

Week 7 - Learning for Use

Learning Objectives and Checklist

Learning objectives

- describe the three phases of Learning-for-Use
- analyze how storytelling and mapping can support inquiry
- identify how LfU could inform your final project

To-Do

- ☐ Review the Week 7 material below
- ☐ Reflect on LfU
- ☐ Participate in discussion, including response

Inquiry Design

Teaching through inquiry can feel overwhelming and, at times, messy. It is a dynamic process shaped by ongoing interactions between the teacher and students, among peers, and within the constraints of the learning environment itself. Designing effective inquiry experiences requires a strong pedagogical foundation that gives educators the confidence to navigate unexpected directions, ask meaningful questions, and assess both the learning process and its outcomes. Inquiry design, therefore, should be grounded in theory that reflects how students learn. One such framework is Learning-for-Use (LfU).

Learning-for-Use

LfU builds on established learning theories to support educators in designing experiences that promote meaningful, usable understanding. It characterizes learning as a process of (a) motivation, (b) knowledge construction, and (c) knowledge refinement. In Edelson's (2001) Create-a-World project, students did not begin with formal instruction on climate systems. Instead, they engaged in a design challenge that required them to investigate patterns and relationships, creating a need for knowledge that was then constructed and applied.

Similarly, storytelling can serve as a structure for inquiry. A well-designed narrative introduces a problem, invites investigation, and leads learners toward application and decision-making. Digital tools can support this process by structuring how information is revealed and explored. In this case, [ArcGIS StoryMaps](https://storymaps.arcgis.com/)  (<https://storymaps.arcgis.com/>) is used to organize the experience as a sequence of visual and spatial interactions that support inquiry. The following experience was designed with this in mind, using a short narrative from my own classroom to illustrate how Learning-for-Use can unfold in practice.

Where Does Our Water Go?

Where does our water go?

How cleaning our paint brushes led
to an inquiry about water systems.

Andrew Morris

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More StoryMapping

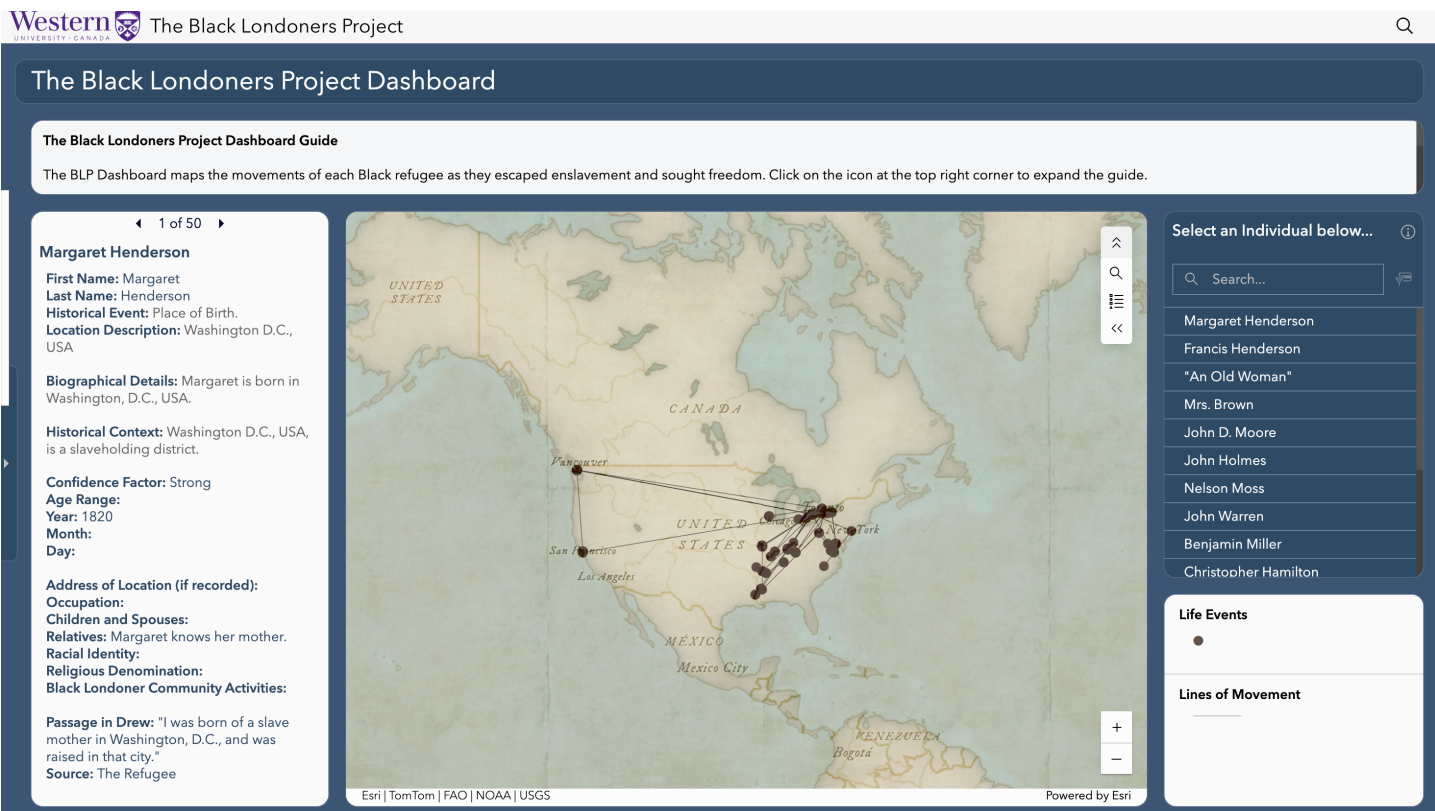
In a project shared by Tony Cushman, students used digital mapping tools to extend their fieldwork beyond simple observation. Rather than being told what to look for, they collected their own data and added it to a shared map of their local area. As their data was collected, patterns began to emerge. Students compared what they were seeing, asked new questions, and revisited their thinking as new information was added. The [StoryMap](http://%22What%20do%20Rolph%20Road%20Students%20do%20at%20Recess?%22)  (<http://%22What%20do%20Rolph%20Road%20Students%20do%20at%20Recess?%22>) became a way to organize their ideas and make sense of what they were noticing over time.

FIELD WORK- How a Grade 3 Class used GIS to Investigate ...



Black Londoner's Project

The [Black Londoners Digital Mapping Archive](https://news.westernu.ca/2023/02/formerly-enslaved-black-londoners-digital-archive/)  (<https://news.westernu.ca/2023/02/formerly-enslaved-black-londoners-digital-archive/>) uses [StoryMaps](https://black-londoners-westernu.hub.arcgis.com/)  (<https://black-londoners-westernu.hub.arcgis.com/>) to document the lives and movements of formerly enslaved Black individuals in Ontario. By combining geographic data with historical records, the project reveals patterns, relationships, and experiences that challenge simplified historical narratives. In this example, the map is not simply presenting information but structures an inquiry into history, identity, and place. Learners are positioned to explore, question, and make connections across multiple sources, supporting the construction of understanding over time.



Screenshot from *The Black Londoners digital mapping project*, by M. Green-Bartleet and A. MacLean, 2025, Western University (<https://black-londoners-westernu.hub.arcgis.com/>).

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Making Sense Using LfU

Think about the StoryMaps shared. Use the chart adapted from Edelson (2001), to reflect on the following:

1. Where do you see motivation, knowledge construction, and refinement in the story?
2. How did the structure of the StoryMap (e.g., sequencing, visuals, maps) support inquiry in this experience?
3. What role does the educator play in shaping how learning unfolds in these examples? Where do you see intentional design decisions influencing student thinking?

LfU Phase	Learner Experience	Design Considerations
Motivation	Learners encounter a problem or situation that creates a need to know more.	Design tasks that require knowledge to solve a meaningful problem, and surface gaps in understanding to spark curiosity.
	Learners become curious when they recognize limits in what	Introduce scenarios that challenge assumptions or reveal incomplete thinking.

	they currently understand.	
Construction	Learners observe patterns, relationships, or phenomena.	Provide opportunities for direct interaction with data, environments, or representations that support noticing and sense-making.
	Learners build understanding through interaction with others or resources.	Include opportunities for discussion, feedback, or exposure to new ideas that help refine emerging understanding.
Refinement	Learners apply their understanding to new or meaningful situations.	Design tasks that require learners to use knowledge in context, reinforcing and reorganizing their thinking.
	Learners reflect on their learning and how their understanding has changed.	Include opportunities for reflection that help learners consolidate and reorganize their knowledge.

Suggested Readings:

Edelson, D. C. (2001). Learning-for-use: A framework for the design of technology-supported inquiry activities. *Journal of Research in Science Teaching*, 38(3), 355–385. [https://doi.org/10.1002/1098-2736\(200103\)38:3%3C355::aid-tea1010%3E3.0.co;2-m](https://doi.org/10.1002/1098-2736(200103)38:3%3C355::aid-tea1010%3E3.0.co;2-m)

Resources:

Edelson, D. C. (2001). Learning-for-use: A framework for the design of technology-supported inquiry activities. *Journal of Research in Science Teaching*, 38(3), 355–385. [https://doi.org/10.1002/1098-2736\(200103\)38:3%3C355::aid-tea1010%3E3.0.co;2-m](https://doi.org/10.1002/1098-2736(200103)38:3%3C355::aid-tea1010%3E3.0.co;2-m)

Green-Barteet, M., & MacLean, A. (2025). *The Black Londoners digital mapping project*. Western University. <https://black-londoners-westernu.hub.arcgis.com/>