The ELI PD model blends the interdisciplinary pedagogical approaches of environmental education with technology integration to enhance the pedagogical content knowledge of inservice science teachers and provide them the requisite skills needed to effectively teach complex environmental issues such as energy use.

**GS-TPACK – Geospatial Science Technological Pedagogical Content Knowledge**

is a way of thinking about how teachers integrate their knowledge of geospatial technology and teaching across science disciplines.

**Initial PD Implementation and Results**

- Five - 8th grade teachers
- Teachers 1-3 participated in a 3 day, 12 hour workshop
- Teachers 4 & 5 participated in an alternate 1 day workshop
- All sessions utilized personal learning context and educative curriculum materials
- Examined changes in skill and attitude with GS-TPACK instrument

**Collaboration and Partnership**

- Design partnership model includes:
  - Science teacher educators
  - Classroom teachers
  - Scientists
  - GIS specialists
  - Instructional designers
  - School administrators
- Incorporates iterative feedback
- Identify needs for differentiation
- Review technology tool and support needs

**Beliefs**

- Address beliefs and misconceptions about science content, technology, and systemic issues
- Many preservice and inservice teacher share implementation concerns
- Self efficacy in teaching with geospatial tools
- School support
- Technology failure

**Geospatial Science Pedagogical Content Knowledge (GSPACK)**

**Geospatial Science Content Knowledge (GSCK)**

**Geospatial Technology Use (GTU)**

**Sustained Support Implementation**

- Professional Development sessions include model student experiences and learning context
- Ideal 3-day, 12 hour workshop introduces content and technology requisites
- Alternate 1 day, 6 hour workshop offered
- Bi-weekly review of upcoming lessons and technology support
- Sessions encourage reflection
- Educative curriculum materials for teacher content knowledge and pedagogical supports

**Curriculum Knowledge**

- Aligns to ELI Energy Unit
- Addresses personal and student misconceptions
- Addresses learning with geospatial technologies

**Institutional and Partnership Model**

- Collaboration and Partnership
- Beliefs
- GS-TPACK – Geospatial Science Technological Pedagogical Content Knowledge
- Initial PD Implementation and Results
- Geospatial Science Pedagogical Content Knowledge (GSPACK)
- Geospatial Science Content Knowledge (GSCK)
- Geospatial Technology Use (GTU)
- Sustained Support Implementation
- Curriculum Knowledge