GeoKids LINKS: Collaborative, Place-based, and Interdisciplinary Science Education
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**Abstract**
GeoKids LINKS (Learning Integrating Nature, Kids and Science) is a collaboration among Saint Joseph’s University, the Wagner Free Institute of Science (WFIS) and the School District of Philadelphia. This poster addresses the exceptional features that have made the project successful during its first 10 years.

The strength of the project is the partnership between a university, a museum, and four Philadelphia elementary school districts. In this model, GeoKids LINKS has used expert consultation and creativity to make science come alive in a community. SJU faculty and GK-12 Graduate fellows work closely with WFIS staff and school district teachers to develop and implement inquiry-based, natural science units in grades K-5 that are aligned with national, state and local standards. Each partner makes essential contributions to the partnership. The project uses expertise of the WFIS and classroom teachers in K-5 education while SJU faculty and fellows bring enthusiasm and science content knowledge. Effective communication and a strong commitment from all parties are the driving forces for the success of this complex partnership.

GeoKids was founded with the view that in order to foster interest in the natural sciences, especially within young children, learning must be rooted in the child’s surrounding environment. Working in inner city Philadelphia, GeoKids LINKS’ youngest units embrace urban neighborhoods as a primary source for learning, field trips and creating interdisciplinary connections. The project focuses on local ecosystems such as woodlands and wetlands and makes natural science accessible in an urban environment. An example can be seen in the third grade fall unit, where graduate fellows lead students on a neighborhood walk to help them observe the different types and uses of rocks.

Working with grades K-5, GeoKid LINKS recognizes the importance of early childhood science education but also the necessity to draw connections to reading and writing. Establishing learning in reading and writing is key to mastering the language of science. Each unit includes a writing prompt and field trip activities to challenge the students to articulate their observations. These are the first 10 years. These efforts culminate with GeoNews, an annual publication of student writing on topics that highlights the achievements in science, reading and writing that occur throughout each GeoKids LINKS unit.

**Support**
Major funding for GeoKids LINKS comes from The National Science Foundation through the GK-12 program (DGE- 4415495). The Howard Hughes Medical Institute, Saint Joseph’s University and The Wagner Free Institute of Science. The following organizations have provided funding for GeoKids through donations or grants to the Wagner Free Institute of Science:
- The Kate Foundation
- The Alexander Ruddick Foundation
- The Birds Foundation
- The John and Melinda Allen Foundation
- The A. E. Seidman Foundation
- The Ami & John M. Burk Foundation
- The Caring Foundation
- The Chase Foundation
- The Edward & Louise Firestone Foundation
- The Helen and William Keating Foundation
- The Louise and Charles Nardelli Foundation
- The National Science Foundation
- The Philadelphia Union Bank
- The Rivka and Burt Ackerman Foundation
- The Urban-Woodcrest Association
- The Van Pelt Foundation
- The Wachovia Foundation
- The William Penn Foundation

**Collaborative**
The Wagner Free Institute of Science

The Wagner was founded in 1855 by William Wagner to provide free instruction in the sciences which still continues today. The museum’s outstanding natural history collections (more than 100,000 specimens of minerals, fossils, sketches, icons, etc.) are available to the GeoKids LINKS program.

**Place-Based**

The Urban Neighborhood

A recent movement in many rural school districts is the integration of a locally responsive curriculum to contextualize teaching of the natural sciences. GeoKids LINKS has expanded the GeoKids LINKS model to include undergraduate students through a Science Education Service Learning Model. SJU students work to develop and implement 6-week curriculum at a school adjacent to the campus. In addition, students encounter the following topics through facilitated classroom discussion and reflections:
- Inquiry-based learning
- Science literacy in society
- The urban classroom
- Language and communication

**Support**
SJU faculty work with GK-12 fellows and the partnership to support the program by:
- lending their classrooms or facilities to GeoKids LINKS students
- providing classroom or field trips to SJU Biology Laboratories
- providing scientific equipment from their labs for classroom use
- advising and supporting their research fellows.

**GeoKids LINKS**

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**The Local Environment**

GeoKids LINKS focuses on learning about woodlands and wetlands, the local ecosystems for the Philadelphia region as opposed to distant environments such as tropical rainforests. Each GeoKids LINKS unit incorporates field trips to local natural areas, many of which are located within the Philadelphia city limits. These trips open access to both the teachers and students to many of the natural resources available in the Philadelphia region. Examples include:
- In first grade, students visit Wissahickon, part of Philadelphia’s Fairmount Park System. GK-12 Fellows lead student along the Wissahickon creek on a rock walk to identify local geological formations. The students learn about basic landforms and earth history through exploring an inner city park.
- In second grade, students visit John Heinz National Wildlife Refuge located in South Philadelphia. GK-12 Fellows guide the 4th graders as they conduct water quality test of the refuge’s marsh and identify the local flora and fauna.

**Support**
GK-12 Fellows serve as mentors and are a valuable resource for the GK-12 Fellows. SJU faculty provide classroom and guidance on classroom management and teaching strategies.

**Making it Work**

An effective university, museum and school partnership is the backbone of the GeoKids LINKS program’s success. The following are critical elements to the collaboration:

- Open and frequent lines of communication – More than just emails, face-to-face meetings are important to facilitating an open dialogue between partners. A steering committee of SJU and Wagner staff meet monthly to plan long term strategies. Each academic year begins with an orientation workshop for all participants. In addition, fellows, Wagner staff and the Project Manager meet bi-weekly to plan ongoing activities.
- A Project Manager who coordinates the day-to-day activities and long term planning, acting as the ‘lynchpin’ of the partnership.
- Diversification – SJU and the Wagner have access to diverse pools of resources and expertise to help sustain and grow the program.

**Interdisciplinary**

Integrating Reading and Writing

Since GeoKids LINKS works with the elementary grade levels, the development of reading and writing skills are an integral part of the curriculum. Lessons integrated and developed with the belief that place-based learning can also happen in the most urban of environments.

Students are first introduced to the concept of an ecosystem by examining the connections between the living and non-living components in their local communities. In this way, students learn about scientific processes. These efforts culminate with GeoNews, an annual publication of student writing on topics that highlights the achievements in science, reading and writing that occur throughout each GeoKids LINKS unit.

**Support**
- A project manager serves as a resource and instructional guide for the GK-12 Fellows.

**GeoNews**

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GeoKids LINKS works with three School District of Philadelphia K-8 schools and an independent Catholic grade school, SJU. GeoKids LINKS teachers serve as mentors and are a valuable resource for the GK-12 Fellows. SJU faculty provide classroom and guidance on classroom management and teaching strategies.

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