Three Methods for Encouraging Problem Solving
Hello!

We are:
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MAKERSPACE
Three Case Studies

- **Critical Making** - HON 296: Interpretive Machines
- **Design Thinking** - COM 487: Internet and Society
- **Speculative Design** - Workshops for Librarians
Critical Making
HON 296: Interpretive Machines
Critical Making
emphasis on critique and expression rather than technical sophistication and function...

-Matt Ratto

Learning Outcomes

- Exposure to an array of historical and comparative contexts for media technologies
- Introductory skills in working with varied media forms
- Creative manipulation of the codex into an experimental interface
Activity 1: Makerspace Orientation
Activity 2: Experiment & Document
Activity 3: Project Work!
Activity 4: Presentations
What this looks like:

Students using Arduinos to create interactive books
Some Results:
Example Projects

- Post something funny on your story
- Message an old friend
- Look at the first TikTok you see
- Share one of Donald Trump’s posts on Facebook
- Pin a new recipe

Friend

- Post something funny on your story
- Message that person
- Invite them to lunch
- Post a photo of the two of you
- Remember to call them

Someone

- Post a pic of your favorite food
- Share a pic of your favorite book
- Share a pic of your favorite place
- Share a pic of your favorite person
- Share a pic of your favorite animal

Follow A

- Follow a celebrity
- Follow a local influencer
- Follow a stranger
- Follow a brand
- Follow a hashtag

Celebrity

- Skype with a cousin
- Kik a friend
- Post your favorite quote on Twitter
- Reblog something funny
- Post your favorite picture on Instagram

Tweet @ your crush <3

- Watch the CNN story on Snapchat
- Snap and share
- Like the first post on your Facebook news feed
- Comment on someone’s birthday
- Tweet your current emotional state
- Chat with someone on Snapchat

Snapchat someone who needs love
What’s Next?

- **Iterate**
  - 3 Years of improving

- **Expand**
  - Bring in other courses

- **Share**
  - The model with other instructors
Design Thinking

COM 487: Internet and Society
Design Thinking is a systematic, **human-centered** approach to solving complex problems within all aspects of life. . . .user needs and requirements as well as **user-oriented** invention are central to the process. This approach calls for **continuous feedback** between the developer of a solution and the target users.

From Hasso-Plattner-Institut
Design Thinking

Inspiration

Empathize Define Ideate

Ideation

Prototype Test

Iteration
Intervention #1
Inspiration: Empathize > Define > Iterate
Activity 1: Define your challenge

To define your challenge, identify a user group and a problem that needs to be solved.

________________________________________   x   _________________________________________
USER GROUP (Who)                  USER NEED/PROBLEM (What)

From IDEO Design Thinking for Libraries (designthinkingforlibraries.com)
Activity 1: Define your challenge

To define your challenge, identify a user group and a problem that needs to be solved.

Raleigh dog owners  \( \times \)  Finding the right dog park

USER GROUP (Who)  \( \times \)  USER NEED/PROBLEM (What)

From IDEO Design Thinking for Libraries (designthinkingforlibraries.com)
Activity 2: How might we...?

Try out several *How Might We* questions that might best describe your challenge:

**HOW MIGHT WE......?**

These should be statements that aren’t too broad and aren’t too narrow. You will need to develop a solution but you don’t want to define the solution in this statement.

*From IDEO Design Thinking for Libraries (designthinkingforlibraries.com)*
Activity 2: How might we...?

Too broad: How might we get people to come to dog parks?

Too narrow: How might we create a “Yelp” reviewing app for dog parks in Raleigh?

Just right: How might we match Raleigh dog owners with the right Raleigh dog park for their dog’s needs and personality?

From IDEO Design Thinking for Libraries (designthinkingforlibraries.com)
Activity 3: Brainstorming

Follow-Up:
Cluster similar ideas.

Vote for favorite ideas with stickers.

RULES:
- Defer judgment
- Be visual
- Encourage wild ideas
- Go for quantity

From IDEO Design Thinking for Libraries (designthinkingforlibraries.com)
Activity 4: Roleplay

Take turns speaking from the point of view of your user community

For each post-it idea, the other group members ask:

What do you like about this solution?

What issues might you run into?
Intervention #2
Iteration: Prototype > Test
Activity 1: Concept map

3A. BREAK DOWN THE USER EXPERIENCE

Take your top idea and draw out a journey or a series of scenes based on the user experience of this idea.
Start with a sketch and a few bullet points on who your ideal user is. Here is the continuation of our example:

**EXAMPLE**

The User:
- Hello.

Awareness:
- Leverage children as awareness point, market the English Language Learners App in schools.
- Hello!

Download app + use:
- User downloads app and sees where public resources are located throughout library system.
Activity 2: Wireframing
Activity 3: Test/feedback
Intervention #3
Implementation: Pitch
Your Pitch Must Include:

- A detailed **description** of the app
- **Justification** of the app choice
- Justification of its **originality** (comparing with other apps)
- A clear description of how **concepts and theories** studied in class helped with the conceptualization of the app
- A step-by-step overview of the project development and brainstorming **process** (how did the group get here?)
- A **demonstration** of the prototype
Secondary learning outcomes

- Design thinking for problem solving
- Makerspace resources
- Library tech lending
- Internet of Things
- Marvel for wireframes
Extensions
3.

Speculative Design

various workshops
... employs speculative products and prototypes to anticipate future trends or propose visionary solutions to vexing problems.

—Ellen Lupton, Design is Storytelling, 2017
Speculative Design (also: Design Fiction, Design Futures)

Futures Cone (after Joseph Voros).
Learning Goals

- Engage participants in imagining outcomes of current social and technological trends
- Teach the prototyping process within an exciting, less business-focused environment
- Challenge participants to apply their critical and creative thinking
Workshop Structure*

Overview of the Process
We offer a short, lightning-talk style intro to our work, its context, and where our methods come from.

Introducing the Scenario
We provide an introduction to the speculative future scenario, using rich media texts (video, audio, print).

Prototyping
Participants are led through an ideation and prototyping process that borrows from the Design Thinking method.

*This workshop was offered for librarians at ACRL & Designing Libraries in 2017, and in an internal workshop for NC State library staff in 2018.
SCENARIO
Making a space for your participants to engage in Speculative Design
Visual Aid

- Gives participants a taste of the future environment
- Makes it more “real” without narrowing their imagination too much

HYPER-REALITY by Keiichi Matsuda, KM.CX
Audio Aid

- We ask that participants close their eyes for this
- Spurs the imagination; invites participants into the fictional world
- More flexibility and easier to produce than using a video or making one

<Play Audio>

Text: Adam Rogers
Voice: Jason Evans Groth
Text Prompts

- Give further guidance on a more specific problem space
- Helps structure the activity for a limited amount of time
- May reign in creativity and brainstorming a bit too much—we have experimented with this

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We need help making library spaces click. Our users can see temperature and noise variances across the whole building, but they can’t see people.

We need help tackling information literacy in a radically different context. We are in a new information paradigm, and I’m not sure we ever caught up with the last one. It feels like we’re a decade behind.

We need help creating distraction-free spaces for our hyper-info-overloaded users. When every wall can be a screen and we are only separated from our devices when sleeping, how can our users find space to focus and work on a single problem, read a book, or to simply reflect, meditate, or be gainfully bored? Some people come to libraries to get away.

- How might we use tools to reduce outside distractions and provide space for focus and solitude?
- How might we build the 20XX equivalents of tools like Freedom [A] or Yondr [B]? Should we actively disrupt users’ hyper-connectedness with something like a Faraday cage?
- How might we gamify a “disconnect” experience to help those who may not know they need time off?

PROTOTYPING
Supplies

- For a short workshop, supplies need to be simple
- Craft supplies + futuristic flair
- Simple electronics: Teknikio + LittleBits
- Consider the prompt: for augmented reality, we offered transparency sheets, safety glasses, and clear acrylic panels as ways to simulate AR displays
Creations

Participants built
- fictional wearable devices
- dioramas of learning spaces
- interactive interfaces with multiple modes/scenes
- plans for new services
- and more!
Sharing

- Sharing learning and reflection is essential to these kinds of experiences.
- Some presentations included skits & roleplay.
- It is also really fun!
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Future Work

- We plan to offer speculative design-based learning experiences for students in both workshops and in connection with courses.
- We have a grant submission in and are continuing research, and would love to hear from anyone interested.
What’s Next

Where do we go from here?
Innovation Studio

- Renovation -- New Space!
- Highlighting these non-physical skills and processes
- Hands on exhibits
- Programming and teaching
Resources

Books
Change by Design, Tim Brown
Speculative Everything, Anthony Dunne & Fiona Raby
Extrapolation Factory Operator’s Manual, Elliot Montgomery & Chris Woebken

Articles
http://dx.doi.org/10.1080/01972243.2011.583819

Toolkits
IDEO’s Design Thinking for Libraries Toolkit
The Thing from the Future by Situation Lab

Videos
HYPER-REALITY by Keiichi Matsuda
SXSW 2019: Black Mirror and the Power of Speculative Design
Questions?

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