A School District-University Partnership for Innovation in Elementary Science Teaching and Learning

Kari Shutt & Angie DiLoreto

Beginning in 2006, learning scientists and science educators from the University of Washington’s College of Education and Learning in Informal and Formal Environments (LIFE) Center, and district leaders, curriculum specialists, and teachers from the Bellevue (WA) School District have been involved in Design-Based Implementation Research (Penuel, Fishman, Cheng, & Sabelli, 2011); iteratively designing, implementing, and testing science inquiry environments that offer diverse groups of 2nd and 5th grade students agency to inquire about personally-relevant, socially-consequential science problems (Tzou & Bell, 2010).

**PHASE 1 – Partnership Begins**

- Superintendent Riley approaches UW’s John Bransford for a “curriculum audit” to compare how the district’s common curriculum aligns with the principles in *How People Learn*.
- Members of the UW-LIFE Center team observe in classrooms and interview principals and teachers to learn more about the district context.
- BSD administrators and curriculum developers learn more about *How People Learn* and COE’s research in learning in the formal and informal environments through four day-long presentations.
- A smaller joint BSD/UW team meets to focus on challenges in science.
- One elementary science unit was identified as a focus to implement these changes.

**PHASE 2 – Partnership Deepens**

- Partnership generates a joint proposal to NSF to address early elementary science curriculum which lacks student agency and relevance.
- Expand research team to include expertise in learning in formal and informal environments (UW’s Philip Bell).
- Effort involves redesigning a full year of curriculum materials at 5th grade and two units at 2nd grade.
- Design teams are comprised of researchers, science curriculum developers, and classroom teachers.
- Additional design expertise includes content specialists and local stakeholders.
- Unit revisions are informed by student interviews, teacher interviews, feedback during professional development and classroom observations.

**PHASE 3 – Partnership Moving Forward**

- Partners co-developed a set of principles to inform the curriculum design. Though the principles reflected the three partners, they have evolved into a more coherent set.
- Looking at science learning and science inquiry in redesigned classes compared to classrooms with the existing curriculum.
- Research compares 5th grade across a year and 2nd grade through two trimesters as well as considers the link between the grades.

**Design Principles:**

- **Challenge Based**
- **Sustained Inquiry**
- **Feedback and Revision**
- **Student Choice and Agency**

**Benefits:**

- Value added for student learning and increased student investment in their learning.
- Greater teacher learning opportunities.
- Better prepared to implement an initiative district-wide.

**Challenges:**

- Maintaining the partnership through changing district leadership; 5 superintendents in 7 years.
- Managing the timeline of research versus the timeline of school implementation.
- Sustaining a partnership and an initiative across funding cycles.
- School district has structures for professional development, use of teacher time, and use of the curriculum and assessments that sometimes hinder quick innovation.

**Outcomes were promising.**

**Acknowledgment:** This work is supported by the NSF-SLC LIFE Center (#0835854) and NSF-DRK12 (#1019503). We wish to note that the findings and conclusions expressed here are those of the authors and do not necessarily reflect the views of the NSF.