

Design thinking for teaching teams. How do I handle a problem that occurs in my teaching?

<p><b>What is Design Thinking?</b>          The principles of Design Thinking include several essential elements that integrate project-based, experiential learning into any existing curriculum.  <b>Observation, Research, Creative Solutions Presentation and Reflection</b>  <i>Adapted from Cooper-Hewitt</i></p>
Goals for the program
Course outline and details
Learning Outcomes

**Course Outline:** Understand that we all come with pre-existing knowledge, skills, beliefs and concepts that effect what we pay attention to, organize, interpret and retrieve new knowledge.

Element	Description
Framing the problem	Most important. What is the core problem? What questions do I need to ask? Exploring pre-existing knowledge( biases we bring )
Finding lots of options	Creative thinking, Brainstorming, Brain-writing
Narrowing the choices	Using decision theory and critical thinking, Shaping ( Be a little bolder )
Designing and testing	Developing possible solutions
Reflecting	Meta-cognition; does it make sense?
Implementation	How do I role this out in a non-threatening way?
Improvement	What did I learn and how can I make it better

Bugs:

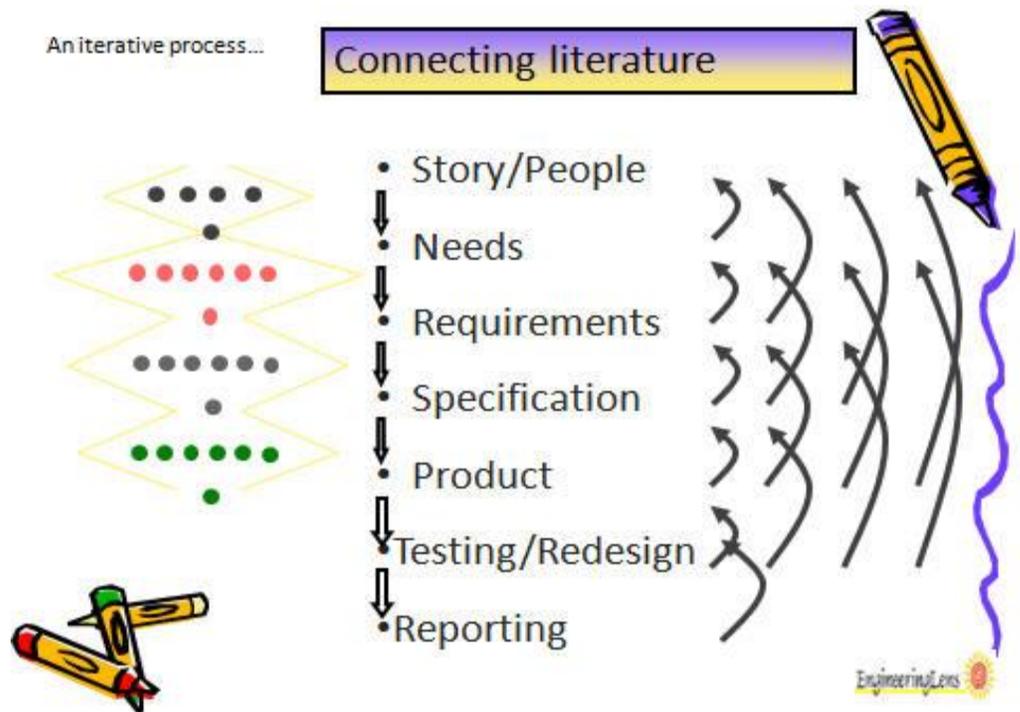
The bigger the problem the bigger the opportunity.

We notice two major themes in this diagram

1. Divergent/ Convergent thinking
2. Iterate process

On the left side, we see the divergent and convergent thinking happening as many ideas are "created and the reduced base on what will work and meet the needs. This is creative and critical thinking.

On the right side we see the iterative nature of the process as things are tried, found to need a change and then repeated until it is correct.



What "BUG" can stimulate many problems to work on.

Can ask the students to bring to class what BUGS them and create a solution for the BUG

### **Inventor's axioms**

- **There is always more to learn.**
- **People are not born with a fixed amount of knowledge.**
- **Inventors aren't successful because they have all the answers... successful inventors have learned how to keep asking questions.**
- **The best ideas don't happen in a vacuum... Gathering the best resources- produces the best results.**
- **Mistakes are the steps toward success.**
- **The bigger the problem the bigger the opportunity.**

### **Outline of Professional Development**

- Brain Plasticity
- Definition ... What's bugging me?
- Keeping a Journal
- Meet the Inventors
- Engineering is everywhere
- What is design ... resolving the GAP ... How to begin inventing
- Tools to help in the design
- Scamper
- Keeping a journal
- Reflection