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.

Connected Learning in the Scratch Online Community: Modes of Participation

Carolina Rodeghiero, Catholic University of Pelotas

This research presentation aims to discuss which modes of participation in Scratch online community can be considered Connected Learning - CL (Ito et al., 2013). How are scratchers learning from their social interactions online? And what model of learning can we take from Scratch virtual community? To do so, the research uses Social Network Analysis (SNA) to collect and present data from online discussions on projects. The data was collected from 2015 and 2016 from 20 different discussion groups of Scratch. With SNA this study was able to show the Scratch online network, its growth during the period of data extraction, and specially the CL principles used by scratchers to interact to each other online.

As a result, the study comes up with the learning model of Scratch online community, creating a typology for modes of participation that happens in the discussion forums data. The learning model is divided into three main modes of participation: collaborative, democratic and academic-cognitive; and each one of them is based in two or three patterns, using as theoretical basis the Connected Learning principles.

This presentation is part of a full study that shows how to identify CL through SNA methodology, uses discussion forums as data to first understand modes of participation in Scratch, and suggests new modes of participation based-on the research analysis.

A School Garden that Connects Plants, Soil, and Beyond

Steven Zuiker, 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.

Priyanka Parekh, Arizona State University

Tinkering with Toys and Tools

Priyanka Parekh, 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.

Elisabeth Gee, Arizona State University