

Appendix 1: QSort Statements

Statements
The online learning community provided a structure to encourage the sharing of responsibilities and decision-making.
The online learning community connected individuals who have similar interests, but did not use the same resources for work (the same language, tools, experiences, definitions).
The different perspectives of online learning community members assisted in developing individuals' roles on the online learning community.
The online learning community encouraged members to value the variety of expertise present in the community.
The different perspectives of online learning community members aided in developing relationships with others in the community.
The online learning community encouraged members with historic and cultural knowledge relevant to the project to share that knowledge with others.
The online learning community brought together the diverse stakeholders needed to achieve the project's goals.
The online learning community's overall shared purpose motivated members of the community.
Online learning community members had a commitment to the same overall goals.
The online learning community had a mechanism that provided the opportunity to critique and help shape new ideas that emerge from the members of the community.
Online learning community members had a commitment to building knowledge that could be used by the whole community.
The online learning community attracted new members by showing the relevance of the project to potential member's lives and interests.
The online learning community provided a starting point for conversation.
The online learning community encouraged any community member (no matter his/her age, expertise, or perspective) to propose new questions or investigations on the site.
The online learning community provided the opportunity for members from multiple perspectives to respond to and build on the ideas of others to advance a project.
The online learning community's overall shared purpose united members of the community.
Online learning community members felt like they were working toward the common goal of building new knowledge together.
Members joined the online learning community because they wanted to build knowledge related to the shared goals of the project.
A shared purpose was important in fostering collaboration on the online learning community amongst its various stakeholders.
Online learning community members had the ability to move from new-comer to experienced members as they enhanced their skills and relationships on the site.
The online learning community provided members with the freedom to express opinions and offer suggestions without fear of how the other members would judge it.
The online learning community provided all members with a way to track and understand how and why a project changed over time.
The online learning community provided the opportunity to develop investigations that represented evolving ideas in the community.
The OLC provided a starting point for discussion with stakeholder groups that otherwise not connect to share ideas.
The online learning community provided the opportunity for community members to develop roles on the site.

The online learning community brought together people with different levels of expertise and/or experience.
All members of the online learning community had the potential to influence the direction and focus of projects.
The online learning community provided a place to put resources that were used by the community.
The online learning community had a structure for notifying members of where information came from and how it had been used in the past.
The online learning community provided the opportunity for members to propose emerging project/investigation ideas that were relevant to their interests.
The online learning community encouraged community members to apply information on the site to their own situations and questions.
The online learning community highlighted and made clear the different groups / stakeholder perspectives involved in the project.
The online learning community provided the opportunity for community members to share the relevance of the projects to their lives.
The online learning community's overall shared purpose helped the project feel significant.
The online learning community provided members with the opportunity to share their knowledge of where they live and what they have experienced in their life.
Projects on the online learning community solved authentic, real-world problems.
Each member of the online learning community brought knowledge to the community based on where they live and what they have experienced in their life.
The online learning community provided the opportunity to connect with members who had the expertise needed for an investigation.
The online learning community brought people together from different locations.
The online learning community provided the opportunity for community members to develop relationships with other members on the site.
The goals of the online learning community are defined and refined by members.
The online learning community connected individuals who use similar resources for work (same language, tools, experiences, definitions).
The online learning community provided members with various ways to connect with any member of the community.
The online learning community helped community members connect to and work with members who had submitted information in the past.
Starting with a shared purpose was important in generating trust amongst the various stakeholders.
The online learning community helped foster relationships and built trust among community members.
The online learning community provided the opportunity for community members to share information with one another.
The different types of expertise present on the online learning community were a factor in making members feel like they were working toward the common goal of building knowledge together.
The online learning community provided access to the tools and practices needed to solve authentic, real-world problems.

Appendix 2: Interview Protocol

Sample Interview Protocol Part 1

Hello, my name is [insert name] and I am calling to ask a few questions about your experience in the Vital Signs citizen science project. It should take about an hour or less. The Vital Signs project is part of study that is looking at a series of citizen science projects that have online communities. The purpose of my call today is to ask you a few questions about the purpose of the **online community** in the project and your experience with it.

Given the purpose of the interviews, it is important that you share your most thoughtful, candid feedback. I might use quotes in the report.

Are you willing to participate in the 45 to 60 -minute interview?

1. Can you please provide a brief description of what you did with the _____project? What were the outcomes of your project?
2. How long have you been part of _____?
3. This study is about citizen science projects that have been able to foster environmental actions. Can you please share some stories about the types of environmental actions (both small scale and wide scale) that resulted from your participation in _____? Did the **site** support you in taking those actions?
4. What parts of the site did you use to complete your project? How did you use each of them?

This next series of questions will ask about how different concepts 1) played a role in your experience in the _____ community; 2) how was that concept fostered by the online community's functionality (Structures).

Explain each element of the NHOLC conceptual framework including a definition and any clarifying statements needed.

	Elements:	Structures:
	<i>Was this idea or concept a part of your experience in the _____ project? How?</i>	<i>Where on the site can users? How does the site foster....</i>
1. Bring together diverse participant groups from vast areas of expertise to enable multi-directional learning opportunities in which everyone that joins the community has something they can offer and teach others within the community		1c. How does the site foster connecting with diverse stakeholder groups? Which functions allow them to connect?
2. Sharing place-based data across geographic boundaries		2c. Which functions on the site foster the sharing of place-based data?
3. Shared Purpose and Goals of the Project		3c. Which functions on the site foster a sense of shared goals in the project?
4. Participant driven real-world investigations that are personally relevant to participants’ lives - “why should I care and what can I do about it”		4c. How do the functions of the site foster crafting real-world projects that matter to individuals?
5. Unhindered Communication to Build Relationships – opportunity to connect with each other via a variety of mean (discussion, messages, etc.?)		5. How does the site foster communication between participants to build relationships?

If time allows ask the two questions below

5. What does not work so well in the online community? How could it have been improved?

6. Anything else that we should know about?