Digital Badges for STEM Education

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objectives

- **Identify** design principles to develop a digital badge system that recognizes informal STEM learning.
- **Document** the building of a digital badge ecosystem that connects learning contexts to formal education and workplaces.
- **Determine** whether and how digital badges support learners' STEM identities.
- **Determine** whether and how digital badges help learners connect their informal learning to formal education and workplaces.

School — ? — Outside School

Higher Education/Workplace
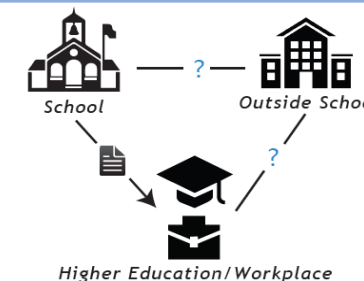
digital badges

Digital badges are **web-enabled icons containing metadata** associated with specific learning goals, practices, and outcomes. They represent an **alternative credentialing system** aimed at recognizing learning within particular settings, but also connecting learning across communities of practice.


Career Badges
For advancement at the Pacific Science Center

DCA   Discovery Corps DCI

where the badge shape determines the career level

Skill Badges
To display for potential employers and higher education

Badge shape represents the type of badge

Student Name: Nancy Drew
Badge Issued: Leadership
Date Issued: May 2nd, 2014
Issued By: Carolyn Keene, Supervisor
Related Jobs: Teen Science Cafe, Portal to the Public

Example Skill Badge

design sessions

methods:

We implemented **Participatory Design (PD)** with youth and adult members of the *Discovery Corps Program* at Seattle's *Pacific Science Center* to **design a digital badge system** that would reward students for their learning and give them a way to share their achievements with external audiences.

design team:
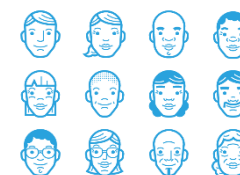
- *Discovery Corps* youth: 14-17 yrs.
- *Discovery Corps* supervisors
- UW researchers
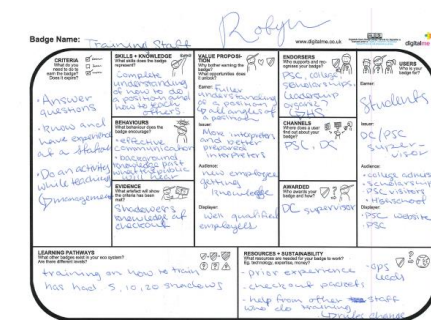- (Web developers)

student insights:

Learning Pathways

"The badge system can show you what you've accomplished, but it can also show you what you haven't done yet."

Connecting Contexts

"I never really thought about our job that much before, and what we learn [in the Discovery Corps]."

artifacts:

Above is a badge design canvas for a potential badge, completed by a student design-partner during a PD session. Badge name: *Training Staff*

project significance

This research informs our understanding of how the perspectives of students and adults can be leveraged for the design of a digital badge system.
By bringing these stakeholders' voices into the design process, we show how PD can be used to design science-based learning environments that align with the participants' values and goals.