

CRCRTH 612: Inventive and Innovative Thinking

Spring 10: Wed. 7-9:30

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Office hours: by appointment

“There’s always a way to do it better... find it!” (Edison)

Every day, millions of people get flashes of inspiration. Some of these relate to the solution of a pressing problem or how to accomplish a task easier, more quickly or less expensively. Undoubtedly, you've had such flashes from time to time yet haven't pursued your ideas.

Here's the chance to change that! This course, (really an inventors' workshop) trains students to use creative thinking and problem solving strategies in combination with the best thinking practices of one of America's most successful inventor/entrepreneurs, Thomas Edison, to unleash their innovative potential.

“I never did a day’s work in my life, it was all fun.” (Edison)

Because that's how it feels when “work” is also a passion! Innovative, inventive thinking takes work (99% perspiration!). But sweat driven by passion makes it worth it.

Text: *Innovate Like Edison: the Success System of America’s Greatest Inventor* (Michael J. Gelb and Sarah Miller Caldicott, 2007)

I. Individual goals:

1. Maintain an inventor's notebook: a continuous record of thoughts, observations, sketches, visualizations, etc. **due: March 10 and April 21**

2. An oral presentation on an innovator/inventor of your choice – **or** about an innovation of your own inspired by your 612 journey: take us on a 15 minute “excursion” into the workings of an inventive mind - or present an innovation of your own. No paper required. Just provide some materials to help us remember the trip! **Due: April 28**

II. Invent-Team goals: *“If we all did the things we are capable of we would literally astound ourselves.”* (Edison)

- Practice key thinking attitudes (dispositions) that fuel innovative thinking (Edison's Five Competencies of Innovation)
- Rigorously apply creative (and critical) thinking strategies that underlie innovation and invention
- Hold regular meetings to generate a new product or service
- Prepare weekly progress reports
- Seek knowledge relentlessly (read, investigate, experiment!)
- Maintain a **collaborative** inventor's notebook: a continuous record of weekly progress reports, process thoughts, sketches, visualizations, etc.
- Consult with a product-marketing specialist (in class)
- Create a marketing plan
- Present your concept to guest inventors (in class)

- Submit a collaborative paper that describes the invention, rationale, thinking strategies, background search, marketing/action plan, etc. plus weekly progress reports

**Jan. 27 "To invent you need a good imagination and a pile of junk."
(Preparation)**

- What is invention? Innovation?
- Who invents? Why? (What motivates inventors?)
- Let's play: What's the invention(s) on this page!
- More play: What can you invent with this *stuff*?
- Well-known and less well-known inventions
- What is innovation literacy?

HW: "Through familiar surrounds with new eyes"

Pad and pencil in hand, take a walk through familiar surrounds: e.g. places in your home, neighborhood, workplace, shopping centers, parking lots, etc. Take a good look around, observing things, thinking about what could be changed, modified or improved to solve a problem, an annoyance, make something easier, more manageable, useful

Read, read! (about inventive ideas in domains of interest) Bring some intriguing examples to share.

Text: Chapters 1, 2, 3

Feb.3 Know Thyself (Preparation)

1. homework results
2. habits of mind for innovative thinking (list making)
3. the innovation literacy blue print: 5 levels of competence: **Competency #1: your solution-centered mindset?**
4. assessing your problem solving style
5. practicing your thinking strengths ("connecting the dots")

Next week: Chapter 4 plus HW: Identify trends in domains of interest: pay attention to trends and tendencies in areas familiar to you and look for GAPS in quality, technology, process, efficiency, user-friendliness, pricing, etc.

**Feb.10 "Imagination is the workshop of your mind"
(Preparation/Illumination)**

1. invent-team meeting
 - sharing thinking strengths
 - mind mapping
 - sharing trends and gaps
2. **Competency #2: kaleidoscopic thinking**
 - idea generation (what trends, what gaps?)

taking a different view (how does it feel to be something that's not working? How would it feel to be that object?)
fantastic story telling (image streaming)

**Feb.17 "The only difference between possible and impossible is an idea"
(Preparation/Illumination)**

invent team meeting: **kaleidoscopic thinking continued**

1. review/elaborate: trends /gaps, domains of **shared** interest;
2. apply strategic creative thinking to explore roads not taken:

What ideas grab you, energize you?

problem stretching (magnify) to see how much there really is
reverse brainstorming

"Camelot" analyses

Why-Why? Thinking to unpack a problem

Chapter 5: Competency #3 Full- spectrum engagement

HW: If you want to learn about something, assume you know very little; keep asking questions and turn over many stones to understand what you need to know. Read whatever you can get your hands on that's available and share it with your team.

Feb. 24 Floodlight/spotlight (Illumination/Perspiration)

Invent team meeting: so many ideas, what to do?...

1. floodlight thinking: sharing/sense making
2. spotlight thinking: Choose your 5 best ideas and work with them even though they're not perfect. Each one will require more thinking, more research, more sweat to make them into something really workable. More sweat. Frame/reframe each idea beginning with: "In what ways might, how might?..."

Mar. 3 Solution Development (Perspiration)

Invent team meeting:

Write the idea that you think is best, beginning with "In what ways might...?" or "How might...?"

Inspire an environment of open exchange to figure out how your concept would work.

Generate many possible alternative solutions to solving the problem you have stated. Get all members of your team involved in recording ideas.

Think:

OTW

SCAMPER

Six Hats

metaphors and analogies

Elaborate the details. Imagine how your design would work and be sure all the details are clear. Decide on the parts, materials and shapes for your prototype. Be as clear and specific as possible so that you can brainstorm "on target" solutions.

Mar. 10 Solution Development (more sweat)

Competency #3 Full- spectrum engagement

discussion: creative mind and the Janus factor: two faces or heads, facing in opposite directions

discussion: *sharing and protecting* intellectual property

invent team meeting: building a prototype

“Overseriousness is a warning sign of mediocrity and bureaucratic thinking” So take a break. Decenter. (UMass approves too!) Remember, innovation team meetings become more productive when they take breaks, so do something that helps you shift modes and relax. Your team will return refreshed and geared up to move forward. See you!

Mar. 14-21 Spring break (Playfulness/Seriousness)

next time: Chapter 6: Competency #4 (Master-mind collaboration)

Mar. 31 Solution Development (Passionate sweating/Verification)

Invent team meeting: reconnect; recap progress, articulate/map objectives

Discussion: Two tools for deliberate choice making:

1. **Evaluation Matrix:** this points out weak spots in an idea for a new product or service. If you address the weak spots you enhance the idea and raise the odds for successful implementation.

2. **PPCO:** Positives, Potentials, Concerns, Overcoming Concerns

Next time: Chapter 7: Competency #5 (Super-value Creation)

April 7 Assistors, Resistors, Resources (Market, Action Planning)

Competency #5: Super Value Creation

- Link market trends with core strengths
- Make salient the “core insight” (the aha) at the heart of your product or service
- Tune into your target audience
- Create an unforgettable market-moving brand

Invent team meeting: articulate steps necessary to implement a solution

1. Each person writes his or her ideas on a piece of paper.
2. After writing down at least four ideas, each person places his/her piece of paper in the center of the table.
3. When participants run out of ideas, they *can choose one of the slips* of paper from the center of the table and *piggyback* on those ideas to create new ones.
4. Eventually every participant should exchange his piece for one in the center of the table
5. Make a "how-how" diagram. The aim is to identify the steps necessary to implement a solution. Instead of asking "why?" ask "how?" An agreed upon solution is stated on the left side of a piece of paper. More detailed action plans are placed on the right in a decision tree format. Each time a solution is listed, the question "How?" is asked and people respond with a more detailed action plan.

April 14 Assistors, Resistors, Resources (Marketing Plan/ Action Planning)

Ask yourselves how you would implement your action plan. For example:

How might we gain acceptance/ enthusiasm for the idea?

What new challenges might the plan suggest?

What objections, limitations, obstacles, etc. might exist?

How might these be overcome?

Who might contribute special strengths, resources, etc.?

Who might gain from the idea?

Who might need persuasion?

What first steps are needed to initiate action?

What subsequent steps?

What timing, scheduling, etc.?

What special locations or places might help?

What follow-up might we plan to measure progress?

Next week: Chapters 8, 9: Expanding Innovation Literacy

April 21 Assistors, Resistors, Resources (Marketing Plan/ Action Planning)

Invent team meeting:

refine market/action plan thinking: Imagine presenting your plan to an intended audience.

Role-play some of the central aspects of your plan to better understand their strength/weaknesses. Some members of your group can be observers and provide feedback.

April 28 Inventors of choice and/or your innovations

Take us on a 15-minute "excursion" into the workings of the mind of an inventor of choice. Or present an innovation of your own. No paper required. Just provide some materials to help us remember the trip!

May 5 Of course you're inventors!

Invent team presentations:

Our guests will be practicing inventors who will be delighted to learn all about your own new product or service!

May 12 Let's talk next steps!

Commercialization: bring your invention into the real world!

Let's celebrate!

Invent team final report due