NEW YOUTH WORKSHOPS FOR CULTIVATING OPEN PORTFOLIOS

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Open Portfolio Project

RESEARCH BRIEF

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The creation of open portfolios at youth-serving makerspaces is an inherently social process where youth share projects, processes, and ideas that they've developed alongside others. In this process, portfolio development can, similar to making, be considered a creative effort that calls for aesthetic decision-making, exploration of tools and materials, and imaginative implementation.

Yet, youth don't commonly gravitate toward capturing and sharing their work on their own, perhaps because portfolio creation can easily fall into a framing that sets it up as an additional task. This suggests that there's a need to take a closer look at the design of framing portfolio creation as an integral and integrated creative practice of making, leading to the question: How can we resolve the tension between making and documenting?

While Research Brief 15: Educator Workshops and Practitioner-Facing Efforts [link TBD] covered professional development experiences for educators that explored the design and integration of portfolios into their maker programs, in this brief, we present three youth-facing design workshops that address the tension between making and documenting. The design workshops are interventions in maker-centered learning environments, and we aimed to use these interventions as a way to frame portfolio creation as a creative practice as equally interesting as making. Thus, we explore how the workshops supported youth and educators to capture their processes, to think about documentation, and to surface implications for the future design of tools and practices.

The workshops are designed to provide ideas for how maker-centered programs can intentionally and better support youth effort around documentation and sharing. These enriching activities described can scaffold the many stages of youth portfolio creation. In turn, analyzing how youth create their own portfolios and view other's portfolios can help the community as a whole evolve and refine documentation practices over time. We conclude by presenting additional design workshop ideas that could serve as activities for makerspaces to improve their portfolio practices.

While each workshop tackles the tension among making and documenting, there are certainly other ways to address the tension among making and documenting. The described interventions are avenues for expanding how youth portfolios are made, how youth can develop personal approaches to capturing their work, and how portfolio creation is understood as a means for creative expression and artistic exploration.

Design Workshops

We created the design workshops to address three underlying tensions present when integrating portfolio creation and assessment into makerspaces and maker-centered programs: (a) curating episodic engagement for a range of audiences, (b) capturing the process of making, and (c) representing the shift of youth roles and identities in and out of a makerspace. Here we introduce three workshops that we facilitated with youth and educators during field site visits, present how participants engaged with the design activities, and describe how the activities might be useful for the larger maker education community. These are just three approaches, among potentially many more that seem promising, that lead to design implications for further development of portfolio tools and techniques, and may be considered in series or individually.

WORKSHOP 1: VISUALIZING SHARED EXPERIENCES IN A MAKERSPACE

Design Challenge: Within maker-centered learning environments, and particularly those with drop-in programs, it can be challenging to track the range of activities, as well as episodic commitments of youth over time, to represent the full engagement offered by a space to multiple diverse audiences. Furthermore, not many makerspaces have systematic portfolio practices, meaning that youth work and their processes are often unseen by outsiders. Creating physical and digital spaces for curating work in locations that are accessible to all can better illustrate program offerings, as well as youth engagement, facilitation and participation patterns, and shared experiences among youth and educators. As makerspaces offer different programs, activities, and enrichment opportunities at varying timescales, there's no one right way to represent them.

Design Response: We designed a workshop in four parts that would allow youth and educators to collaboratively curate a portfolio, representing the range of program offerings at their site. First, participants collected makerspace schedules, programs, and activities and gathered documentation of these (e.g., browser windows that displayed photographs and videos in online repositories, a list of projects exhibited in the makerspace, and camera roll folders on personal mobile phones). Second, participants browsed through the photographs, annotated memorable moments captured in still frames, and selected photographs that were most representative of their programs. Third, participants printed the selected photographs and annotations, spread them out on a large surface, and rearranged them in relation to the activity schedule (e.g., which photograph represents which activity, and how the activity related to the larger organization of the schedule). Fourth, participants decided on a structure for how the photographs and actual maker materials could be displayed, both online and in print, while considering consent and legal rights around openly sharing imagery.

Workshop Facilitation: We facilitated the workshop at the Millvale Community Library in Millvale, Pa., a close-knit community drop-in space that is seeking to design and build value-based maker-centered learning programs (Clapp, Ross, & Ryna, 2016). The workshop included participation by two educators and three youth. Most of the photographs that captured making at the library were stored in an online repository that was privately shared among the educators. We first opened all photographs on two laptops and asked participants to discuss and leave comments about the depicted engagement.

Youth comments on images were often expressed as comic observations or as ideas for humorous thought bubbles to integrate into the image. All photographs with comic annotations were printed, scattered on a long table, and rearranged with the aim to design a layout for a shared website that would map enrichment opportunities (see Figure 1). Spread across the table, the photos provided a visual representation of patterns across programs and invited thematic categorization and sorting.

Educators arranged the photographs in relation to the hand-written makerspace schedule. The educators sorted into three categories by color-coding the photographs; themes that corresponded to the schedule were blue, longer-term projects were pink, and shorter projects were yellow. The arrangement along a timeline also sparked recognition of youth participation patterns. Further, seeing how activities corresponded with the number of photographs invited conversations about factors that fostered or hindered documentation, as well as discussion around memorability of activities. Lastly, the participants created a final public collage piece, integrating the selected photographs along with actual scraps of maker project materials, including those which were depicted in the images.

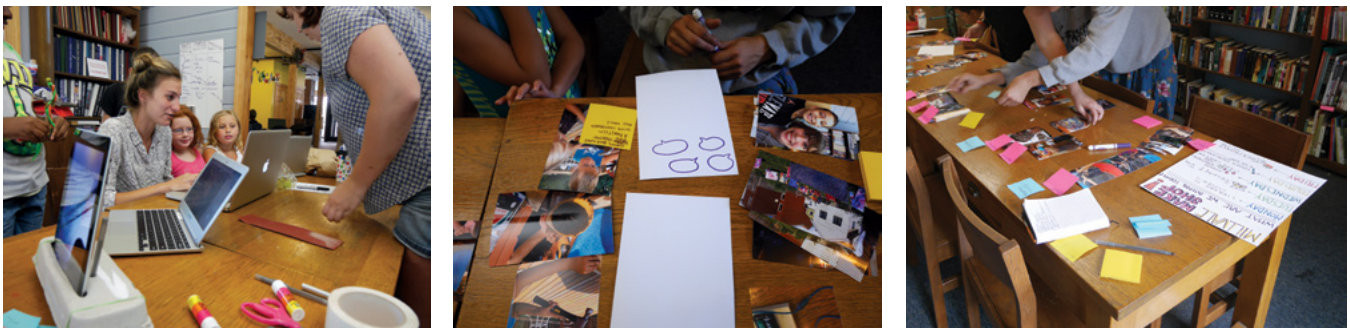

Figure 1 (left to right): Students commenting on a digital photograph, a student picking up photographs and joking, and educators sorting the photographs into categories.

Design Implications: The workshop surfaced four aspects to consider for future planning: (a) showing programs on a timeline to see the density of offered activities and participation patterns; (b) presenting the depth of documentation per activity for strategizing about how to increase capturing and sharing across activities; (c) organizing, labeling, and categorizing making through keywords and groups that can then be represented and explored through visual representations in physical and digital spaces (e.g., tree structures, circular representations, density graphs); and (d) quick ways of reviewing, editing, and blurring children's faces to honor privacy across individuals and age groups.

The periodic insertion of humor created an atmosphere of enjoyment around portfolio creation that we consider important to sustain. It led to the idea of integrating speech bubbles and text annotations on top of images, where the placement, size, and font could be important ways for conveying the shared memories and collective meaning of an activity. Repurposing scrapbooking features (e.g., Shutterfly) or collage-making (e.g., PicCollage) for curating and annotating narratives of shared experiences could be a starting point. Some of these services offer the printing of personalized books that could be exhibited in a makerspace and become sources of inspiration and reference works for program development. In the process of creating books and collages, the selection and placement of photographs, as well as the addition of quotes and subtitles, were important for curating a narrative that can be told to and retold by the makerspace community.

WORKSHOP 2: CONTINUOUSLY CAPTURING THE PROCESS

Design Challenge: When implementing new portfolio practices, educators are often tempted to streamline the process by introducing one standard practice for all youth to follow. While this can be an efficient way of integrating portfolio creation and assessment, it also makes it challenging to accommodate individual needs when capturing unconventional projects. An "efficient" portfolio practice may also over- or under-represent parts of maker practices, such as focusing on turning points, characteristic improvements of a project, or failure. The authentic documentation of an entire process – and the personal learning that springs from reflecting on such a process – is critical; often though, it is less of a priority than the final product of a project, and it results in a large amount of data to process and curate.

Design Response: In order to identify avenues for youth to adapt their documentation to personal interests and to facilitate the authentic documentation of a full process, we designed a workshop in three parts. First, participants engaged in a short maker activity (e.g., integrating a circuit into an origami project) and captured time-lapse videos of their entire process using a do-it-yourself (DIY) documentation station where two modified egg cartons prop up a total of four iPads (see Figure 2 with three iPads). A time-lapse recording reduced a 30-minute maker process to a video clip of about a minute.

This documentation station is an iteration of a prior version of a DIY tool that utilized one egg carton to prop up one iPad (see "Research Brief 3: DIY Documentation Tools for Makers"). The iteration was initiated when we observed that many maker activities include collaborative and cooperative practices even in individual projects (e.g., getting up to show a project in process or leaning over to comment on a peer's work). To capture maker processes more fully requires the design of a documentation station that can capture both individual work and shared engagement. The new DIY documentation station can be set up at the center of the table and can record through four cameras. This supports documentation from a range of angles and camera views, while utilizing tools and materials makerspaces have easily access to.

Second, after the making activity, participants viewed their time-lapse recordings, took screenshots of important moments of the process, and composed animated GIFs of these screenshots that included text and graphic image layovers. This part of the workshop lasted 20 minutes. Third, participants reflected on their experience of recording time-lapses and creating GIFs by sharing their experience and contrasting it with the capturing and sharing practices they engaged with prior to the workshop.

Workshop Facilitation: We facilitated the workshop with five youth at the Digital Harbor Foundation, one of the makerspaces presented in the Research Brief 12 series. We asked youth to engage in the three-part design process by first, capturing time-lapses of an origami paper circuit activity with the iPad camera app; second, viewing and sharing time-lapses, capturing highlights, and creating GIFs; and third, sharing their experiences by comparing and contrasting capturing tools and how they might want to use them in the future. Figure 3 shows photographs taken during the design process as well as screenshots of one of the participants' animated GIFs.

Figure 2: Egg carton documentation station with three iPads.

Figure 3: Youth capturing and viewing time-lapses and creating GIFs (top), plus screenshots of an animated GIF (bottom).

What stood out most during their reflection was the way in which the workshop facilitated a comparative analysis of open portfolios tools and practices. Youth compared the two approaches to documentation: recording time-lapses or pausing to document the process of making, where one must remember to take photographs as projects progress. During the process of making, the moments that youth would have wanted to capture were the ones in which they were most engaged and in the flow. As we have often heard, documentation interrupts this engagement.

In contrast, by integrating documentation into the process of making, the time-lapse video captured the processes that youth engaged in, as well as eliminated the need to remember to pause to take pictures. Comparing the time-lapse recording to GIF creation, youth preferred to share the whole or parts of the time-lapse rather than an animated GIF that shortened the process representation. Creating a GIF required time and involved selecting which parts of the process to represent. At times, the GIF-making tool didn't save, and youth lost their work. The GIF representation also sped up the maker process in a way that eliminated transitions. GIFs also lost important aspects of process that couldn't be captured with one single frame, and they additionally required a time-consuming editing process, separate from making.

In conversation, youth brainstormed ideas for an easier-to-use time-lapse editing tool, especially one that would speed up and slow down their recordings through gesture-based interactions, rather than cropping and deleting parts of the recorded process. Furthermore, through the exploration of the tools (i.e., GIF-making app and time-lapse recording app), youth were able to better gain a deep contextual understanding of the functionality of the tools in relation to their usefulness for capturing and sharing. Getting to know the tools and the kind of media artifacts those tools can produce identified such trade-offs and built a basis for youth to make more informed decisions about which tools to use in the future and why.

Lastly, the design workshop allowed youth to reflect on the challenges in documenting making and consider the affordances of tools. They recalled the difficulty in writing reflections and portfolio entries from memory; in contrast, having visual documentation like time-lapse videos – and so seamlessly integrated into the process helped to "jog their memory" and assist in reflecting on how projects were developed.

Key to this workshop is recognizing the embedded functionality of tools and their typical and atypical uses. Exploring how tools can be leveraged to improve the capturing and sharing of youth work can help to broaden and increase portfolio creation. For example, makerspaces can build on the recommendation of the youth, take their voices into consideration when continuing to develop portfolios practices, and spur the design of portfolio tools that are uniquely suited for capturing maker processes and promoting reflective discovery.

Design Implications: The workshop was a starting point for facilitating creative exploration of both site-wide and personalized documentation. Extending this workshop into an educational curricular unit might encourage youth to consider capturing and sharing as a personal choice and artistic expression. The workshop also pointed to a need for further iterations on the design of tool that could support simplified post-production processes, like editing videos. One example of this is the further development of a time-lapse recording app that includes features of speeding up and slowing down recordings, editing, generating GIFs of parts of a video, and augmenting video with audio narrations, text, and graphic elements through a simplified user interface that emphasizes rapid production processes. Lastly, the workshop supported the supposition that automated documentation stations, like the egg carton hack, are vital for authentic documentation possibilities that shows individual and collective engagement.

WORKSHOP 3: CROSS-SITE VIEWING OF PORTFOLIOS

Design Challenge: Traditional portfolio assessment is frequently aimed toward capturing individual learning in order to connect personal achievements to concrete learning experiences. Within maker education, a strong focus on community expands upon this assumption, and portfolio practices and tools increasingly need to adapt to represent individuals and their shifting roles (e.g., novices who become 3D printing experts) within maker-centered learning communities. However, it can be challenging to identify small yet effective changes that illustrate these shifts.

Design Response: We designed an intervention that allowed participants to explore other youth portfolios and consider the roles and identities of the individual, as represented in his/her portfolio. In the workshop, participants from one site view the youth portfolios of another site and reflect on them in relation to their own documentation practices. One of these portfolios was created by a student from a school-based makerspace who had been sharing video production projects on YouTube since he was 13 years old, including

custom logo animations, music videos recorded with friends for digital media courses, and tutorials for special video effects. Some of the tutorials were speed-art recordings, time-lapsed screencasts of design processes, that showed connections with other youth who are part of a YouTube collaborative around digital video production. Many of the videos received encouraging comments and had over 9,000 views. The student then pulled together a selection of their best videos on a personal website.

Workshop Facilitation: We facilitated the workshop with four educators and five youth at the Digital Harbor Foundation. First, we provided a guided portfolio walkthrough of an example portfolio. Second, we led a conversation that asked participants to reflect on the portfolio's features and how they might translate to their own portfolio approaches. Participants highlighted the number of views, comments, and endorsements the example portfolio received. This led them to consider how community outreach and social media strategies for garnering views could be integrated as part of a unit that introduces portfolios to youth.

Similarly, participants highlighted the fact that an educator had shared some of the example portfolio's projects with their own online social network. This could help to accentuate projects exhibited at the makerspace and the youth who create them. An example of an existing practice at the Digital Harbor Foundation that bears similarities to this is the blog series "Girls in Making," in which educators share spotlight stories about female makers at the makerspace, including their projects and interests. In addition, participants discussed another way to increase community engagement, by including a "Hire from Digital Harbor Foundation" button on their main page. This button could link to the portfolios of youth who are seeking employment opportunities.

Design Implications: Reviewing portfolios of those from outside the makerspace can serve as inspiration for further developing existing portfolio practices. Seeing features of a website or a storytelling technique sparks new ideas and opportunities for how to improve their own capturing and sharing experiences. It is especially important to note how portfolios can situate youth as contributing members inside and outside of a makerspace.

Additionally, the kind of portfolio that was shared and viewed between sites mattered. Portfolios from dissimilar sites and spaces, where programs and offerings are not common to one another, can seem irrelevant and even intimidating without appropriate contextual details.

The workshop also pointed out the practices embedded within makerspaces and within portfolio tools. In some maker-centered learning environments, adults regularly shared youth projects and promoted youth via their own personal networks, and makerspaces often highlighted youth on the official website. Together, this suggests that there's a need to more carefully consider how portfolios are highlighted, shared, and promoted.

Conclusion

Creative approaches to developing improved practices around documentation and sharing are crucial to overall portfolio implementation and assessment within maker-centered learning environments. Together, the design workshops described here represent interventions for maker educators and youth to learn more about and to become more explicitly aware of how their work can be represented in relation to tools, media products, and documentation practices. Where the workshops cannot entirely resolve tensions for implementing portfolio practices within maker education, they provide avenues to address, progress, and improve documentation over time.

The picture-sorting design workshop facilitated the visualization of shared experiences of youth and educators in a makerspace by illustrating patterns across activities and youth engagement. The time-lapse and GIF-making workshop helped youth to actively consider documentation as a seamless and creative process alongside making, highlighting the need for rapid video-editing tools and improvements to prior documentation station models. Sharing the portfolios of other makerspaces helped staff and youth to recognize features that could be integrated into their own portfolio practices, highlighting the value of adults sharing youth work and fostering youth development.

There are many more interventions that could foster awareness of open portfolio practices. For example, many portfolios privilege individual representations of work over collaborative learning. To better understand how collaborative portfolios could be representative of rich learning in ways that other kinds of portfolios cannot, facilitators can ask youth and educators to engage in a shared project that is collaboratively documented. What would that documentation look like? Could it be integrated into existing platforms and how? How could this process be replicated at other sites? These types of workshops might inform the future design of new portfolio tools that can better facilitate the creation of portfolios in makerspaces.

Reference

Clapp, E. P., Ross, J., Ryan, J. O., & Tishman, S. (2016). Maker-centered learning: Empowering young people to shape their worlds. John Wiley & Sons.

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