THE INTEGRATION OF LITERACY, SCIENCE, AND ENGINEERING IN PK-5

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Integrating Literacy and Science PK-5 "High Points"

- Research on integrating literacy and science in PK-5 indicates that science learning supports literacy learning and literacy learning supports science learning
- Science instruction can provide meaningful, knowledge rich contexts for students to use tools of reading, writing, oral language, and other modes of communication ***AND*** support literacy and science learning, especially when:
  - *Texts are well designed, thoughtfully placed in curriculum and instruction, and paired with rich sensemaking discussions*
  - *Writing is well supported by curricular resources and teacher practices*
  - *Instruction leverages affordances of multiple modes of communication*
- Science and literacy curriculum and instruction that is intentionally designed to affirm the linguistic resources and identities ***AND*** to support the linguistic needs of English learners can advance both science and literacy learning
- Family-based experiences – especially in PK-2 – may play a key role in supporting students' scientific sensemaking and literacy development, especially in out-of-school spaces that integrate science and literacy (e.g., museums, outdoor spaces, home)
- While less research has focused on professional learning supports for integrating science and literacy in PK-5, research has uncovered features of professional learning sessions and educative curriculum materials that can support teachers' integrated science and literacy instruction
- Emerging research provides illustrations of what justice-centered science pedagogy that enlists tools of reading, writing, and oral language might look like in PK-5 classrooms

Integrating Literacy and Engineering PK-5 "High Points"

- While the research base is still developing, PK-5 engineering instruction can provide meaningful, knowledge rich contexts for students to use tools of reading, writing, oral language, and other modes of communication, especially through opportunities for students to:
  - *Read and discuss a variety of texts*
  - *Write and draw about engineering designs*
  - *Engage in rich sensemaking discussions about engineering design problems and solutions*
- Curricular resources and teacher practices that support students to read, write, and draw about engineering have the potential to drive engineering learning by (for example) introducing engineering design problems (reading) and supporting students to effectively communicate and refine their designs (writing, drawing)
- Engineering education may be uniquely well-suited to support the participation of students who have historically been marginalized on the basis of language, culture, or gender norms by providing rich opportunities to interpret and communicate information using multiple modes