

# T66.33 - 12.156, ABSTRACT 270690 - Building Bridges While Building Blueprints: Authentic Experiences Developing OUND ROCK 🕕 🚳

## 1. BACKGROUND

**DIG (Diversity and Innovation for Geosciences) Texas Instructional Blueprints Project** The NSF-funded Diversity and Innovation in Geoscience (DIG) Texas Blueprints project created theme-based Blueprints composed of topical units built around a storyline for teaching a yearlong high school Earth Science course. Each three-week unit meets the Texas Essential Knowledge and Skills (TEKS) for Earth and Space Science, addresses the Earth Science Literacy Principles, and is congruent with the Next Generation Science Standards (NGSS).

### 2. THE "VISION"

#### A. A "blueprint":

- is a collection of units covering the different topics in a year-long Earth science course. - can be "theme-based."

#### B. A "unit":

- **DIG**Texas **BLUEPRINTS** Peering into the Unive
- is "topic-specific" and contains links to supporting lectures, readings, visualizations, lab investigations, learning activities, virtual and actual field trip experiences, and other materials from credible online sources. - has scaffolding notes.
- is aligned to the Texas State Science Standards for Earth and Space Science (TEKS) and the Earth Science **Literacy Principles.**
- addresses the Next Generation Science Standards (NGSS) and congruence with Science and Engineering Practices, Disciplinary Core Ideas and Crosscutting Concepts.

### **3. IN THE BEGINNING...**

Initial teams composed of university-level geoscientists and pedagogy specialists and secondary-level science educators met in the spring of 2013. Participants' understanding of the vision of a Blueprint and its units covered a wide range, from approaching its development as writing curriculum to the Blueprints being a repository for vetted resources. Additionally, there was disconnection between university faculty and practicing teachers when considering content level and instructional strategies.

C. Elaine Bohls-Graham<sup>1</sup>, Katherine Kelly Ellins<sup>2</sup>, Connie Sergent<sup>3</sup>, Belinda E. Jacobs<sup>4</sup>, and Eric Stocks<sup>5</sup> <sup>1</sup>AustinIndependent School District, <sup>2</sup>Jackson School of Geosciences – The University of Texas, <sup>3</sup>Northeast Independent School District, <sup>4</sup>Round Rock Independent School District, <sup>5</sup>University of Texas at Tyler

### **4. BUILDING THE BRIDGES**

The second team meeting, in Laredo in 2013 allowed for the teams to build theme-based Blueprints by selecting 7-9 units developed by other teams or their own team.

These first Blueprints became the roadmap for the first round of pilot teachers. They contributed feedback and suggestions that were then incorporated in the second summer meeting and the work started by the 2014 summer education interns.





In June of 2014, Blueprint Teams met in Brownsville. The proposed product would include the NGSS outcomes and their congruence with the Science and Engineering Practices, Disciplinary Blueprint Teams Ideas, and Crosscutting Concepts for Earth science. **Education Interns took over after** this meeting and began the task of refining units, vetting resources, and assigning vocabulary.

As Summer 2015 arrived, along with the Education Interns, the vision for the DIG Texas Blueprints became a reality. This 4-person team worked together to finish the project and to build the final span by:

- creating new units, as needed, to fill in existing Blueprint themes.
- rewriting units and revising unit storylines creating continuity within the unit.
- finding and vetting missing resources, assigning vocabulary, and filling in scaffolding notes.
- developing the NGSS congruence documents.
- formatting the units for live delivery. The first three units went "live" in early July 2015, with the goal of twenty-one units by the end of 2015.

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**DIG**Texas **BLUEPRINTS** 

rossing the Shoreline: Gulf of Mexico

# **5. PERSONAL EXPERIENCES**



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The opportunity to work on this project presented a new perspective to teamwork and insight into what is invovled with a project of this scope. Personal experiences have been on three different fronts: initially as a Blueprint Team member for all meetings, secondly as a summer Education Intern for both 2014 and 2015 (with 2015 including appointment as Lead Intern), and finally as a technical intern for the Fall of 2015.

A. DIG Texas Blueprint Team Member - Initial challenges were to develop coherent themes and unit storylines to provide a framework for exisitng supportive resources, find existing earth science curriculm/activities/

resources and assess provenance and suitability for inclusion, learn to use the SERC-hosted website and page templates, and to work with individuals who had difficulty with the vision of a Blueprint/unit, as well as those who felt discomfort with working/thinking "outside of the box."

**B. DIGTexas Education Intern - Challenges within this group were fewer, for** both summers. They included taking a unit and revising/rewriting it into a workable, functional unit and creating new units to replace weaker units or topics not covered or left empty by Blueprint teams, and learning to use the review tool to assign the vocabulary and standards to a resource.

C. DIGTexas Technical Intern - The biggest challenge is time as the end of 2015 and the project comes ever closer. A smaller challenge has been to learn to navigate additional areas of the SERC-hosted website.

A. Overcoming challenges and building bridges allowed all participants to: form lasting collegial relationships;

become adept at working with the SERC-hosted web

- gain expertise in selecting high quality standards-aligned
- delve into the organizational structure of the NGSS, with respect to understanding the relationships between the
- **Science and Engineering Practices, Disciplinary Core**
- Ideas, and Crosscutting Concepts for Earth science.

- Blueprints are currently being implemented in Earth Science
- Several of the units are being implemented in Astronomy classes and with dual enrollment and college-level
- The DIG Texas Blueprints will undergo further revisions and updating during the fall of 2015 utilizing the input
- Additional units are being finalized during Fall 2015.