Moving Beyond Craft Programs: Encouraging Creative Confidence in Adult Learners

According to a landmark longitudinal study by George Land, creativity peaks in early childhood, dropping drastically as we grow older.[1] Ninety-eight percent of children aged 4-5 score at the genius level on creativity assessments, yet by age 15, only 12% still scored at this level. When the assessment was given to adults, that number dropped to just 2%. These statistics support a trend that library professionals have witnessed – today's adults have a much harder time than children with tinkering, playing, and using their imaginations. This trend is concerning, because creativity will be the third most important employable skill by 2020.[2] As emerging technology transforms the landscape of work, the success of individuals and society will depend on creative thinking. We must adapt programming to fit these new needs, because – as discussed in Audrey Barbakoff's book – "through play, the library can encourage the flexible education that adults need in the modern workforce, developing skills like creativity, critical thinking, and resilience."[3]

Yet when it comes to creative projects, adults are afraid of trying new things. They fear failure, and have forgotten how to experiment and play without a set outcome in mind. David and Tom Kelley refer to this as "*creative confidence:* the ability to come up with new ideas and the courage to try them out." According to the Kelleys, "Creativity is a natural part of humanity,

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[1] George Land and Beth Jarman, *Breakpoint and Beyond: Mastering the Future Today* (New York: Harper Business, 1992), 153.

[2] "The Future of Jobs," World Economic Forum, last modified January 18, 2016, https://www.weforum.org/reports/the-future-of-jobs/.

[3] Audrey Barbakoff, *Adults Just Wanna Have Fun: Programs for Emerging Adults* (Chicago: ALA Editions, 2016), xiii.

but the fear of social rejection often keeps adults from trying out creative ideas."[4] In essence, adults experience creative block. Consequently, adults often come to library programs expecting step-by-step instructions; to be told exactly what to do. While there's merit for these types of crafting programs, their lack of experimentation, exploration, and personalization reduces the opportunity for participants to learn translatable skills.

<div align="center">Building Creativity</div>

Encouraging adult learners to move beyond crafting to making and tinkering is key to helping adults tap into their inner creativity. As shown in figure 1.1, crafting, making, and tinkering represent a hierarchy of engagement whereby makers ascend towards more meaningful, self-directed creation. Keep in mind that the medium or type of making is not as important as the process. It doesn't matter whether your attendees are knitting, paper crafting, or working with robotics; what's important is the process and level of engagement. For example, in an origami crafting program, participants follow specific directions to make an origami frog. Participants learn a specific skill (in this case, basic origami folds), but they haven't experimented or embraced uncertainty because they knew what the end product would be before they began. With making, however, the end product is less defined, and the process involves iteration, creative license, and collaboration. As Megan Egbert explains, "essential to the heart of making, and critical to the maker mindset, is the ability to choose for yourself how you will express an idea or produce a product."[5] We might encourage making in the origami program by giving attendees

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[4] David Kelley and Tom Kelley, *Creative Confidence: Unleashing the Creative Potential Within Us All* (New York: Crown Business, 2013), 6.

[5] Megan Egbert, *Creating Makers: How to Start a Learning Revolution at Your Library* (Santa Barbara, CA: Libraries Unlimited, 2016), 6.

options for customizing their project – different types of paper; patterns for different animals; or markers and glitter glue to decorate their project. <figure 1.1 near here>

Tinkering, the highest level in the engagement hierarchy, involves exploring and playing with a variety of materials and crafts without a specific end product in mind. According to Wilkinson and Petrich, "[Tinkering is] fooling around directly with phenomena, tools, and materials. It's thinking with your hands and learning through doing… It's also about making something, but for us, that thing reveals itself to you as you go."[6] In the origami example, tinkering might mean experimenting with various origami folds to make completely original works of art, or attempting to fold a frog without using a pattern. The end goal matters less than the process. Fortunately, while many adults have unlearned the ability to tinker and play, Colleen and Aaron Graves suggest that "tinkering is a skill and a habit,"[7] something that redevelops over time with effort. Without doing away with craft programs, changes can be made incrementally that begin challenging adult learners in new ways. By nudging adult learners to make, tinker, and play in our programs, we can help them flex creative muscles, let go of inhibitions, and make amazing things.

<div align="center">Adult Learning</div>

In *Maker-Centered Learning*, Clapp et al. suggest maker-centered learning is a new type of hands-on pedagogy "that encourages community and collaboration (a do-it-together mentality), distributed teaching and learning, boundary crossing, and responsive and flexible

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[6] Karen Wilkinson and Mike Petrich, *The Art of Tinkering: Meet 150+ Makers Working at the Intersection of Art, Science & Technology* (San Francisco: Weldon Owen, 2016), 13.

[7] Colleen Graves and Aaron Graves, *The Big Book of Makerspace Projects: Inspiring Makers to Experiment, Create, and Learn* (New York: McGraw-Hill Education, 2017), 1.

teacher practices."[8] These elements play out through redirecting authority (students and teachers alternate roles); emphasizing collaboration and troubleshooting (tinkering and iteration); fostering a sense of agency (self-directed learning); and, cultivating a sensitivity to the world around us.[9] While Clapp et al. focused their three-year research project on the learning process of younger students in classroom settings, the research can be extrapolated to adults when viewed through the lens of adult learning. Many theories relate to adult learning, but TEAL Center (Teaching Excellence in Adult Literacy)[10] identifies andragogy, self-directed learning, and transformational learning as the most prominent.

Andragogy contrasts from pedagogy because it focuses on adult learners. In his research on andragogy, Malcolm Knowles identified traits of adult learners, positing that learning is self-directed, built upon accumulated life experiences, problem-based (with a desire for immediate application), and intrinsically-motivated.[11] Breaking down these concepts a bit further, TEAL Center explains that adults learn by doing, "need to know *why* they are learning something," and learn best when solving real-life problems.[12] These traits have close ties with active learning,

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[8] Edward P. Clapp et al., *Maker-Centered Learning: Empowering Young People to Shape Their Worlds* (San Francisco: Josey-Bass, 2017), 4.

[9] Clapp et al., *Maker-Centered Learning*, 40, 52–54, 105.

[10] TEAL Center, *Adult Learning Theories: Fact Sheet No. 11* (U.S. Department of Education, 2011), 1.

[11] Malcolm Knowles, *The Modern Practice of Adult Education: Andragogy Versus Pedagogy*, rev. and updated ed. (Englewood Cliffs, NJ: Cambridge Adult Education, 1980), 44–45, 55.

[12] TEAL Center, *Adult Learning Theories*, 1.

project-based learning, and constructionism, which all argue that participation in activities like making and creation solidifies concepts and helps people learn better.[13]

A component of andragogy, self-directed learning consists of individuals taking ownership of the learning process by identifying personal learning needs, setting goals to reach those needs, locating resources, forming a plan to reach identified goals, and assessing/evaluating learning outcomes.[14] While self-directed learning traditionally takes place in informal learning settings, it has strong ties with student-centered learning, which is "an approach to learning in which learners choose not only *what* to study but also *how* and *why* that topic might be of interest."[15] Student-centered learning can be a powerful tool in a library setting, working best when staff take a facilitator role in place of leading, focus on designing real-life tasks which involve collaborative, inquiry-based learning, and allow the role of teacher to shift between participants and staff.[16]

Transformational learning, the third major adult learning theory, is defined by TEAL Center as "learning that changes the way individuals think about themselves and their world, and that involves a shift of consciousness."[17] Transformational learning connects closely with Clapp et al.'s maker-centered learning concept of "sensitivity to design" in which "the exercise of

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[13] Laura Costello, Meredith Powers, and Dana Haugh, "Pedagogy and Prototyping in Library Makerspaces," in *The Makerspace Librarian's Sourcebook*, ed. Ellyssa Kroski (Chicago: ALA Editions, 2017), 31–33.

[14] TEAL Center, *Adult Learning Theories*, 2.

[15] TEAL Center, *Student-Centered Learning: Fact Sheet No. 6* (U.S. Department of Education, 2010), 1.

[16] Costello, Powers, and Haugh, "Pedagogy and Prototyping," 31–32.

[17] TEAL Center, *Adult Learning Theories*, 2.

looking is a starting point" which "encourag[es] curiosity and stimulat[es] a desire to understand and engage with the world."[18] In relation to making and tinkering, transformational learning can be used to find alternate ways to problem-solve and improve the iterative process. By taking a project-based learning approach to solving a problem, attendees can collaboratively discuss solutions and form new ways of thought through exposure to each other's suggestions and ideas.

Costello, Powers, and Haugh explain that "maker education is a learner-driven process" in which, much like Clapp et al.'s maker-centered learning classroom,[19] "the line between 'student' and 'teacher' starts to blur through collaboration and mutual participation in projects." This type of learning space creates loosely structured, controlled chaos. But it's important to remember that it is structured with an overarching teaching strategy, which "gently guide[s] students to discover, question, experience, and understand the concepts they are intended to absorb."[20] Thinking about your craft programs, reflect upon these learning theories and identify ways that current programming can be shifted to better support andragogy, self-directed learning, and transformational learning.

<div align="center">Implementation</div>

With these learning theories in mind, how can you encourage adults to regain the creativity lost since childhood? A good first step is analyzing the purpose of your current programs. Ask yourself what outcomes you want to achieve with your programs, and why. Examine what impressions, experiences, and skills your patrons are taking with them when they leave. This activity can be made easier by utilizing a framework such as the lesson planning

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[18] Clapp et al., *Maker-Centered Learning*, 110.

[19] Clapp et al., *Maker-Centered Learning,* 41.

[20] Costello, Powers, and Haugh, "Pedagogy and Prototyping," 36.

worksheet created by Costello, Powers, and Haugh. Their four-step process identifies 1) program structure and target audience; 2) purpose/goals; 3) learning outcomes; and, 4) action plans.[21] By spending time considering these elements, you will better organize your thoughts while ensuring that adult patrons feel comfortable, encouraged, and empowered in your programs.

In our experience, adult learners have the most difficulty with uncertainty – not knowing what the end product should be. Starting with a pre-made object and reworking it is often less intimidating for adult learners than starting from scratch. Keeping andragogy's principles in mind, seek activities which incorporate problem-based learning and tie the project into real-life problems. Adults frequently purchase garments that do not fit correctly, and rather than finding a tailor, the items sit in the closet. If your library provides sewing machines, consider implementing backward design in a sewing class to *deconstruct* clothing rather than constructing them. Instead of starting with a pattern and walking students through the project step-by-step, ask students to start with a finished or store-bought item and review its construction. Analyzing the garment would determine what steps and sewing techniques were used to make it. Then, students deconstruct the piece and decide whether to reassemble, alter, or create a pattern template for something new. If patrons use the 3D printers in your makerspace to print ready-made objects downloaded from Thingiverse or similar repositories, consider utilizing transformational learning to alter an object with 3D modeling. Ask program attendees to examine a pre-made 3D object from Thingiverse such as an octopus, and experiment with adding hinges to make the tentacles articulate as they would naturally. These activities result in patrons gaining skills, such as sewing or 3D modeling, but more importantly, they provide opportunities for patrons to analyze objects and think more deeply about them.

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[21] Costello, Powers, and Haugh, "Pedagogy and Prototyping," 42.

Program goals don't need to be lofty; patrons can build upon initially modest outcomes through skills hierarchies or tiers. Harris and Cooper outline tiers of engagement in which patrons move from "users" to "innovators", and ultimately to "makers", where they "build or create new things, concepts, and theories" and collaborate with others, often even teaching others what they have learned.[22] Vecchione et al. similarly discuss "tiered levels of engagement" as a means of providing accessible entry points for patrons to feel comfortable engaging creatively regardless of prior skills or knowledge.[23] When thinking through your lesson plans, consider how patrons in a low tier of engagement (no prior knowledge of the tools or activity) may experience the program differently from those in a higher tier. Then think through how your program makes it possible for patrons to climb the tiers of engagement and build creative confidence.

Consider circuitry. On its own, circuitry can be a very intimidating concept for patrons with no prior experience. Yet when it is combined with something patrons already know well, such as sewing, it creates a new tier of engagement – e-textiles. E-textile programs bridge the gap and provide a way for patrons to move up the skills hierarchy from basic hand-stitching to complex embroidery, and finally to introductory circuitry concepts. This opens the door to a whole new level of makerspace projects, introducing concepts such as simple parallel and series circuits, sewable microcontrollers, and even computer coding. Depending on your desired outcomes, this exact program could be flipped, using e-textiles as an entry point for higher-level circuitry students to learn how to sew. E-textiles could also be used as a social connector for

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[22] Jennifer Harris and Chris Cooper, "Make Room for a Makerspace," *Computers in Libraries* 35, no. 2 (March 2015): 5–9.

[23] Amy Vecchione et al., "Encouraging a Diverse Maker Culture," in *The Makerspace Librarian's Sourcebook*, ed. Elyssa Kroski (Chicago: American Library Association), 55–57.

sewists and circuitrists, redirecting authority to encourage student-centered learning and creating a platform to teach one another while collaborating on a large project. E-textiles provide an accessible entry point for students to move up the tiers of engagement and become comfortable exploring a topic that might have previously been intimidating to them. For more information on the topic, read about Fields and Lee's university course titled Craft Technologies 101, which used sewing and fiber art as an entry point for students to learn about circuitry and microelectronics.[24]

Putting adult learners into open-ended situations is often the best way to push them into making and tinkering. Drawing upon self-directed learning, Pikes Peak Library District's East Library Makerspace provides a drop-in watercolor painting program in which participants are given watercolor supplies and library books with watercolor examples, and left to create at their own discretion. In the early days of this program, patrons were visibly uncomfortable with the open-ended activity. Used to the library's crafting programs, patrons expected to be walked through a series of steps by an instructor. But by talking with attendees one-on-one, staff were able to connect attendees' interests with available library books and encourage them to explore different techniques and projects. Now that this program has been ongoing for some time, longtime attendees have moved up the skills hierarchy to become mentors to other new attendees, often helping them to get started.

Adding making and tinkering to your programs doesn't have to be a huge undertaking. It can be as simple as altering one step of the process in a maker project. Give patrons basic instructions, but leave room for customization. Generally, a good rule of thumb is to consider the

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[24] Deborah Fields and Victor Lee, "Craft Technologies 101: Bringing Making to Higher Education," in *Makeology: Makerspaces as Learning Environments,* ed. Kylie Peppler, Erica Rosenfeld Halverson, and Yasmin B. Kafai (New York: Routledge, Taylor & Francis Group, 2016), 139–156.

overall number of finished products with unique elements. If everyone is walking out of your programs with the exact same creation, there is definitely room for incorporating making and tinkering. As you plan future programs, utilize a lesson planning worksheet to assess existing programs and consider ways to incorporate opportunities for self-directed learning, project-based learning, and troubleshooting. Start small with incremental changes, and before you know it, your patrons will regain their creative confidence!

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