Radical Change in Library Learning Spaces: Research on Maker Spaces

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This study examined question prompts as a scaffold for the development of critical technical practices in maker spaces for youth at public libraries, museums, and community-based organizations.

Maker Literacy
Critical Technical Practice

How might we help young people think creatively, critically, metacognitively, and with a deep self-awareness vis-à-vis their relationship with the technologies and media that they create and use?
The humble question prompt!

• A socio-cultural tool.
• Skillful questioning from a teacher (or, in the case of the Maker Space, a mentor) can help learners analyze their own thinking processes, see connections, build new understanding, and support a disposition toward mindful and critical technical practices.
• With practice and modeling, learners may ask these questions of themselves, without the direct intervention of an expert.
• Question techniques are already familiar to librarians:
  – Storytelling: Dialogic reading
  – Literacy instruction: Reciprocal teaching: summarize, predict, clarify and create new questions about one’s own comprehension of a text.
The Fourth Knowledge

• Anderson & Krathwohl’s revision of Bloom’s Taxonomy, 2001).
  – Factual knowledge
  – Conceptual knowledge
  – Procedural knowledge
  – Metacognitive knowledge
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Deeper Learning

21st century skills and knowledge grouped into three broad domains.
Methods

• Three sites
• Participant observation;
• Four focus groups with tweens & teens;
• Semi-structured interviews with adults (mentors);
• A series of sketching exercises.

We engaged with approximately 45 teens, six adult mentors and six administrative staff during the course of the research project.
Results

• Outcomes derived inductively from an analysis of the questions highlighted by the participants. Results include:
  – a conceptual framework for understanding critical thinking during the process of making technological artifacts;
  – A set of root questions (and underlying problematics) that offer a meaningful pathway toward critical technical practice and which would, at the same time, be authentic to youth makers.
What are the core questions that makers (and the mentors who guide them) should ask?
Eight core questions

• What will make me happy?
  • Who is my audience?
• What resources do I have and need?
• What will inspire me to give my time and effort to a project?
  • What do I know?
• Can I let myself make a mistake?
• How will my creation affect other people?
  • What kind of maker am I?
MINDFUL MAKERS ASK THEMSELVES...

WHAT RESOURCES DO I HAVE OR NEED?
Mindful makers want to know what resources will serve as a muse to their imagination, so this is an understanding of the properties of materials.

WHAT WILL INSPIRE ME TO GIVE MY TIME/EFFORT TO A PROJECT?
Sometimes we don’t have the necessary skills to complete a project and need to make an effort to learn. Mindful Makers look for interesting projects that will keep them engaged and motivated (music, sports, a special cause).

WHAT DO I KNOW?
Mindful Makers ask themselves the question throughout the making process. This way they can figure out what they don’t know and take steps to learn.

WHAT WILL MAKE ME HAPPY?
A Mindful Maker is aware of the emotional connection between the maker and the objects that they make. If it makes you happy then you can have fun!

CAN I LET MYSELF MAKE A MISTAKE?
Many makers in today’s world are afraid of making mistakes. The reality is that most mistakes are learned from and people better themselves through it. This leads Mindful Makers to ask another question: What ways beyond the “right” way can I make something?

WHO IS MY AUDIENCE?
Mindful Makers understand that some of their projects will be viewed, used, and shared by other people. Who are these people? Mindful Makers think about how their own interests and ideas interact with the needs of the potential audience.

HOW WILL MY CREATION AFFECT OTHER PEOPLE?
Mindful Makers think about how their projects might affect people. Will it interest them? Will they learn something? Will they have fun? Will it make them happy or sad?

WHAT KIND OF MAKER AM I?
Maker self-awareness helps anticipate the best way to tackle a design/build problem.

Poster and web site: http://www.mindfulmakerquestions.info/
Next Steps

• Take the “Mindful Maker” question prompts into the field and explore practical ways to insert them into the verbal interactions between mentors and young people, as well as the design of library programming in maker spaces for youth.

• Create specific guidelines, training tools, and examples for mentors, including librarians.
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Thank you!
The Mindful Maker Web Site:
http://www.mindfulmakerquestions.info/

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