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Makerspace Instruction & the ACRL Framework

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This was presented through ACRL-Oregon / OLA Academic Division's free webinar sessions.
The following is a link to the Toolkit mentioned in the presentation: <https://www.boisestate.edu/library-makerlab/maker-instruction-toolkit/>
Presentation slides document is available for download.

The background features several abstract, hand-drawn style elements. In the top left, there is a teal shape with a black grid pattern. In the top right, a red teardrop shape with white speckles is positioned. In the center, a large teal circle with white speckles is partially obscured by the text. To its right is a red teardrop shape with white speckles. Below the text, a horizontal orange oval with white speckles is centered. In the bottom left, there are several vertical shapes: a red one, a teal one, and a black outline of a triangle. In the bottom right, a large orange circle with white speckles is partially covered by a teal and red shape. The overall aesthetic is modern and creative.

Makerspace Instruction & the ACRL Framework

Introductions



Stephanie Milne-Lane

Willamette University

Processing Archivist & Records
Manager



Amy Vecchione

Boise State University

Associate Professor
Head, Emerging Technologies and
Experiential Learning

Agenda

01

Background/Context

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Matching the
Framework with the
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Maker Instruction
Toolkit

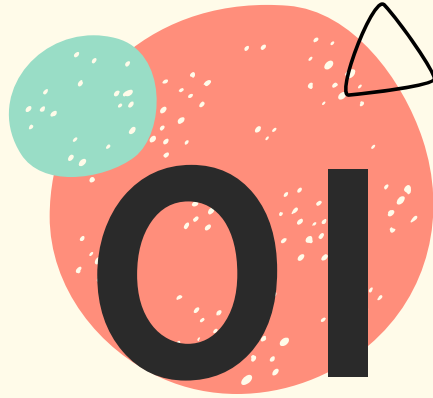
04

Reflections a Year
Later





**What Have You
Made
Recently?**



Background/Context

Makerspaces in Academic Libraries



Project Background

Direct
Fieldwork
at BSU
Albertsons
Library

Attended
ACRL
RoadShow

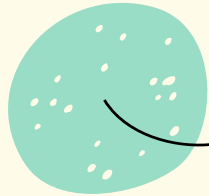


MLIS Capstone



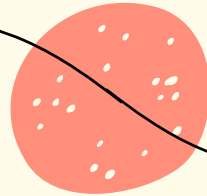
Boise State's Background

MakerLab Opened
September



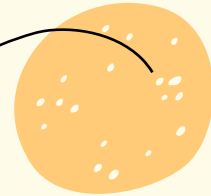
2014

Instruction Began
January



2015

Framework
Roadshow
August

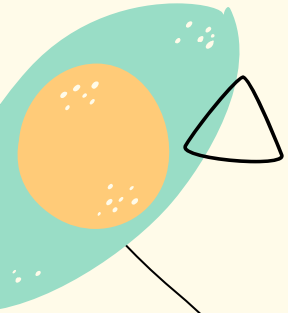
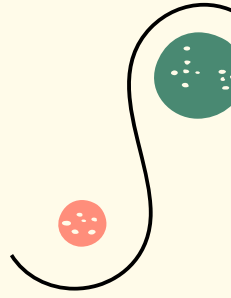


2018





**Matching the
Framework
with the BSU
Makerlab**





That thing you created

**How did you create knowledge
when you were working on
creating it?**

The Frames

**Authority is
Constructed &
Contextual**



**Information
Creation as a
Process**

**Information
has Value**



**Research as
Inquiry**

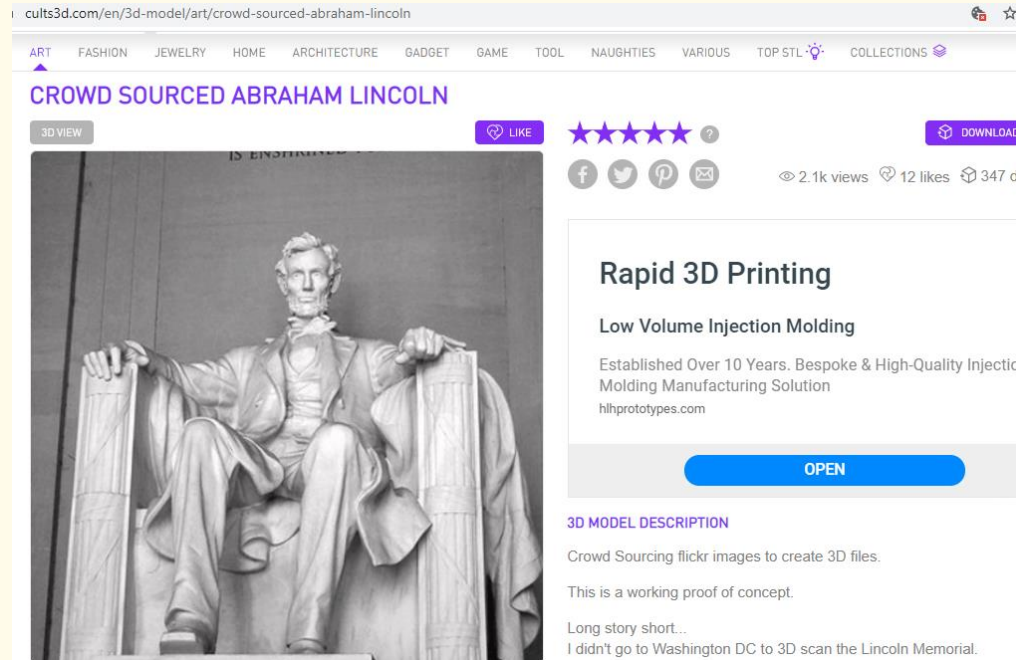
**Scholarship
as
Conversation**



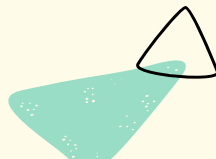
**Searching as
Strategic
Exploration**



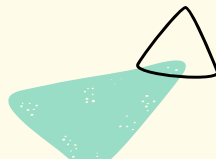
Authority is Constructed and Contextual



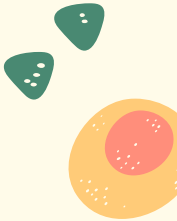
The screenshot shows a web browser displaying a 3D model of Abraham Lincoln on the Cults3D.com website. The URL in the address bar is cults3d.com/en/3d-model/art/crowd-sourced-abraham-lincoln. The page features a navigation menu with categories like ART, FASHION, JEWELRY, HOME, ARCHITECTURE, GADGET, GAME, TOOL, NAUGHTIES, VARIOUS, TOP STL, and COLLECTIONS. The main content area displays the 3D model of Abraham Lincoln, a '3D VIEW' button, a 'LIKE' button, a star rating of five stars, and a 'DOWNLOAD' button. Below the model, there are social media sharing icons for Facebook, Twitter, Pinterest, and Email, along with statistics: 2.1k views, 12 likes, and 347 downloads. A blue button labeled 'OPEN' is positioned below the statistics. To the right of the model, there is a section for 'Rapid 3D Printing' and 'Low Volume Injection Molding' with a description: 'Established Over 10 Years. Bespoke & High-Quality Injection Molding Manufacturing Solution' and the website 'hihprototypes.com'. Below this, there is a '3D MODEL DESCRIPTION' section with the text: 'Crowd Sourcing flickr images to create 3D files. This is a working proof of concept. Long story short... I didn't go to Washington DC to 3D scan the Lincoln Memorial.'




Information Creation as a Process




Information Has Value



CT #3DBenchy - The jolly 3D printing torture-test by CreativeTools.se
by CreativeTools April 09, 2015



Creative-Tools.com #3DBenchy (3DBenchy.com)



Thing Details	24 Thing Files	393 Comments	3559 Makes	0 Remixes
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License



#3DBenchy - The jolly 3D printing torture-test by CreativeTools.se by CreativeTools is licensed under the Creative Commons - Attribution - No Derivatives license.





Thingiverse ✓
@thingiverse



Is your Thing a remix, a mashup, or merely inspired by other Things? If yes, be sure to cite your sources.

thingiverse.com/groups/thingiv...

BASIC INFORMATION

Thing Name (required)

Category (required)

Select a category

License (required)

Creative Commons - Attribution

Tags

This is a Remix This is a Customizer This is an Educational Project

Remix Source Files

Search

11 Results for "taco"

Chihuahuas by MustangDave



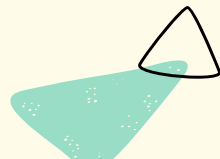
ADD SOURCE

Taco Shell Holder X3 by barspin



ADD SOURCE

7:44 AM · Dec 4, 2016 · Buffer



Research as Inquiry

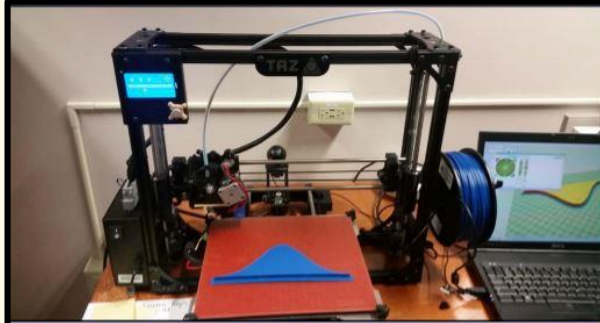


Fig 1. 3D print on Lulzbot TAZ

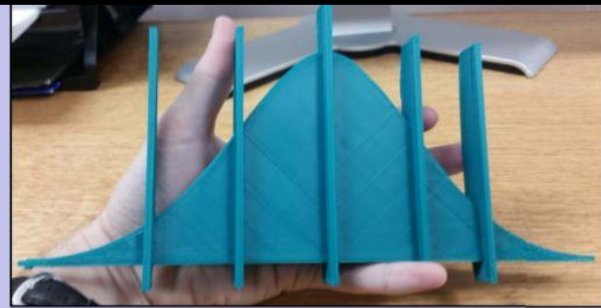


Fig 2. The Empirical Rule

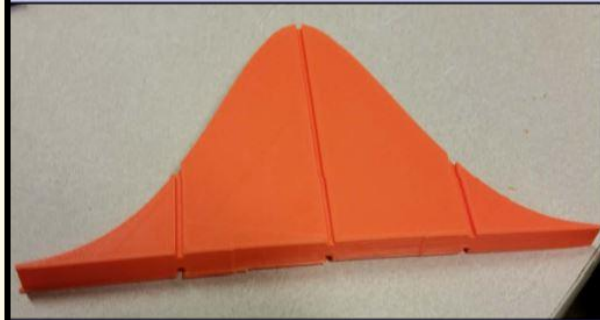


Fig 3. Proportions of the curve

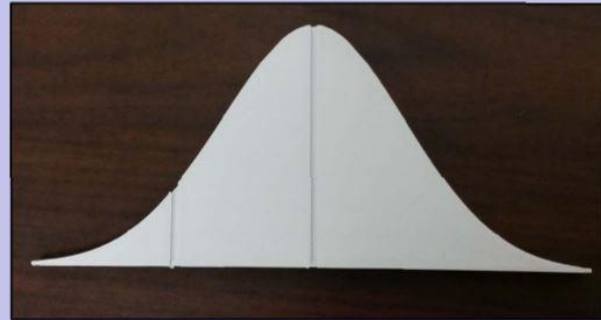
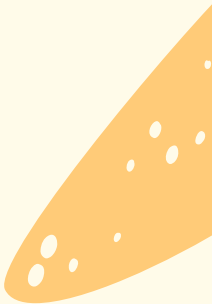
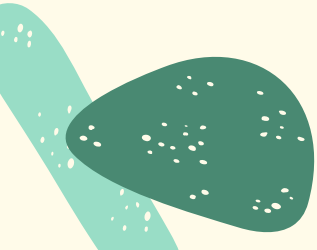


Fig 4. One-tailed tests



Scholarship as Conservation

Just as the fifth frame of ACRL Framework suggests, student makers saw “themselves as contributors to scholarship rather than only consumers of it.”



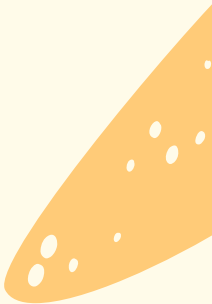
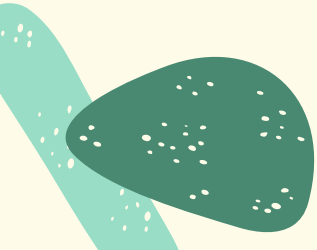
Scholarship as Conservation

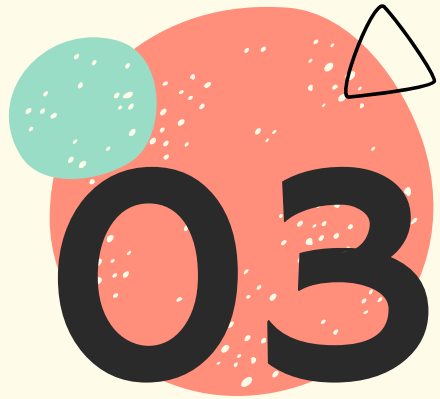




Searching as Strategic Exploration

Just as a student writing an economics paper might display creativity and resilience when conducting searches in a catalog, the same behaviors are evident when mechanical engineering students designed and 3D printed wind turbines that were later tested in the BSU Engineering Department's wind tunnel.





**Maker
Instruction
Toolkit**

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Maker Instruction Toolkit

This toolkit was designed and created by Stephanie Milne-Lane, MLIS student at the University of Washington, 2019 in consultation with Associate Professor and Head of Emerging Technology and Experiential Learning, Amy Vecchione. The purpose of this toolkit is to create and establish a framework for providing library maker instruction through the lens of the ACRL Framework. The framework connects with maker instruction easily, as evidenced in this research. To use this toolkit, follow the links to the subpages below to learn more information. Reading the background, literature review, and downloading the toolkits can provide any librarian with the ability to design instruction to use their makerspace to create new information.

IN THIS SECTION:


[Makerspaces in Context](#)[Why Experiential Learning](#)[Matching the Makerlab with ACRL Framework](#)[Lesson Plans](#)[MakerLab Instruction Checklist](#)[Inspiration](#)

Makerspaces in Context



Utility

addressed & provided justification for the existence of makerspaces in academic libraries



Implementation


implementation or “how to” articles, which run the spectrum of how to start a makerspaces to how to the development of 3D printing policies.

Instruction

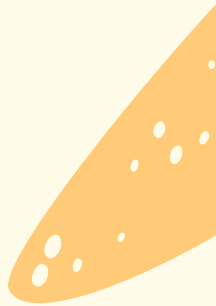
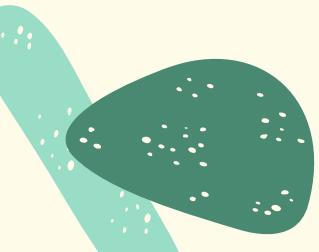

growing body of literature on the educational aspects of makerspaces, specifically instructional practices & learning benefits



Why Experiential Learning



Whether stitching or printing, students engaged in experiential learning foster critical analytical skills, fill knowledge gaps, and practice synthesizing information. ...The BSU MakerLab supports information literacy by providing students a tactile means of understanding of how information — in all its varied forms — is produced, valued, and utilized.



Matching the Makerlab with the Framework



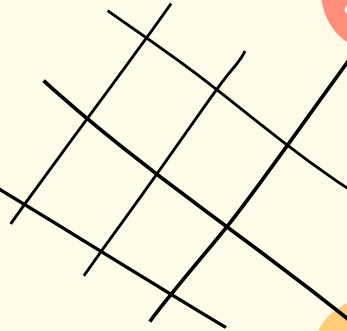
Scholarship as
Conversation



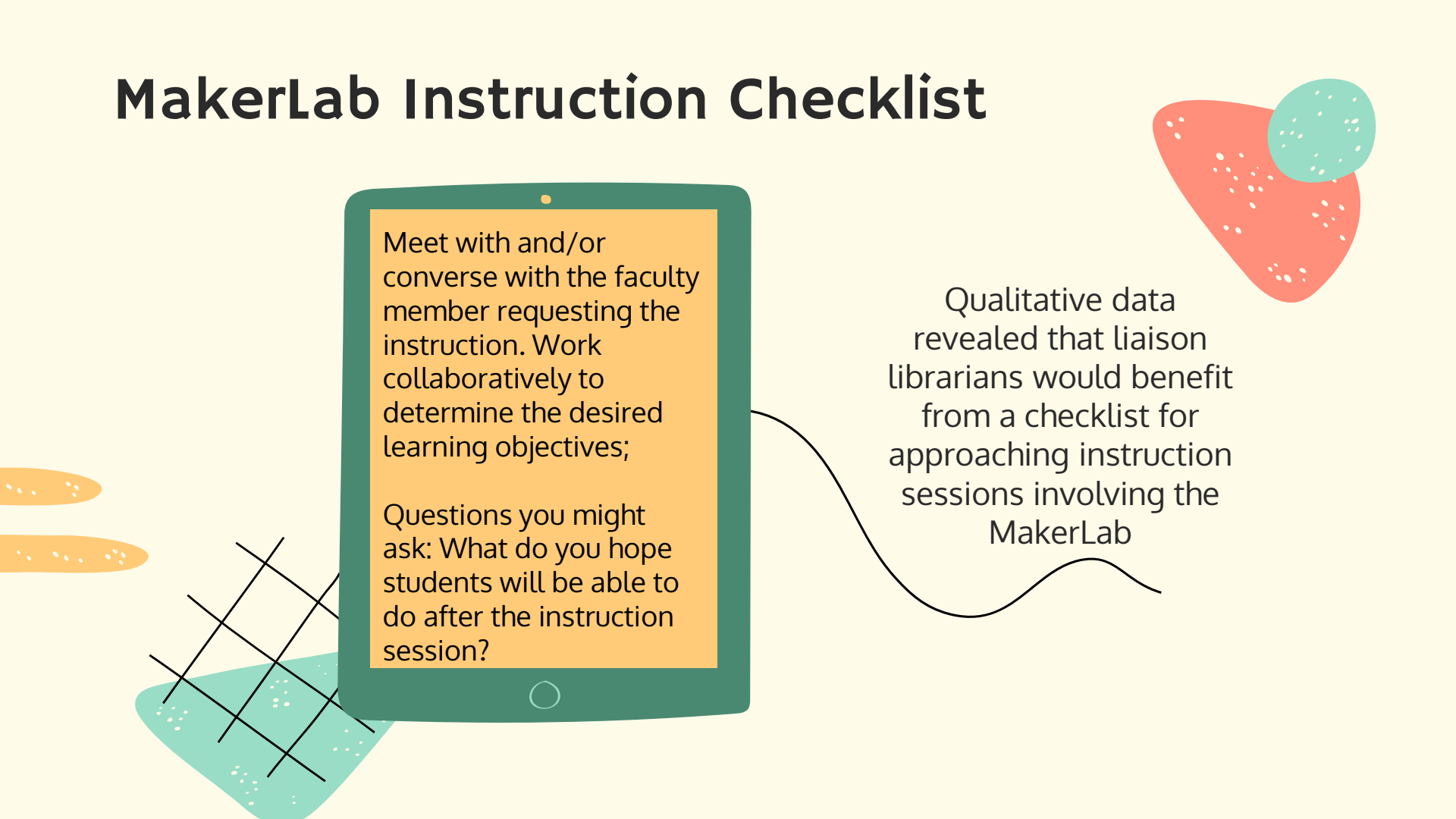
HAL Button



BSU Makerlab



MakerLab Instruction Checklist



Meet with and/or converse with the faculty member requesting the instruction. Work collaboratively to determine the desired learning objectives;

Questions you might ask: What do you hope students will be able to do after the instruction session?

Qualitative data revealed that liaison librarians would benefit from a checklist for approaching instruction sessions involving the MakerLab

Lesson Plans

MATERIAL SCIENCE 415 – SESSION 2

Date/Time/Location	October 30, 2018, 1pm
Prompt from Instructor	After the introductory workshop to 3D printing, students will be assigned to print something. Caveats: Students must modify a found design if they do not do something from scratch AND it should be a "successful" print, which means that they may have to do iterations and save any "failed" attempts.
Enduring Questions	What is information? What is your role in creating information?
Learning Outcomes	Students will be able to: <ol style="list-style-type: none">1. Understand that they are contributors to scholarship rather than only consumers of it (<i>Scholarship as Conversation</i>)2. Understand that first attempts do not always produce adequate results (<i>Searching as Strategic Exploration</i>)3. Seek appropriate help (including from peers) when needed (<i>Research as Inquiry</i>)
Facilitators	Amy Vecchione
In Advance Needs	Have student makers set up and prep: <ul style="list-style-type: none">• Prep computers• Have failed prints available for investigation

Schedule

Time	Activity	Narrative/Main Points	Learning Objective
1pm-1:05pm	Agenda for 2 nd session	Tidying Up Lingering Problems Small Group Discussions	N/A
1:06-1:36pm	Tidying Up Lingering Problems	Have students pair up – One student with a good print, one student who is experiencing lingering problems with their print. Have them troubleshoot together. Have student makers check in and help where needed. Circle around and check in with each group.	3
1:37-1:42pm	Small Group Discussion 1	What did you learn from the process? What role did mistakes play? Have a representative from each group report out to the entire class	2
1:43-1:48pm	Small Group Discussion 2	What role does failure/mistakes play in learning? Have a representative from each group report out to the entire class	3

Inspiration

30
YEARS

3D printers have actually been around for about 30 years. Barriers like cost are breaking down, so they're now becoming available to the public.



Printed objects can be incredibly intricate. They can also be created with working components, hinges, and parts within parts.

Biology students can study cross-sections of hearts or other organs.



Chemistry students could print out molecules to study.



Auto class students could print replacement or modified car parts.



Cooking class students could design intricate molds for ices and gelatins.



Students in geography courses could print out maps showing the topography, population or demographics of an area.

REVOLUTIONIZING *the* CLASSROOM

3D printing has caught the attention of educators who are looking into ways to incorporate it into the classroom.

Using 3D printers in the classroom could mean:



Engineering and design students can print out prototypes of their creations.



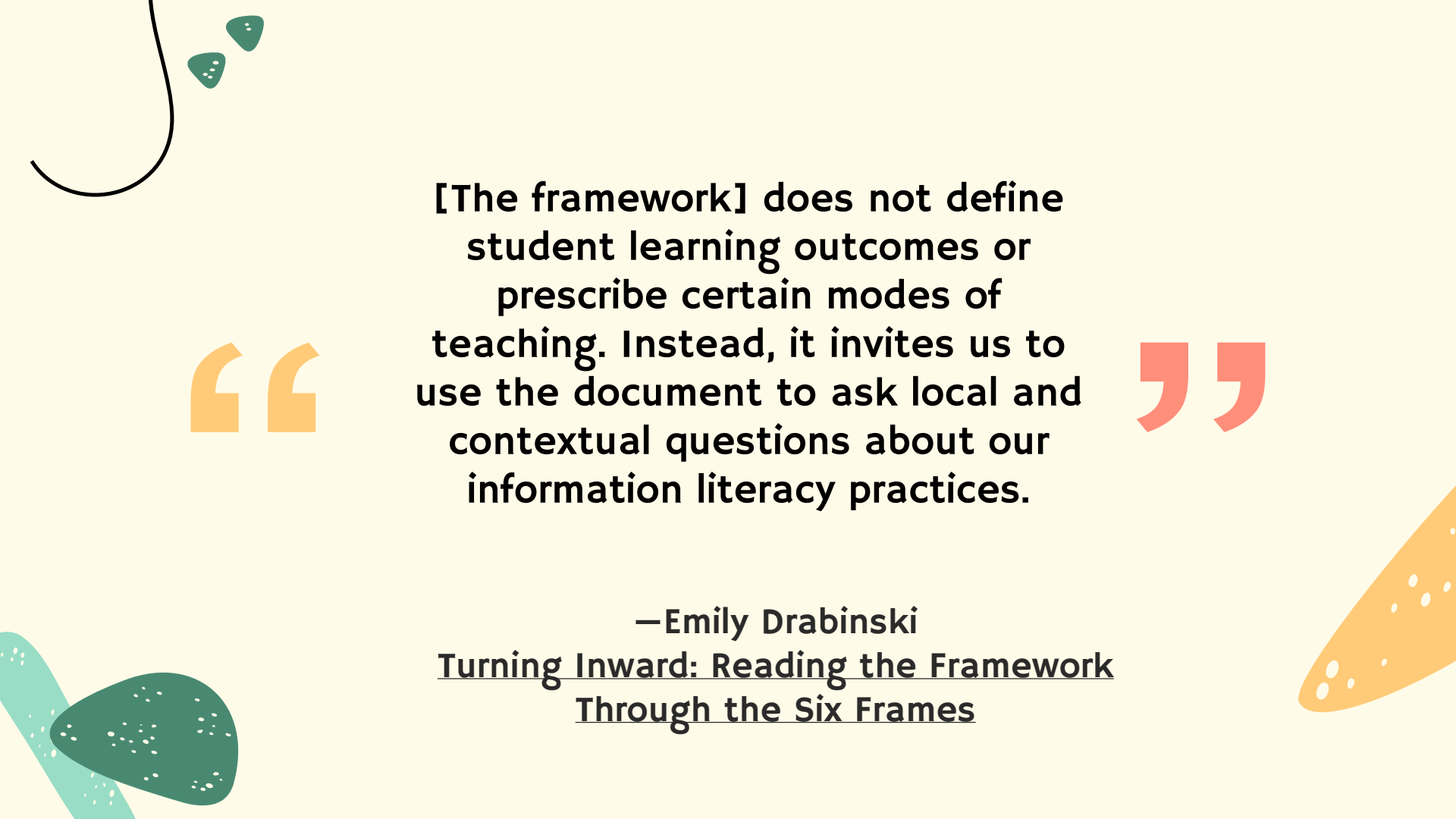
Architecture students could easily print out 3D models of their designs.



History classes could print out historic artifacts for closer examination.



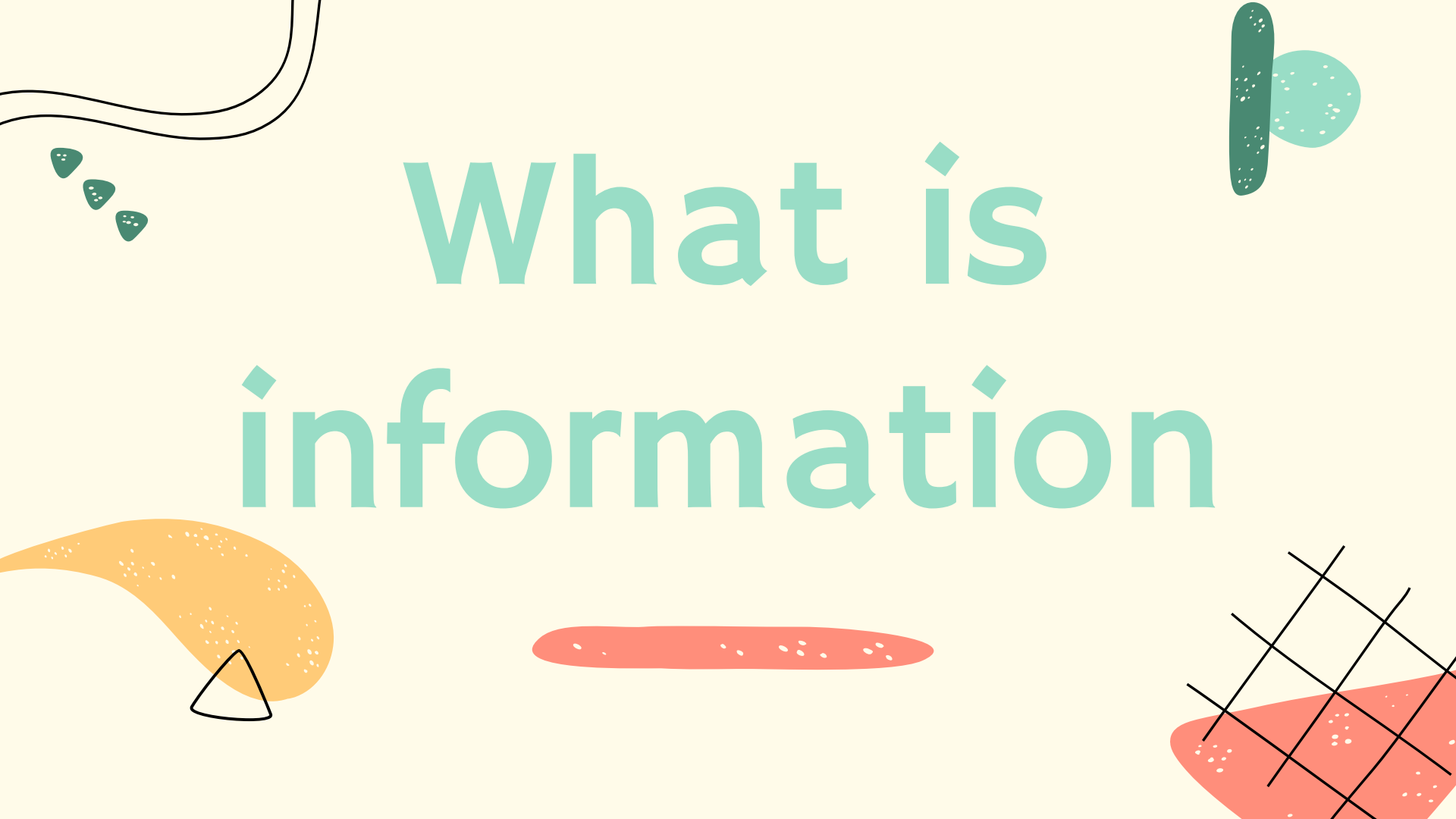
Graphic design students could create 3D versions of their artwork.



[The framework] does not define student learning outcomes or prescribe certain modes of teaching. Instead, it invites us to use the document to ask local and contextual questions about our information literacy practices.

—Emily Drabinski

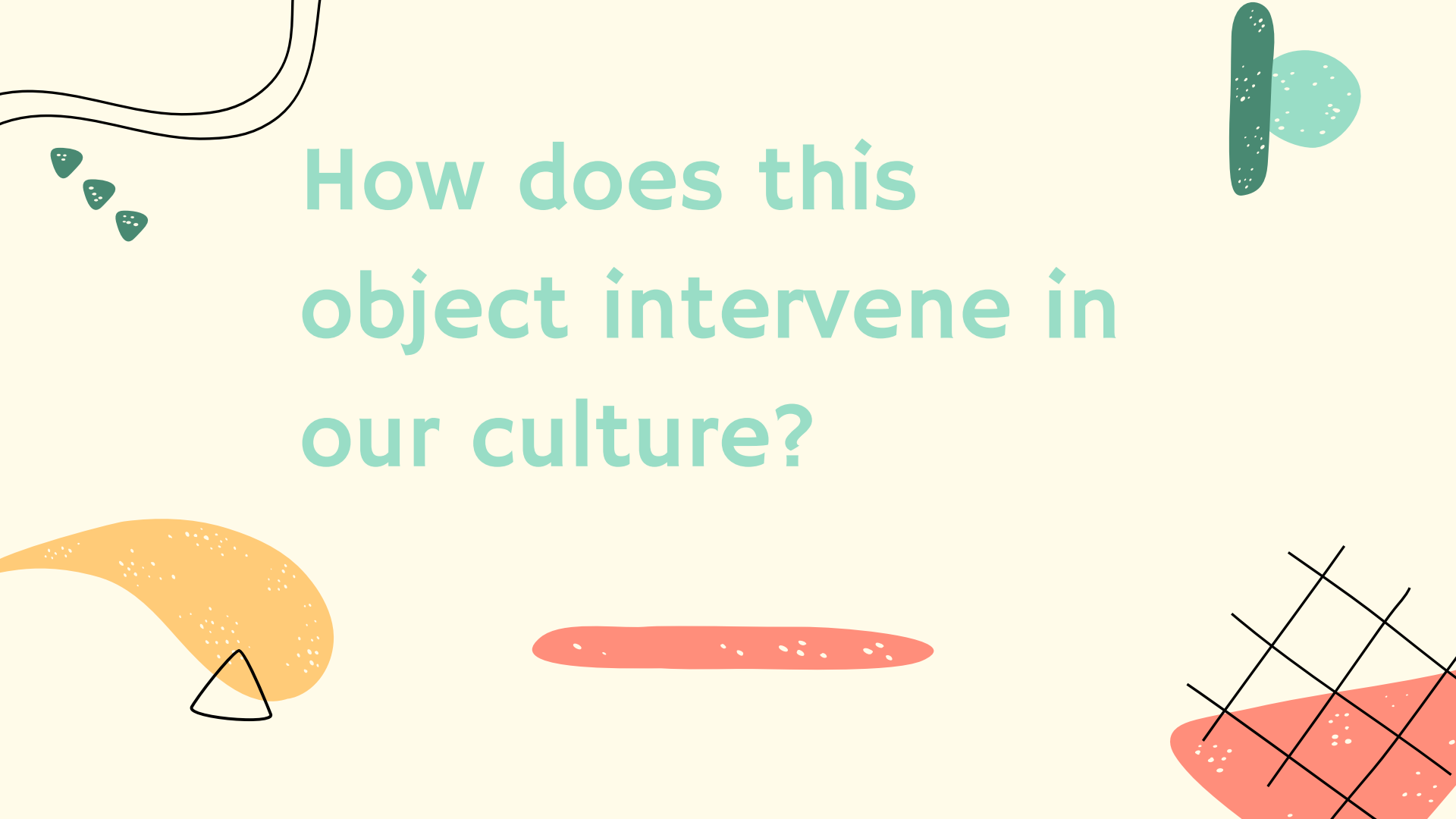
**Turning Inward: Reading the Framework
Through the Six Frames**



What is information



What is your role in
creating new
information?



How does this
object intervene in
our culture?

Materials Science

- 1. Understand that they are contributors to scholarship rather than only consumers of it (**Scholarship as Conversation**)
- 2. Understand that first attempts do not always produce adequate results (**Searching as Strategic Exploration**)
- 3. Seek appropriate help (including from peers) when needed (**Research as Inquiry**)

**Craftivism:
Stitches of
Resistance**



Math Education





04

Reflections a Year Later





Instruction Program for MakerLab

- Developing a Formal Instruction Program
- Continuing collaborations with faculty and instruction
- Building a larger team



ARCHIVES

+

ZINES =



What's the Utility?

- You can take the ideas, lesson plans, and inspiration and pull them into any learning context
- We hope you glean -- and perhaps apply -- ideas in this presentation into your instruction sessions!



Q & A

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