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3. IMPROVISATION WITH/IN SCIENCE

Expanding Worlds and Lives

In this chapter I share stories of working with youth in an after school Technology Club to create movies about science in their lives. I use these stories to argue that an important aspect of empowering science education is valuing the role of student agency as both an outcome of the learning process and as a generative contributor to the on-going re-design or transformation of the learning community and of the self. This work draws specifically upon Dorothy Holland’s framing of agency, which defines agency as being when and how individuals or groups act upon, modify, and/or give significance to their worlds in purposeful ways, with the aim of creating, impacting and/or transforming themselves and/or the conditions of their lives (Holland et al., 1998). Embedded within this view is the idea that agency is built upon a critical awareness of one’s world and, in the case of agency in science education, a deep understanding of science and a desire to make a change in one’s life as a science learner (see Basu’s work on critical science agency, chapter 3).

DEFINING AGENCY IN THE VIDEO PROJECT

There is more to learning science than learning content. Science learning, particularly in any transformative form, is a combination of learning content, developing skills to think critically about science content, and being able to activate one’s critical awareness of science and her or his environment in order to intentionally effect change. The enactment of agency is done in an effort to create positive change in one’s “figured world”. This change must occur at both the individual and social level, as a person’s “figured world” is constructed by the combination of what the individual believes to be her or his reality and how others acknowledge and respond to that reality.

Agency is tightly linked to identity through a dialectical relationship (Holland et al., 1998). Identity refers to ways in which one participates in the world and the ways in which “others interpret that participation” (Brickhouse & Potter, 2001, p. 966). Holland’s vision supports this notion of identity existing on both personal and social levels, arguing that “identity is a concept that figuratively combines the intimate or personal world with the collective space of cultural forms and social relations” (Holland et al., 1998, p. 5), such that a individual holds multiple identities at the same time. In its most simplified form, a person’s identities exist simultaneously within two spaces. First, there is the individual’s perception of self. This would be
the space that Brickhouse (1994) and Holland et al. (1998) refer to as the “personal world”. The second space is the social world. This is the identity formed by the individual’s awareness of other’s perceptions of themselves (Brickhouse and Potter, 2001).

Holland et al. (1998) argue that there are two forms of the agency – identity dialectic: Symbolization and Improvisation. Symbolization is when an individual relies on the objectified identity or objectified figured world (as represented through symbols) to direct self and others actions. Improvisation refers to the process when an individual is in a contested or ambiguous space and the individual uses her or his resources creatively to change the norms or routines of the figured world.

Improvisation is a particularly powerful and transformative form of the agency – identity dialectic because rather than using the norms (i.e. objectified identity or objectified figured worlds) to direct one’s actions, the individual takes action to change the norms. As Heble (2005) describes, “improvisation can encourage us to take new risks in our relationships with others, to work together across various divides, traditions, styles, and sites to foster new models of trust and social obligation, and to hear (and to see) the world anew. It can facilitate new kinds of global and intercultural conversations, and it can serve as a powerful marker of history, memory, identity, difference, and community” (n.p.).

The student participants of the Technology Club’s video project drew upon improvisation to alter their figured worlds within the video project and their everyday lives. In the context of the space of the Technology Club, where the requirements of the project were ambiguous and under negotiation, the students’ agency was in their ability to use the resources available to them to change the direction of the project in effort to gain access to new resources and ultimately altering their figured worlds. This stands in stark contrast to their classrooms where ways of knowing and being were highly regimented and students had little influence over what was taught, when or how. While this project takes place in the informal spaces of schooling, the implications can inform formal classroom practice.

THE STORY OF THE VIDEO PROJECT

The video project took place at Broken Hill Middle School (BHMS), a student generated pseudonym based on the name of a familiar street in the neighborhood. BHMS was a “School Under Registration Review” (SIRR) in a low-income urban community in New York City (NYC). Of the approximately 1500 6th–8th graders who attended BHMS, 66% were Latino/a, 32% were African American, 1% were Asian/Pacific Islander, 0.8% were white, and 0.6% were American Indian (www.nycenet.edu). In the 2002–2003 school year, 90.4% of the BHMS student population was eligible for free lunch and had a 90.9% attendance rate. The school structured its classes around a tracking system consisting of “honors”, “moderate”, and “lower level” classes.

From 2001 to 2004, I worked with two groups of sixth and seventh grade students to design and produce three mini-documentaries that expressed their ideas about science in their lives: “What We Bring to Science”, “Survival: What Animals and