The Role of Asynchronous Digital Feedback in Youth Maker Projects

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Abstract: The aim of this work is to make engagement with ideation, iteration, and critique more accessible to learners and to understand the value of these art-making practices for learning (Clapp et al., 2016). While these terms may be unique to arts disciplines, giving and getting feedback are core tasks across almost any discipline. Here we are referring to formative feedback, dialogic interactions either among that focus on the whole process of creation (Bangert, 2004). In this paper, we share results from a design experiment that included the introduction of asynchronous, digital feedback into a making process. This making process, a six-week project with a group of fifth graders is described in other work (Litts & Halverson, in press). Here, we ask the following research questions: What is the role of asynchronous, digital feedback in young people's maker projects? Specifically, what kind of feedback is offered and how does this feedback influence subsequent project iterations?

Build in Progress: The goldilocks model of e-leaning platforms

We partnered with three different platform designers over the course of a two-year period to find a tool that was both non-disruptive to the making process and amenable to a range of makerspace contexts. We termed our selection process the "Goldilocks" model: the first tool afforded deep engagement between makers around iteration and critique but was far too constrained to support the learning arrangements. The second tool was very easy to use and could be dropped in to a range of settings but did not offer enough scaffolding to encourage younger makers to engage in productive critique and iteration. The third tool, Build in Progress, an online, open-source project sharing and development tool which includes over 2,000 shared projects became the platform of choice for a range of design experiments. Build in Progress was "just right"; it proved easy to use, scaffolded to encourage iteration and critique, and seemed to not disrupt the making process.

Our work with Build in Progress involved a six-week design experiment; a maker experience that stretched across school and museum spaces. Three sessions were in the students' classroom and the other three were in the makerspace of the nearby children's museum. All sessions were facilitated by the museum's lead teaching artist, assisted by museum staff and researchers. At the end of the project, 11 teams of two and three presented two-minute puppet shows that were recorded and shared at the museum space for younger students. Build in Progress was used to document weekly progress, get feedback from researchers on the work, and to share ideas with one another. Each week, students documented their work by taking photos and writing reflections in Build in Progress where they could get feedback from their peers and from adult maker mentors, who were researchers working on the project with expertise in making. Our data analysis focused on the information entered in the Build in Progress application by the student participants and their maker mentors.

How mentors give feedback

At the beginning of the project the maker mentors were given specific guidelines for how to give students feedback based on the Harvard based Project Zero "Visible Thinking" core thinking routine of "I see… I think…I wonder". We placed mentor feedback into one of three categories: actionable feedback, compliments, and general questions. Actionable feedback was designated as specific actions that students could incorporate into their puppet. For example, one maker mentor suggested, "Have you thought about adding more fabric to conceal the battery pack?" Another type of feedback was general questions. These were less specific such as a mentor who asked, "I wonder what type of personality your puppet has?" While these general questions offered things for students to consider they did not offer a specific course of action to take next. Finally, mentors may have offered compliments to students such as "great idea" or "I am so impressed…".

How learners engage with the feedback

After considering how mentors offer feedback and separating it into three distinct categories, we then analyzed how students engaged with the mentor feedback through the Build in Progress app. Students primarily responded to the actionable feedback (Figure 1) and general questions (Figure 2) within a common framework.

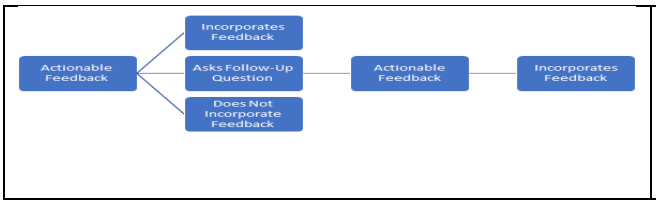

Figure 1. Student engagement paths with asynchronous digital actionable feedback.

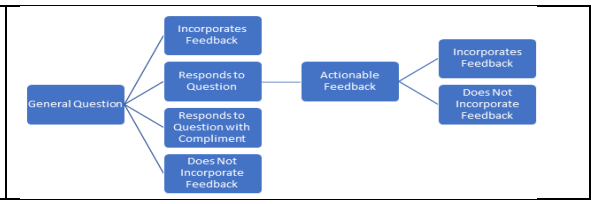

Figure 2. Student engagement paths with asynchronous digital general questions feedback.

Table 1: Student overall engagement with the asynchronous digital feedback while working individually

	Actionable Feedback	General Question	Compliments
Total Given	25	23	2
Total Incorporated	13	5	N/A

Table 2: Student engagement with the asynchronous digital feedback while working collaboratively

	Actionable Feedback	General Questions	Compliments
Total Given	5	1	5
Total Incorporated	4	1	N/A

Discussion

Our data indicate that when students are given actionable, specific feedback they tend to incorporate it into their projects. Interestingly, the critique and iteration cycle is not as linear as we might typically see in a formal classroom setting; students' incorporation of feedback often happened weeks after the feedback was first offered. Additionally, students seem to incorporate feedback at a higher rate when they work collaboratively. Students who did not incorporate feedback while working individually were more likely to incorporate it when working in a group, indicating that there is something about working with others that promotes engaging with feedback. We also find that the student engagement paths mirror the features of peer feedback and the indicators of whether this feedback was taken up as described in Nelson & Schunn (2009). What we termed "actionable feedback" shared many of their cognitive features, notably feedback specificity. Feedback seems to be most useful when it refers to a particular design feature or artistic decision. General questions seemed less useful, especially when those general questions did not ask students to reflect on how an audience or user might interact with their design. "Compliments" looked a lot like the affective feedback Nelson and Schunn described. And while it may be true that the students in our study agreed with these compliments, their presence did not encourage students to make changes to their work.

References

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