Connected Learning Principles in Practice

Principles: How are educators using connected learning principles in research and practice?

Discussant: Vera Michalchik

Turning our Connected Learning Gaze on a Single Learner: To What Ends?
Jayne C. Lammers, University of Rochester

Much of the research examining connected learning (Ito et al., 2013) in action explores questions related to design and implementation within learning environments, such as classrooms (e.g., Niemeyer & Gerber, 2015), fan communities (e.g., Martin, 2014), and afterschool programs (e.g., Davis & Fullerton, 2016). While this work has led to important insights, such as those that aim to inform how teachers can design for connected learning opportunities in schools (see Garcia et al., 2014), less is known about how particular learners experience and seek out connectedness as they traverse multiple social contexts over time. Following the recommendations of Kumpulainen and Sefton-Green (2014) for connected learning research that employs methodologies to capture learners’ processes of making connections over time and across spaces, I conducted a longitudinal case study of an adolescent writer throughout her high school career, and beyond. This instrumental case study (Stake, 1995) employed connective ethnographic methods (Leander & McKim, 2003), including interviews, artifact collection, and systematic observation of online writing practices, to examine one young woman’s (Laura) writing in high school English classrooms, online (posted on Fanfiction.net and her personal website), and to support her work as an actress and director in theatre productions. A process of analytic induction (Erickson, 1986), involving multiple readings of the entire data corpus, has generated assertions not only about the connected nature of this adolescent’s writing practices, but also about the tensions that emerged as Laura sought to make connections across contexts. This presentation will highlight the following assertions: (1) Across various contexts, Laura plays with writing to push back against expectations she finds constraining; and (2) Laura values, though does not always receive, constructive feedback as a means of improving her writing. In discussing these assertions, this presentation seeks to explore questions about what the field gains (or not) by turning our attention to the connected learning of a single young person.

A School Garden that Connects Plants, Soil, and Beyond
Steven Zuiker, Arizona State University
Priyanka Parekh, Arizona State University

Cyberinfrastructure underlying an “internet-of-things” can support practical connections between schools, local neighborhoods, and professional disciplinary communities to enhance learning and teaching activities in science education. Our presentation will share design and research agenda of Connected Gardening, a project-based approach to gardening in schoolyards existing at the intersections of sixth-grade classrooms, school campuses, and their surrounding communities. Utilizing digital resources (digital sensors that “plug in” the physical resources) on the school campus and in surrounding communities, we create a cyber-physical infrastructure interconnecting student investigations unfolding in science class, school gardens, and local communities to study how soil sustains life.

Our research explores how an emerging technology-enhanced garden design organizes opportunities for students to pursue interests and exercise intellectual agency in an open-ended design and learning space while remaining accountable to real-world conditions that recruit and evolve scientific practices and resources. Such a learning environment positions participation as “a way of being in a social world, not a way of coming to know about it” (Hanks, 1991, p. 24). Our research also explores how framing what is in a garden (i.e., soil, plants, microbes) in relation to what a garden, itself, is in (i.e., neighborhood, habitat) expands its relevance to some of the broader relations that connect science learning to other places and people (e.g. home, ecosystem, watersheds). Qualitative analysis of social transactions among students and between students, and between students their teachers through the duration of an academic year.
considers how class-wide science was learning shapes and is shaped by planning, monitoring, and nurturing a garden plot. Findings illuminate some ways in which interactions between physical design components of the garden, the curriculum, and social interactions foster a project-based approach to garden-based learning. These interactions expand the driving question into emergent secondary questions that ultimately link and separate gardens and gardening with everyday sites related to soil, and practices in homes and the local community. In this way, our work seeks to systematically explore and explain how maintaining a class garden positions the Next Generation Science Standards as tools for practical applications of scientific ideas in everyday settings.

Tinkering with Toys and Tools
Priyanka Parekh, Arizona State University
Elisabeth Gee, Arizona State University

Tinkering with technologies such as microcontroller boards and circuit blocks, or with software such as programming tools or digital game design platforms, has become a popular way to support connections between young people’s interests, creative pursuits, and STEM learning. Such connections are critical for the kind of sustained engagement that results in meaningful and expansive STEM learning. However, acquiring and mastering these technologies requires financial resources and guidance from facilitators with technical expertise as well as STEM knowledge, both of which can be scarce. An alternative is to engage children in similar tinkering activities with more readily available, easy-to-use materials and technologies, scaffolded by facilitators who are well versed in STEM but who do not need expertise with specific tools.

In this presentation, we describe the process of connected learning through tinkering using broken toys, salvaged technological parts, and craft resources. Specifically, we share the journey of two children aged ten and twelve who, through a week long tinkering workshop using such tools and materials, built on their interests, aspirations, social interactions, and passion for tinkering to further their engagement in scientific inquiry. Our findings show that salvaged technologies, broken toys, and everyday materials can nurture deep science learning in children. While other tools and kits that are designed for tinkering can be coded and modified, salvaged technologies, for example, Printed Circuit Boards (PCBs) in a light-up wand, cannot be reconfigured but can be used in combination with other parts to add unique features to artifacts. The process of reusing such components and finding suitable new uses for them can lead to understanding how PCBs and circuits work and how LEDs can be used to create various effects. Such learning might lead to enhanced understanding of complex STEM content, inquiry, and problem-solving skills through continued engagement. Furthermore, elements of fun, aesthetics, and projects that best match each child appear to be critical for helping children to make connections across interest-driven and peer-supported scientific inquiry. Understanding science as practised by children in such informal settings will help us design better learning opportunities in the future.

Digitally-Mediated Black Activism on College Campuses: Contexts for Racial and Political Identity Development
Kihana Ross, The University of Texas, Austin
Sepehr Vakil, The University of Texas, Austin
Na’Ilah Nasir, The University of Texas, Austin

The current wave of Black undergraduate activism across the country has been hailed the largest, most sustained and serious reemergence of student activism since the infamous Civil Rights era. The protest practices of Black student activists are diverse and varied, including cultural practices carried over from generations past (e.g., sit-ins, walk-outs, rallies) as well as new cultural practices, such as digital and online forms of political participation. While prior research has illuminated the ways in which Black online activism has shifted the public and political discourse in powerful ways (Bonilla & Rosa, 2015; Williams, 2015), particularly since the #Blacklivesmatter movement (e.g., #blacktwitter), less scholarship has
examined the learning and identity processes that occur within technology-mediated cultural practices of Black activism, particularly for Black undergraduate students. Drawing from a larger ethnographic study of Black students’ political socialization within physical and digital spaces in two predominantly white institutions of higher education, in this paper we specifically examine how Black digital spaces function as learning environments that facilitate and/or constrain racial and political identity development for Black undergraduate students. We draw on critical race perspectives to situate the cultural practices of Black online activism within, and in response to, broader institutional and national contexts of anti-Black racism and the ascendancy of white nationalism (Dumas & Ross, 2016). We argue that these cultural practices, and more specifically the social interactions that occur within them, are critical sites of racial and political identity development for Black students (Gutierrez & Rogoff; 2003; Nasir & Kirshner, 2013). This paper has implications for rethinking sociocultural theories of identity to account for new forms of technology-mediated resistance to the racialization and marginalization Black students are experiencing across college campuses in recent years. Finally, our paper also has implications for reframing Black digital media protest practices, not merely as instruments for social change, but as important sites of learning and becoming for undergraduate Black students.