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Design and Innovation At The Tech

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TODAY'S AGENDA

- Introductions
- Design Challenge: : Energy@Play
- Discussion: The Tech's Learning Model
- Resources

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Outcomes

- Experience with The Tech's Learning Model - Design Challenge
- Gain an understanding of Design Challenge as a powerful teaching and learning strategy
- Appreciate museums as informal science resources
- Have fun!

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The Tech Museum of Innovation

Serving as an educational resource that engages people of all ages and backgrounds in exploring and experiencing technologies affecting their lives and to inspire the young to become innovators of the future

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LEARNING BY DESIGN

- Why we do it
- Design Challenge and Innovation

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"I truly believe that we are going to continue to have a generation of non-thinkers and non-innovators if we do not give them experiences to think outside the box. It makes me more passionate about wanting to develop more Design Challenges and do more Design Challenges."

Amy Kolb, Tech Fellow

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Energy @ Play

Challenge:

You are a toy designer and need to design a “new” and exciting toy to be sold at The Tech’s gift store.

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Constraints

- Store potential energy and convert it to kinetic energy
- Transfer a ball 1 linear meter to stick to target
- Target can be in any orientation and location
- No human kinetic energy can be inputted save a light touch to start machine
- Each group member needs to participate in all phases of the challenge
- Devices should be able to be used multiple times

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ELEMENTS OF A DESIGN CHALLENGE

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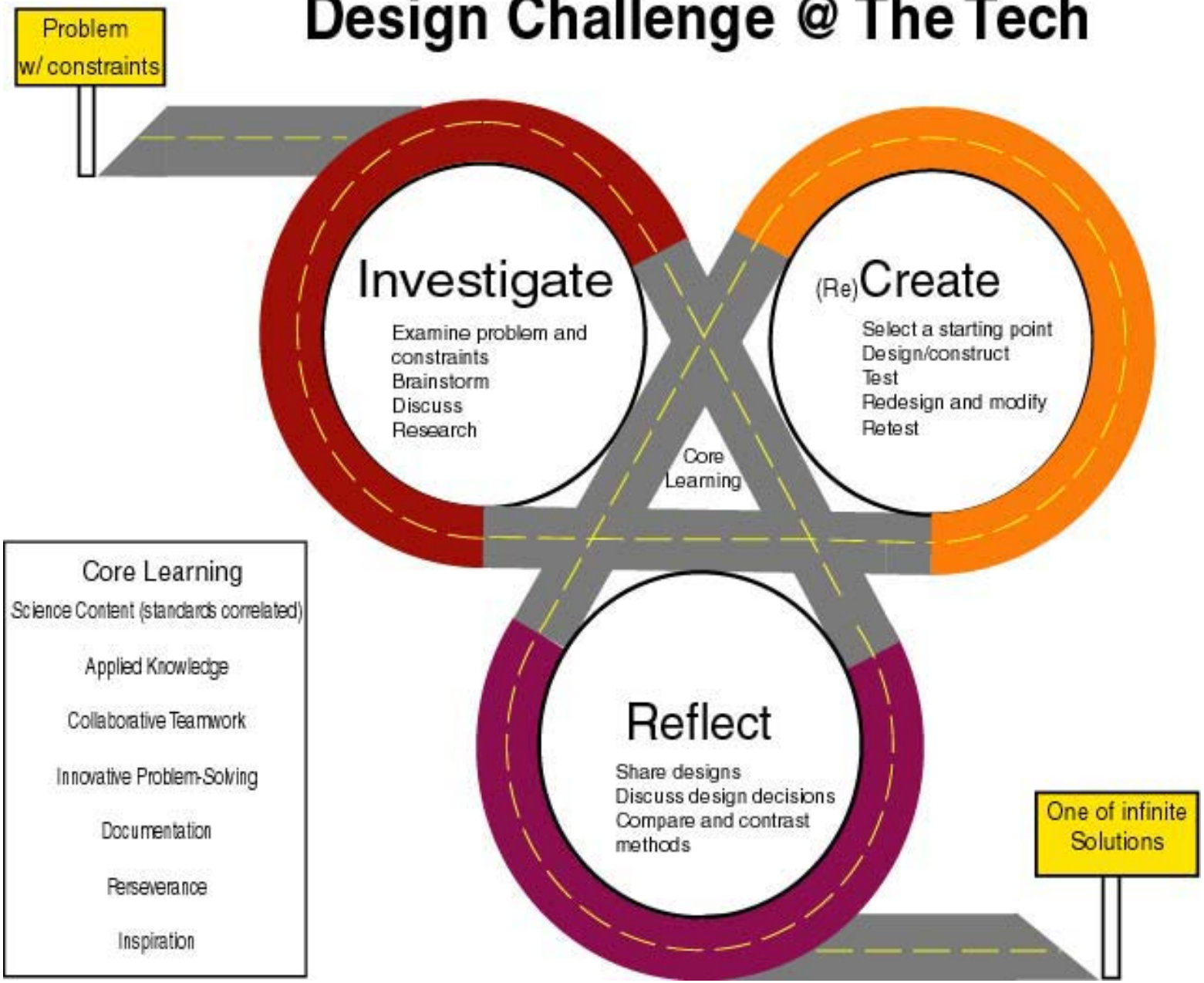
Science Content Knowledge

- Potential Energy
  - Gravitational
  - Elastic
- Kinetic Energy
- Simple Machines
- Conservation laws Energy
- Newton's 1st & 2nd laws

Design Challenge @ The Tech



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DESIGN & INQUIRY

Teaching for Innovation =

Design + Inquiry + Math + …

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INNOVATION MATTERS!

- The lifeblood of the Silicon Valley
- Increasing demand for innovative solutions to local and global problems
- Learning Institutions seldom teach the habits and skills required of innovators
- Schools thirst for curriculum to reach ALL students
- Lower-income students least likely afforded innovative learning opportunities

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INNOVATIVE HABITS OFF MIND

- Applying cross-disciplinary learning
- Achieving one unique, viable solution from among multiple options (rather than one right answer)
- Learning and applying life-long skills for success:
  - Teamwork
  - Risk taking
  - Perseverance
  - Learning from failure!
    (and viewing it as temporary)

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INFORMAL EDUCATION

- Blurred distinction between Formal and Informal
- “Big One” in Kathmandu

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RESOURCES

- Online DCs at our Design Challenge Curriculum website:
  http://www.thetech.org/learning/challenge/design/
- Contact me:
  tkeating@thetech.org
- Subscribe to Tech Times for Teachers:
  http://www.thetech.org/learning/tech_times/sub.cfm