Engineering Better Learning: Practical On-Ramps to the Emerging Practice of Learning Engineering

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- What is IEEE ICICLE?
- What is Learning Engineering?
- What are Key Processes of Learning Engineering?
- How can I learn more and get involved?

Discussion: What tools and “onramps” are needed to advance the practice of learning engineering?

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Learning Engineering is a *process* and *practice* that

1. applies the **learning sciences**, 
2. using **human-centered engineering design methodologies**, and 
3. **data-informed decision-making**

...to support learners and their development.
Learning Engineering is...

**Applied Learning Sciences**

- Cognitive psychology
- Developmental psychology
- Social psychology
- Neuroscience
- Anthropology
- Education research
- Motivational research
- Biomedical R&D
- Data science

- Conditions for learning
- Guidance and feedback
- Learner behaviors

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Learning Engineering is…

a Creative Problem-Solving *Process*

a.k.a. an engineering Process
Learning Engineering is...

Data Driven

learning engineering emphasizes instrumentation of data to inform an *iterative* design, development, and improvement process
Key Processes

• Knowledge domain modeling
• Activity modeling
• Learner modelling
• Instrumenting
• Design and Development
• Data analytics
• Iterative improvement
Learning Engineering is...
more of a verb than a noun.
Discussion:
What is needed to advance the practice of learning engineering?