Multimodal Reflection: Adolescents Remixing and Sharing Their Experiences in an Informal STEM+L Academy

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Abstract: This study reports how 31 adolescents enrolled in an informal academy focused on STEM and digital literacies reflected on their experiences by creating short multimodal videos. Initial findings reveal how students remixed a variety of modes—including photographs, videos, text, animation, and music—to reflect on their learning, collaborations, and digital projects. Students simultaneously composed for multiple audiences through their multimodal reflections, while learning more about themselves and new technical skills.

Keywords: reflection, multimodality, digital literacies, adolescents, STEAM learning

Introduction

Reflection is the process of returning to experience, connecting with thoughts and feelings during that experience, and reexamining it through a new perspective (Boud, Keogh, & Walker, 1985). The importance of reflection as a conduit for learning and personal growth has been emphasized for some time in educational research (Dewey, 1933). However, much of this work has occurred in English Language Arts settings with students writing reflections after they submit an essay (Yancey, 1998). To date, little research has examined how youth reflect on their processes when creating multimodal projects (however, see Smith & Dalton, 2016). This study contributes to this underdeveloped area by exploring how culturally and linguistically diverse adolescents reflected on their experiences in an informal STEM+L academy by creating multimodal video reflections.

Theoretical framework

We draw from social semiotics theory (Kress, 2010), which is based on the assumption that various modes (e.g., visuals, text, sound, movement) are integral in meaning making. The unique interweaving of different modes communicates messages that no single mode can express independently (Jewitt, 2009). In addition, composers leverage the modal affordances of specific modes when creating their messages (Kress, 2010).

We also employ a sociocultural view of multimodal composition which forefronts the dialogic relationship between composers and their composing tools (Wertsch, 1998). Just as modes offer communicative affordances (Kress, 2010), tools similarly offer unique possibilities for constructing meaning and reflection. Composers not only communicate through their orchestration of modes but simultaneously also form identities—representing personal goals, interests, and self-presentation techniques (Rowsell & Pahl, 2007).

Finally, remix is a core practice when students reflect through multiple modes. When remixing, composers manipulate and recombine modes and media to create new meaning (Knobel & Lankshear, 2008).

Methods

The study was conducted in the context of a STEM+L ("L" stands for digital literacies) academy for adolescents (ages 10-13) to develop knowledge, interests, and identities related to STEM practices and digital literacies. Participating students worked in small groups to produce a multimodal science fiction as their final project. The academy consisted of three components: a five-day summer camp, fall extension (once every month), and final presentation. A total of 42 students completed the summer camp (26 male, 16 female; 19 Latino/Hispanic, 14 Black, 5 Other, 4 White), and a total of 33 students returned on the first session for the fall extension.

During the first fall session, students were taught how to use Windows Moviemaker to produce videos and then asked to individually create a 1-minute video that reflected upon their experience in the summer academy. Students had freedom in the content and format of their videos and were offered a variety of prompts, including how they collaborated, favorite and challenging aspects of the academy, and main "take-aways." Students were provided a variety of multimedia data from the study, including photographs and videos of

student presentations, guest speakers, group work, and their final products. Students also had the latitude to include their own visuals, text, or music. The entire task, including a tutorial, took ~90 minutes.

Initial data analysis involved recursively coding students' video reflections and their perspectives gathered through online surveys to generate emergent categories for how students reflected through multiple modes. Future analysis will also involve creating multimodal transcripts for videos and incorporating video observations for focal students as they created their reflections.

Preliminary findings and implications

A total of 31 videos were produced (length ranging from 14-209 seconds). Students leveraged the affordances of multiple modes and digital tools to reflect upon their experiences in the academy in three distinct ways.

First, there were similarities in how students remixed different modes and media in their reflections. Students relied on visuals—photographs and embedded video clips—to "show" important elements of their collaborative process and interesting guest speakers. Text was often layered on top of visuals to provide details on their experience (Figure 1). Sergio explained, "Videos show what we did. Text and voice explain the video." Music was used to convey affective dimensions of students' experience (e.g., "optimistic music").

Figure 1. Examples of different ways students remixed media in their multimodal reflections.

Second, students' reflections were targeted for multiple audiences. A majority of students explained they had other viewers in mind when creating their video—including to "show people how we learn and what we do" and "how fun the academy was." Sean explained, "My goal was to create a video that would persuade viewers to come to [the STEM+L academy] and experience these moments themselves. I wanted to create something appealing and also interesting." In addition to reaching others, students also explained personal goals (e.g., "to please myself") and motivations to have "the best" video out of their peers.

Lastly, students' videos and perspectives revealed how they learned on multiple levels through creating their reflections. Along with sharing the collaboration skills and science content they acquired, students also explained how their experience of creating the videos helped them to acquire new technical skills. Additionally, some students shared personal benefits from the video reflection. Maya revealed how she "learned that sharing experiences can help you connect with other people" and Fabian explained, "I learned that I like science."

We believe our study will shed light on the value of asking students to reflect upon and share their experiences through multiple modes in digital spaces.

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