inquiry-driven, curriculum-based scientific investigations. They are designed and conducted by small groups of students driven by their observations, questions and curiosity. Students select from one of four different types of Exit Project options which include: Fieldwork, Controlled Experiment, Design Project and Secondary Research. Driven by their own questions, guided by the New York City Department of Education’s GROW rubric, (Great!, Really good, On your way, keep Working) and supported by their teachers and all UA components, students conduct their own investigations.

Fieldwork

Fieldwork: The Student Scientist collects data through firsthand observation of subject/environment without manipulating the subject/environment being studied. The Student Scientist develops and tests a data collection protocol that is designed to address the hypothesis. Data is collected and analyzed in order to evaluate the hypothesis.

How do Magellanic Penguins Behave and Communicate?
**Controlled Experiment**
The *Student Scientist* manipulates an aspect of the environment to understand its relationship to subjects or components of the environment being studied. Data is collected, and analyzed and used to evaluate the hypothesis.

**How clean is the air that we breathe?**
“To answer that question we have conducted an experiment on air quality to test how polluted our air really is. The above is an important question to ask because our air quality has become an extremely and increasingly important issue in the past years and still is.”

Source: Student Exit Project Introduction

**Design Project**
The *Student Scientist* identifies a need and designs a solution in response to that need. The design is realized and tested (where possible) and results are used to improve the design. The redesign is tested, and a plan for ongoing evaluation is developed.
Sponsored by Urban Advantage, the Annual 8th Grade Science EXPO is a celebration of students and their Exit Projects. Students present their Exit Projects to the public through tri-fold boards, 3-D models, simulations, oral presentations, and Power Point presentations.

Secondary Research

The Student Scientist accesses the larger scientific community by examining authentic data collected and made public by others. Students use this data to inform their hypothesis, frame their questions, and respond to their question. Data is collected, analyzed, and used to evaluate the hypothesis.

“I saw about five sample exit projects on the Internet. I liked the Siberian Tigers… [the project] had a lot of research on it and it was interesting. It had a blue background. It also had the Scientific Method…”

Source: Student Journal Entry, Urban Advantage Demonstration School
“We are fortunate to live in New York City...where there is great diversity and many different languages spoken -you do not need to wait to learn the other language to ask your own questions…”

Source: Dr. Maritza Macdonald, AMNH Sr. Director of Education and Policy, EXPO June 2007