Perceptions of student abilities:

“How can you teach chemistry to deaf students?”

“Her English isn’t good enough to pass the AP exam.”

“What’s he doing in AP chemistry?”

“Why don’t you “weed out” the weak students?

Do we really believe that all students, including English Language Learners, can succeed in STEM?
Strategies for including Deaf students in STEM education

- make it visual! (ASL, computer graphics, etc.)
- hands-on, minds-on (inquiry-based instruction)
- “experience before content” (ABC = activity before concept, LBC = lab before content)
- examples before general concepts
- “write to learn” (lab research notebooks)
- be ready to detour and “fill the gaps”
- make it relevant! (chemistry in our world)
Strategies for including English Language Learners in STEM

- STEM as its own “language”
- create a shared identity: “You are a chemist.”
- focus on abilities; learn English through STEM experiences
- write to learn: lab research notebooks, markerboards
- emphasize vocabulary and finding the “right words”
- validate students’ use of their native language
- avoid grade penalties related to language proficiency
- include activities with “universal appeal”
- “The classroom is my mirror.” Model respect!
ALL students need STEM knowledge to acquire 21st century skills

The 3 R’s
- Reading
- Writing
- Arithmetic

The 4 C’s
- Critical thinking
- Creative problem solving
- Collaboration
- Communication