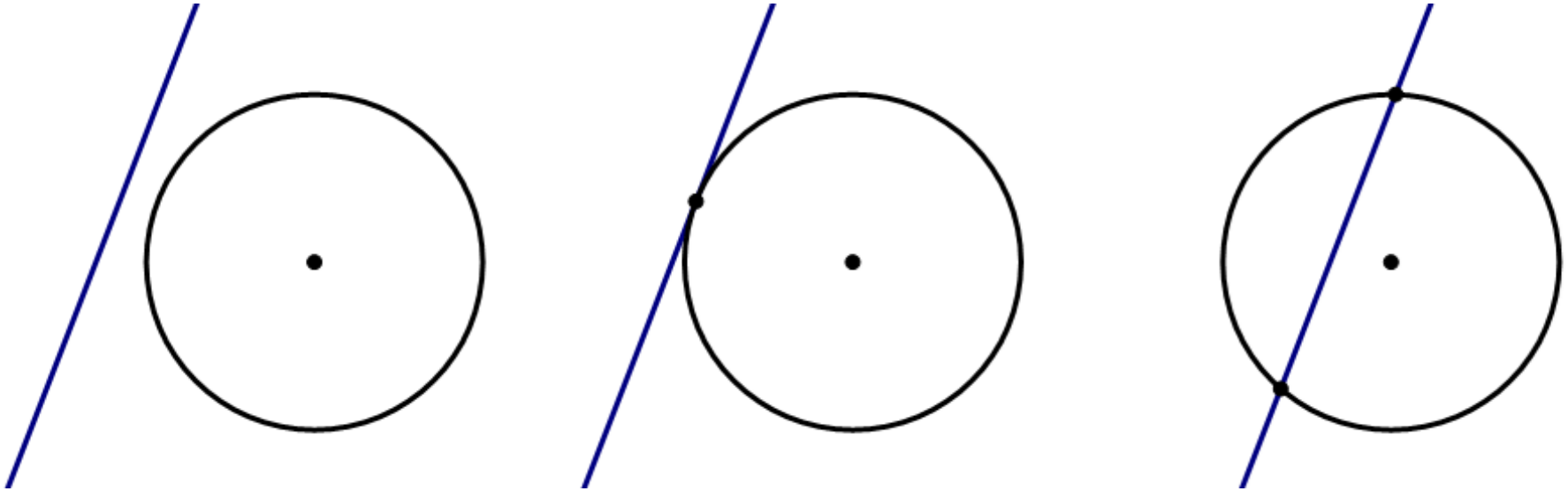
Defining the Frontiers of Bioengineering Education at Illinois and Beyond – University of Illinois at Urbana-Champaign

Our guiding statement is ”no solution without a need”

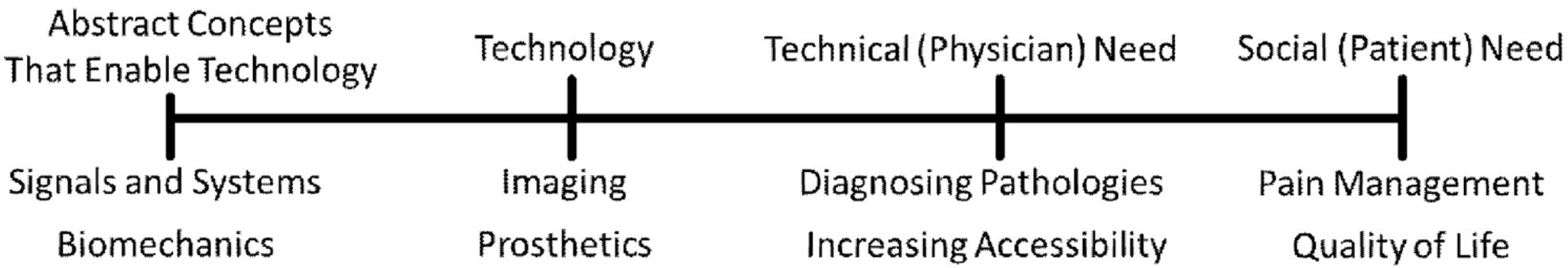


No solution

One solution

More than one solution

In a needs focused curriculum faculty are challenged to focus courses based on the needs that drove the creation of the technology or concepts.



By focusing on need, we compromise matching technology with clinical need while allowing for innovation

We had four main objectives for our project

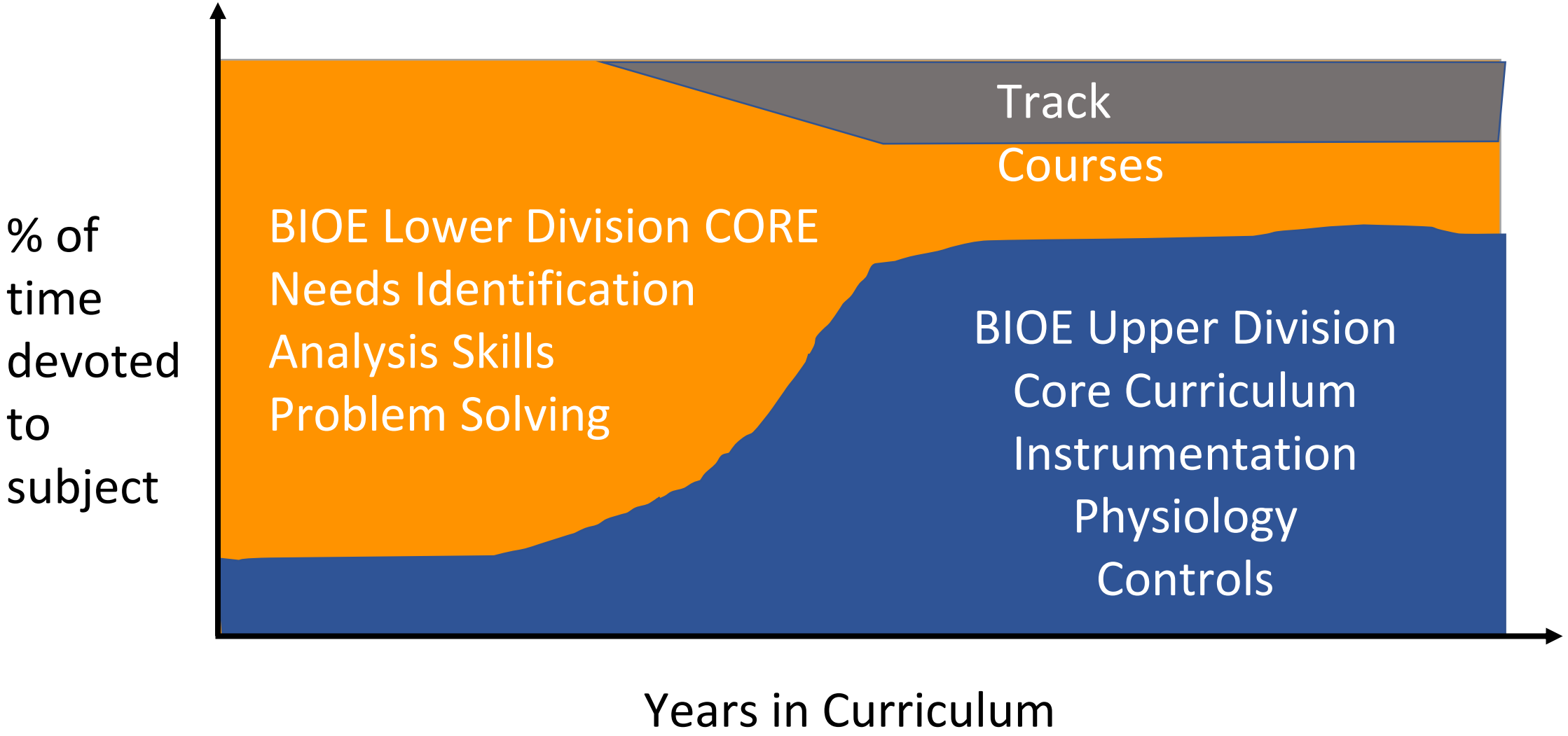
1. **Integrate co-curricular clinical experiences** into the undergraduate curriculum

2. Reorganize courses and faculty teaching efforts into **needs-driven curriculum tracks**

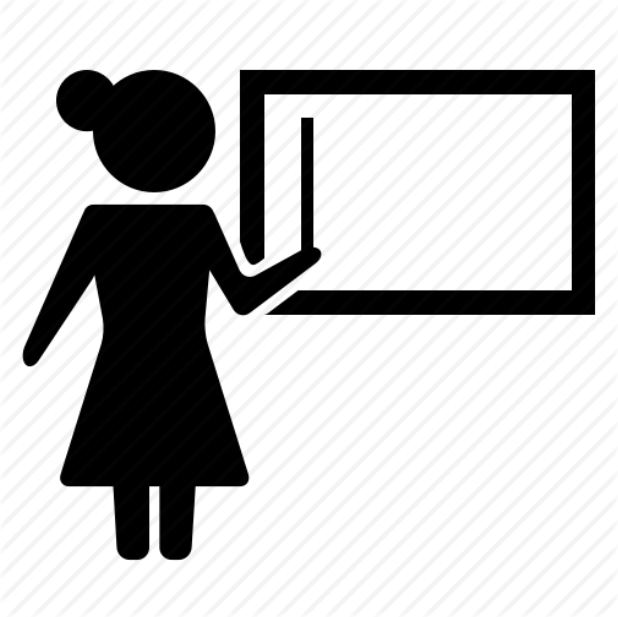
3. **Translate medical assessment practices** into engineering education contexts to unify the clinical experiences and curriculum tracks into a holistic curriculum.

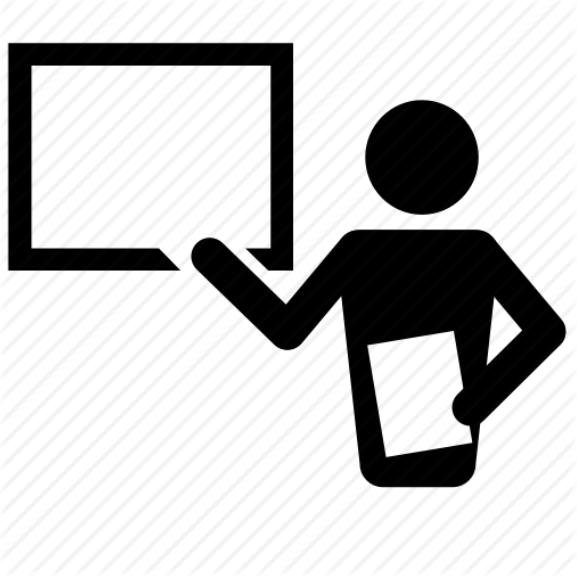
4. **Organize faculty into communities of practice** (CoPs) to provide faculty development

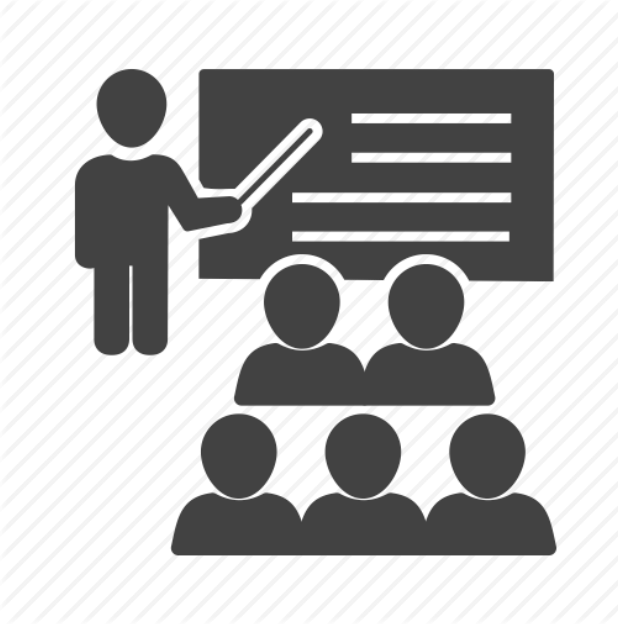
We vary the curriculum to focus on clinical needs, problem solving, and analysis earlier and more of the solution space as they develop more skills



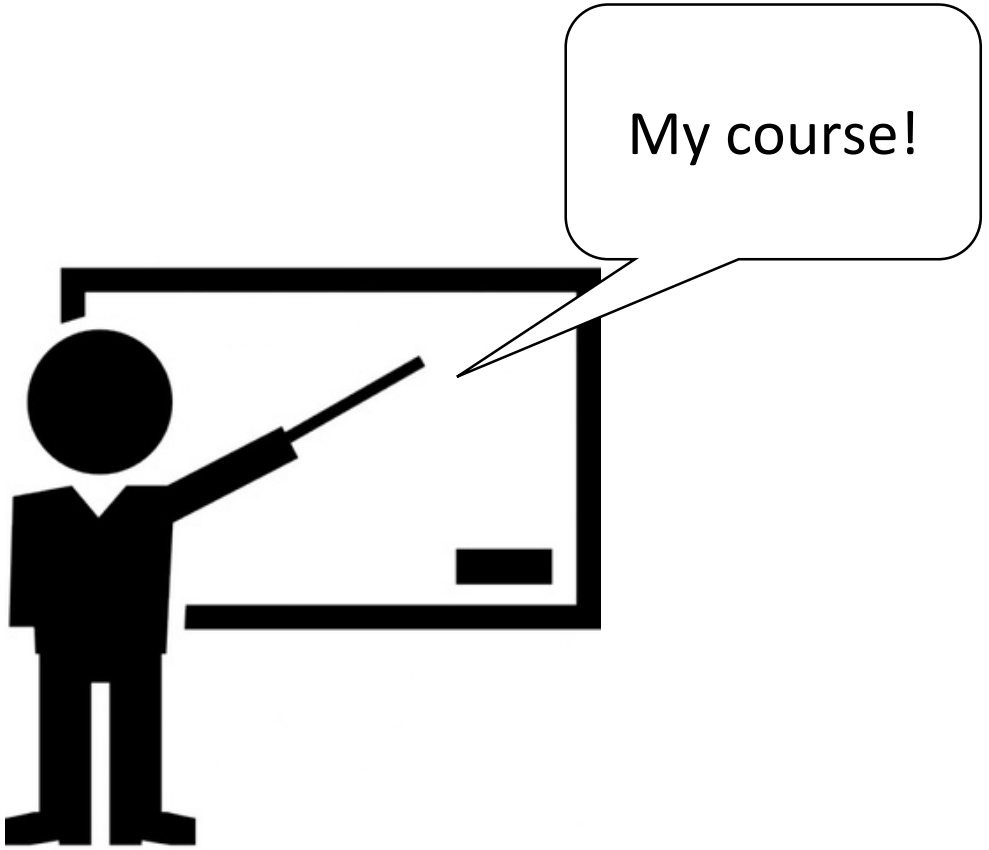
Faculty need support to help make curricular changes and learn how to assess new skills

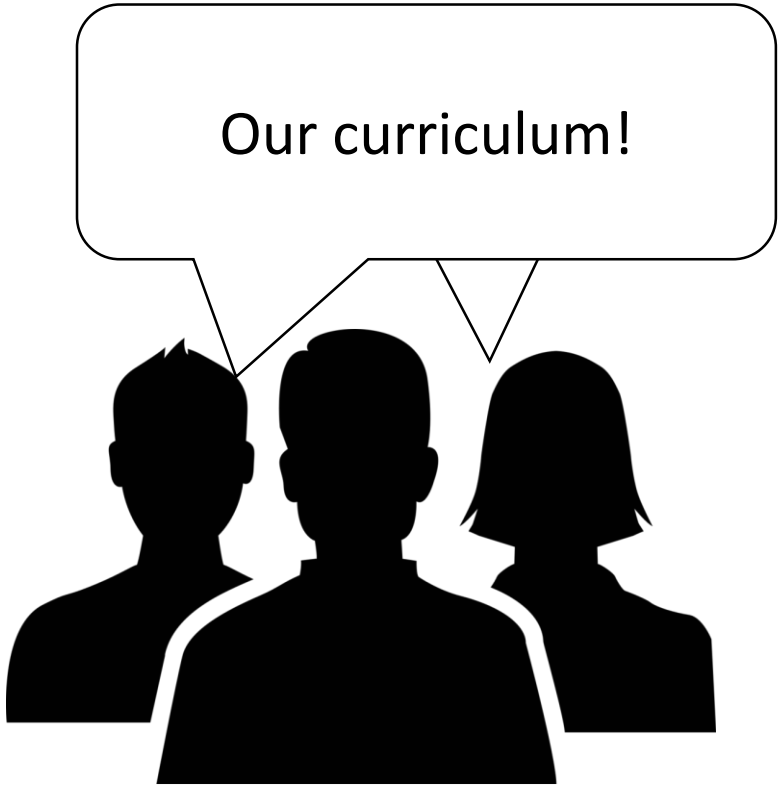


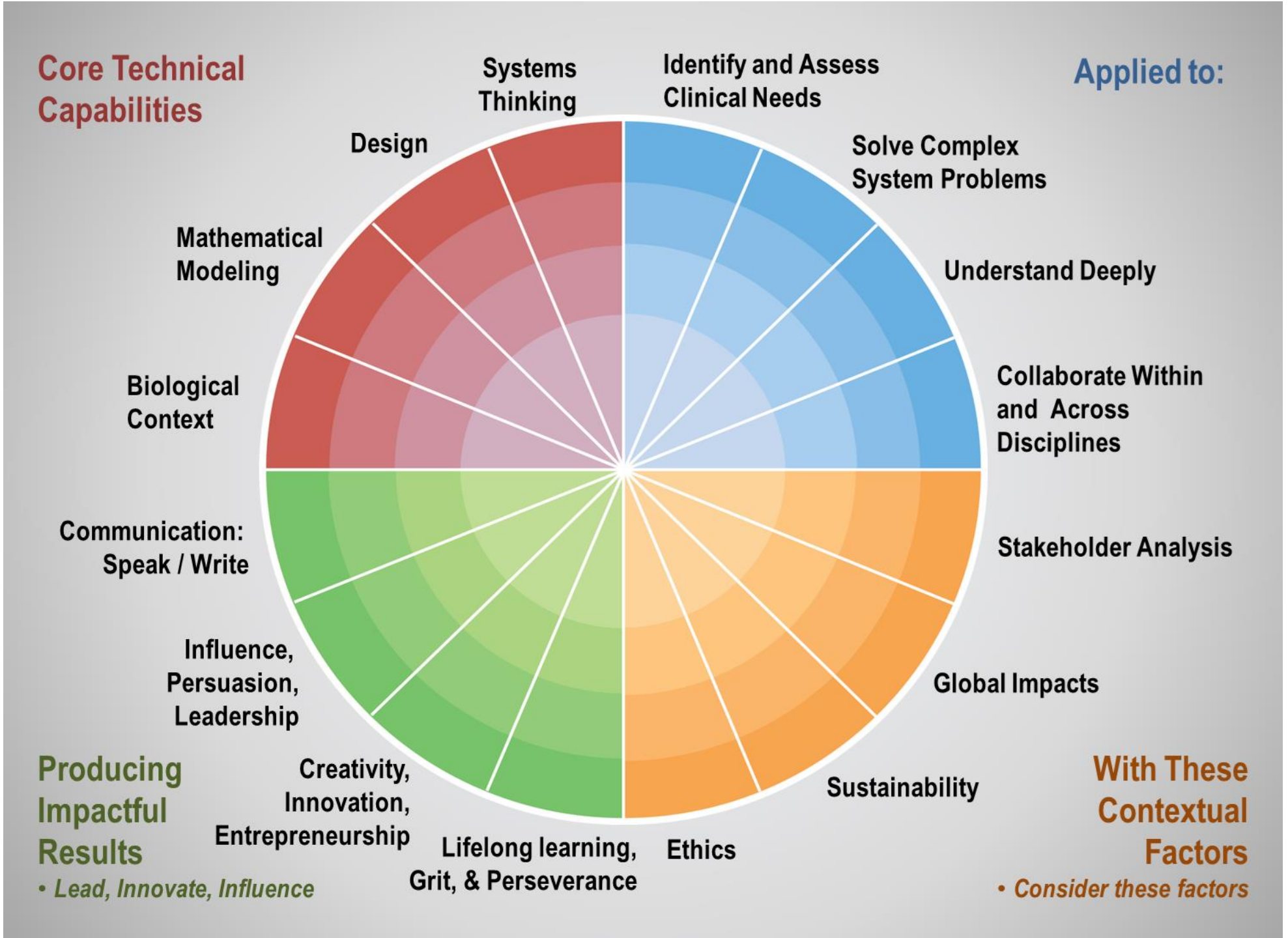




We are trying faculty training programs, CoPs, and a vision document to share and get buy-in






Core Technical Capabilities
Systems Thinking
Design
Mathematical Modeling
Biological Context
Communication: Speak / Write
Influence, Persuasion, Leadership
Creativity, Innovation, Entrepreneurship
Lifelong learning, Grit, & Perseverance
Ethics
Sustainability
Global Impacts
Stakeholder Analysis
Collaborate Within and Across Disciplines
Understand Deeply
Solve Complex System Problems
Identify and Assess Clinical Needs
Applied to:
Producing Impactful Results
• Lead, Innovate, Influence
With These Contextual Factors
• Consider these factors

By using digital systems for grading, we can get individual data for students using the same template

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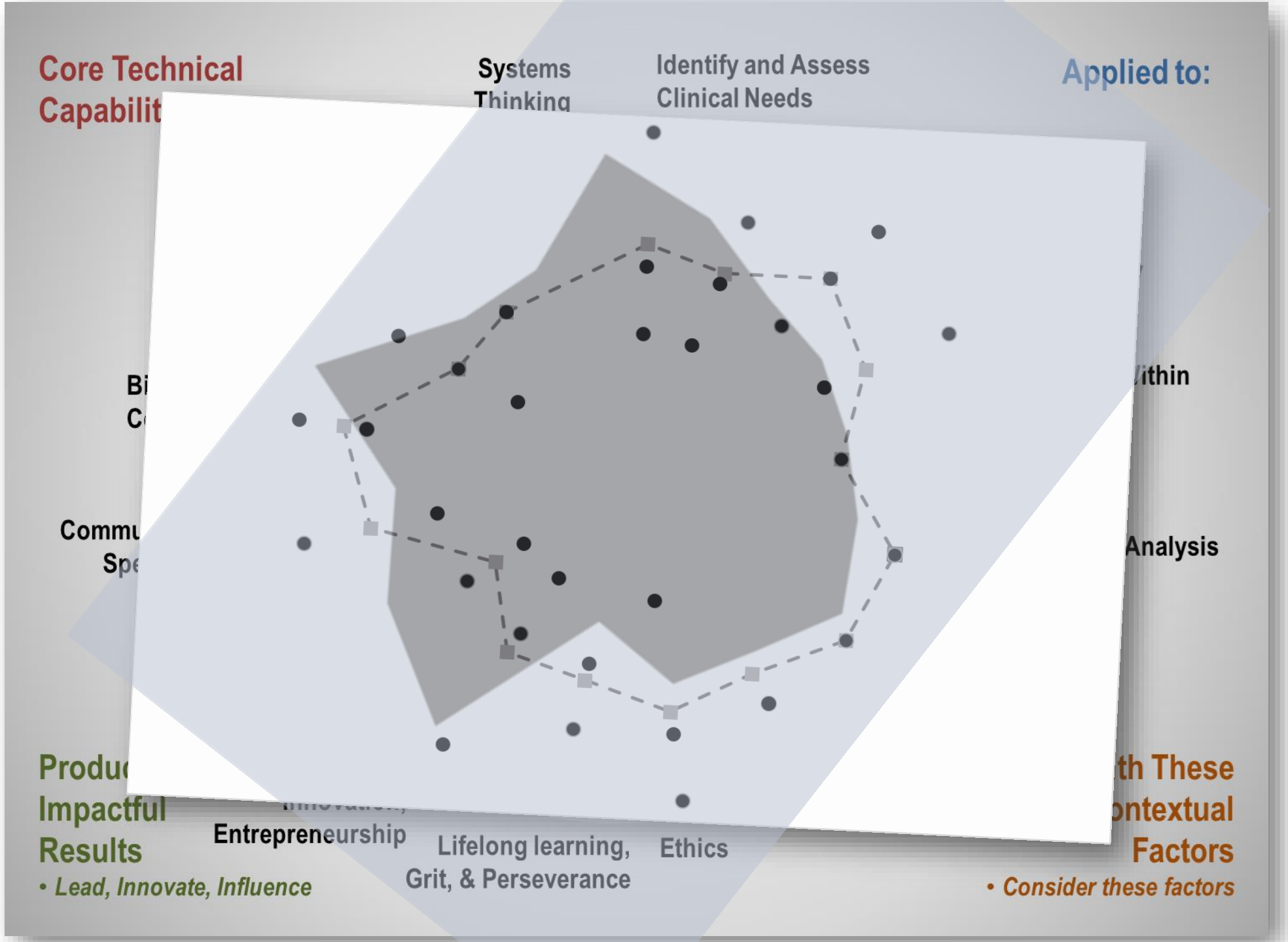
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Entrepreneurship
Lifelong learning,
Grit, & Perseverance
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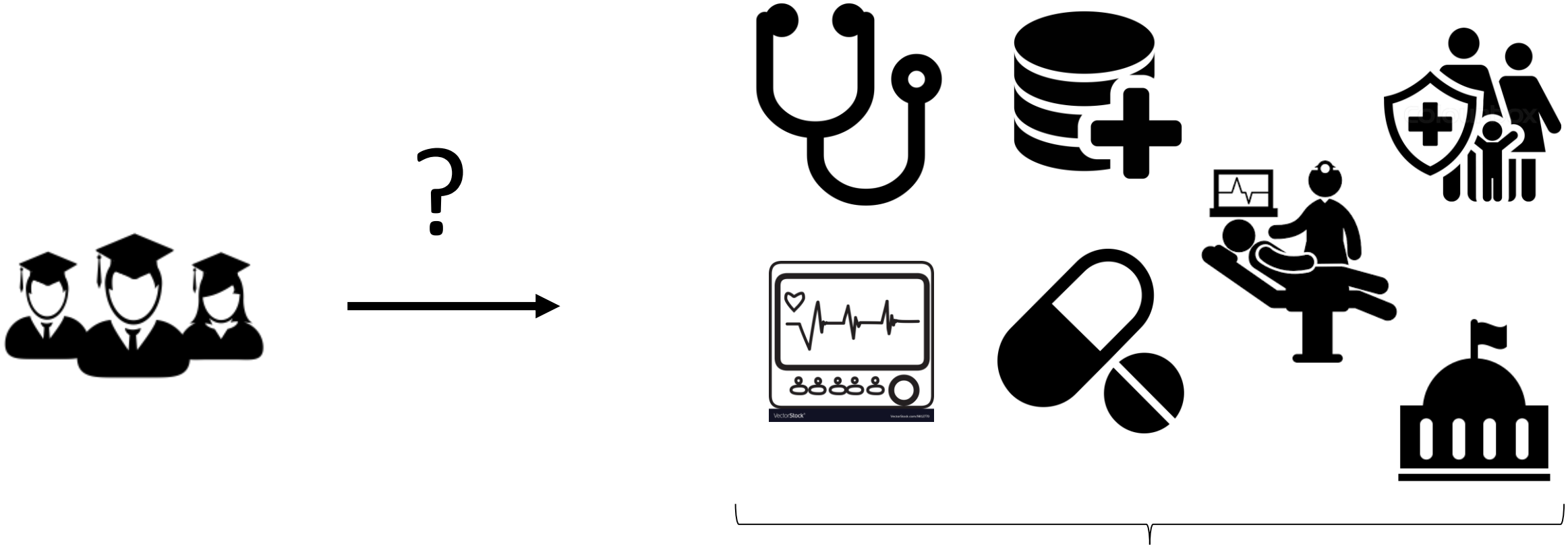
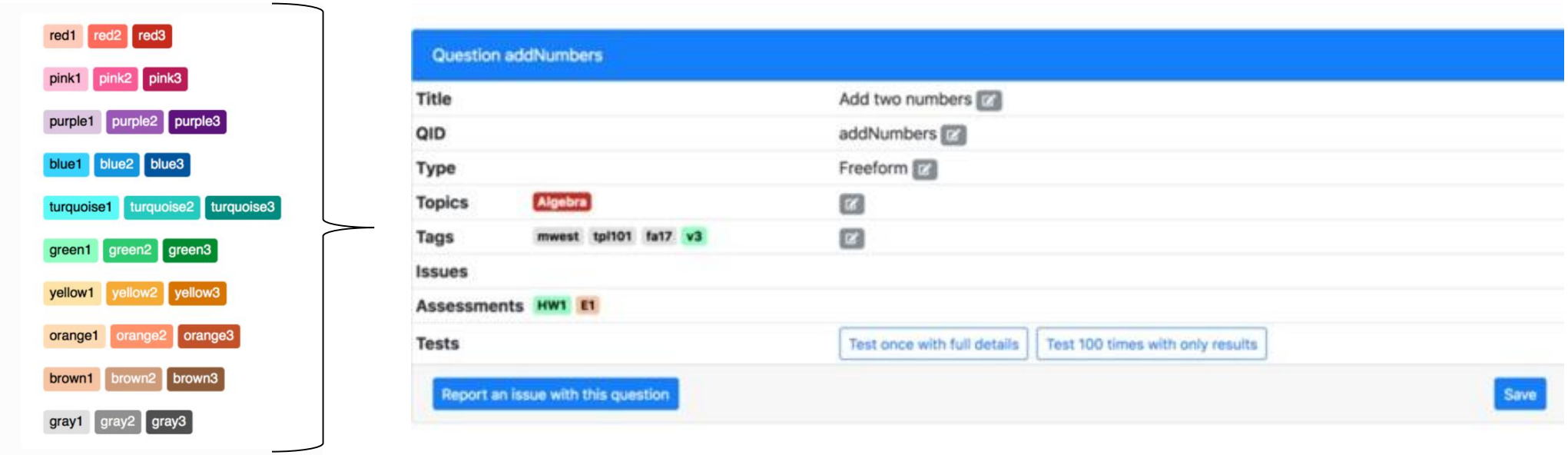
To enhance conceptualization of the impact of curriculum on career choices, we are adding a Bioengineering Ecosystems course that focuses on informed academic and professional decision-making.



4D industries (Drugs, Diagnostics, Devices, and Data) together with the GHI (Government, Healthcare, Insurance)

Scalability is a major concern at Illinois with classes ranging from 25 to 750 students on campus



Questions tagged based on learning outcomes and competencies

We are also learning how to effectively use active learning and tech-infused classrooms to support our efforts

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