Libraries, Citizen Science, and the Sustainable Development Goals (SDGs): Researcher and Project Manager Perspectives

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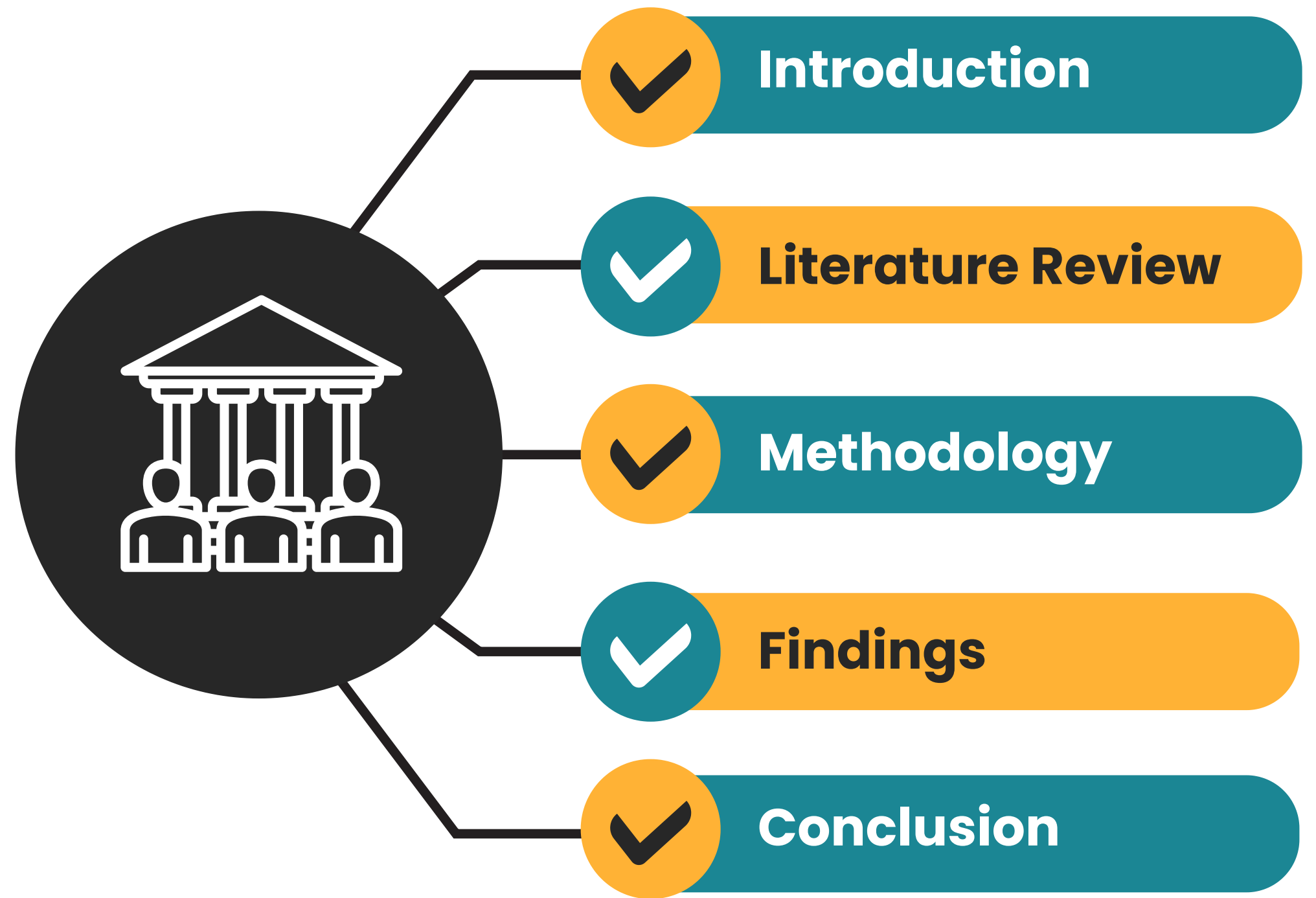DEPARTMENT OF LIBRARY &
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Libraries, Citizen Science, and the Sustainable Development Goals (SDGs): Researcher and Project Manager Perspectives

- Introduction
- Literature Review
- Methodology
- Findings
- Conclusion

What is Citizen Science?

A collaboration between scientists and of us who are just curious or concerned and motivated to make a difference. (Scistarter, 2020)

Citizen Science

Citizen Science

01 Anyone can participate

02 Participants use the same protocol so data can be combined and be high quality

03 Data can help real scientists come to real conclusions and

04 A wide community of scientists and volunteers work together and share data with which the public, as well as scientists, have access.

Source: Flagg, B.N., 2016

European Commission: 8 pillars of open science

01 Fair Data (Research Data Sharing)

02 Open Science Cloud

03 Education and Skills

04 Reward and Incentive

05 Next Generation Metrix

06 Research Integrity

07 Citizen Science

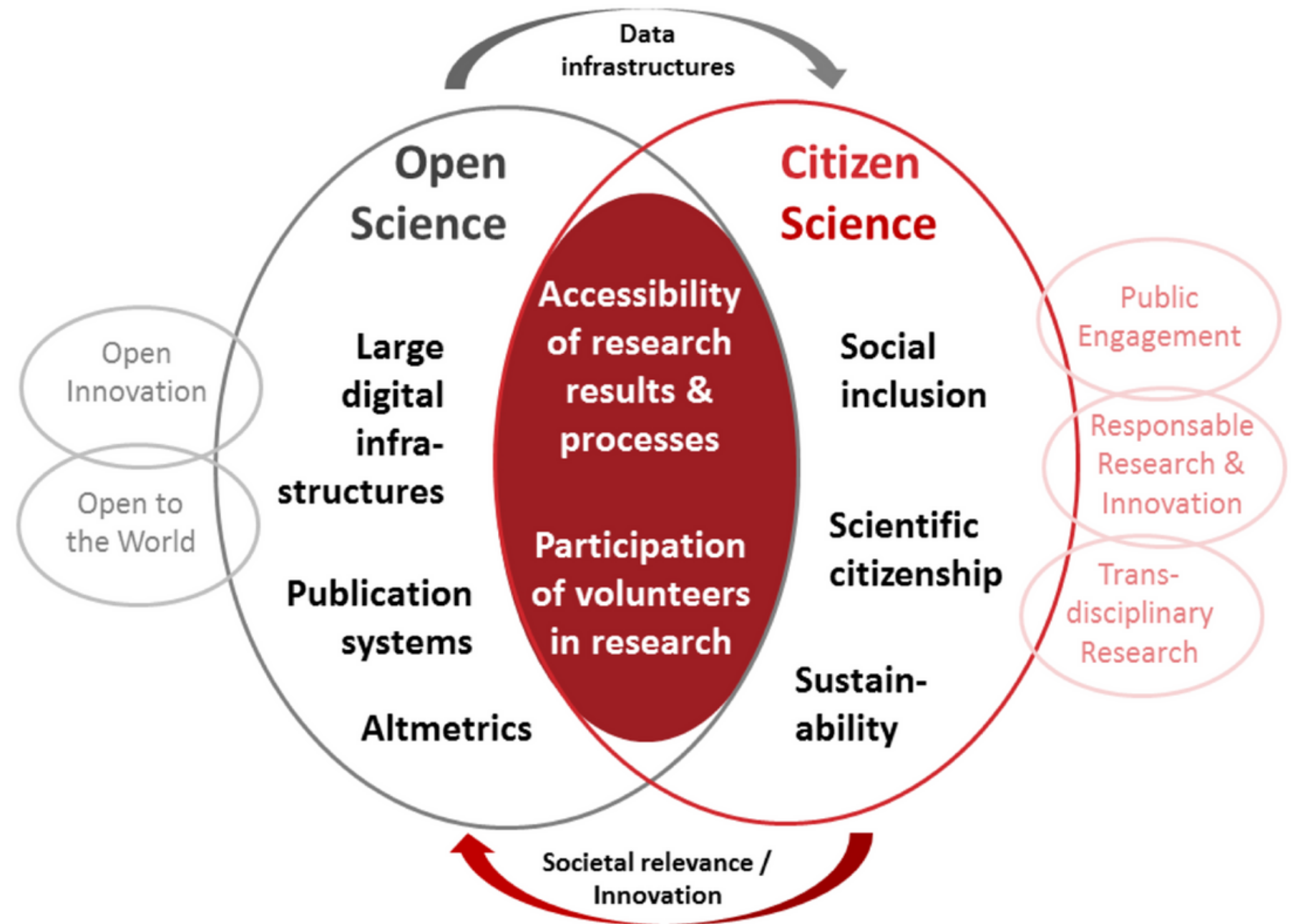**08** The Future of Scholarly publishing (Open Source)

Source: Open Science and its role in universities – A roadmap for cultural change (2018)

Open Science & Citizen Science
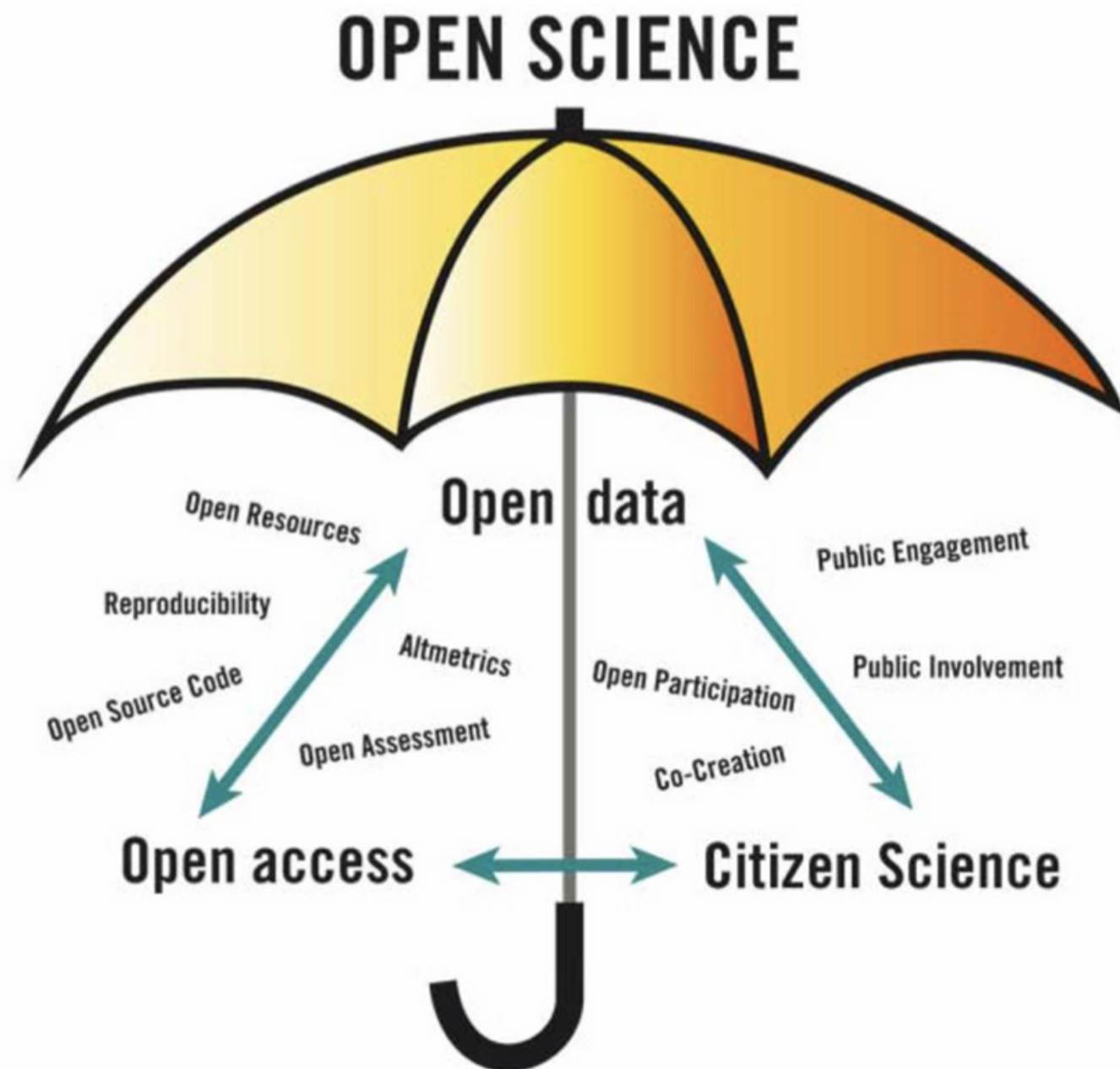
Open Science As Umbrella Concept
Wehn, U., Gobel, C., Bowser, A., Hepburn, L., & Haklay, M. (2020).

Citizen science and Open Science Core Concepts and area of synergy
(Vohland and Gobel, 2017)

Citizen Science in Library Information Science

LIBRARY ROLES

Libraries across the country are becoming hubs for citizen science, where people can access books, field guides, computers, subject matter experts, and other citizen science resources. Some libraries are even housing citizen science projects with specialized kits featuring tools like telescopes and light sensors, that enable patrons to complete projects.

(Scistarter, 2020)

DATA

Library has also offered advice and assistance in developing data management plans to return data collected by citizens to them once it has been processed. Researchers can also use the institutional repository to preserve and publish their data.

(Ignat, 2018)

COLLABORATIONS

Academic libraries can provide leadership, information services, research data management services, and research collaborations to support open science by sharing available data, open access resources, educational resources, and even open methodologies

(Tzanova, 2020)

Why should my library become a hub for citizen science?

Can any type of library offer citizen science to their community?

Join us!

THE NATIONAL
CITIZEN & COMMUNITY SCIENCE
LIBRARY
NETWORK

SCAN HERE!

CitizenScience.Asia
Building Connections, Capacity, Conversations

SCAN HERE!

Aim of the study

To explore the experiences and perspectives of researchers and project managers in Citizen Science projects connected to the SDGs, as well as the role and engagement of libraries in these projects

Research Questions

- How are current Citizen Science projects connected to the SDGs from the researchers' and project managers' perspectives?

- How do researchers and project managers define the potential roles of libraries in Citizen Science projects connected to the SDGs?

- What challenges do researchers and project managers face when implementing into practise citizen science initiatives related to the SDGs?

Methodology

Qualitative
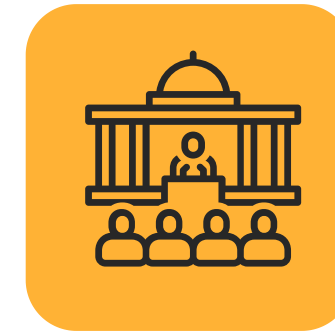
Software Atlas.ti

In-depth interview
semi-structured
Online ZOOM

Purposive Sampling
Researcher, project manager in citizen science
projects at Research University

Findings

01   Citizen Science (CS) + SDG

02   Potential roles of libraries in CS projects

03   Challenges

Citizen Science (CS) + SDGs
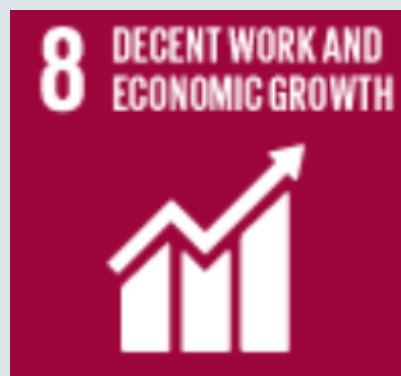
4 QUALITY EDUCATION	Our CS projects promote ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, especially Goal 4.7, to ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development (R2)
6 CLEAN WATER AND SANITATION	In terms of Place-Based Water Quality Monitoring, I think the main focus was on SDG 6, clean water and sanitation (R2) Basically, our focus was on SDG6, clean water and sanitation, because we want to look into the water qualities of our rivers and how it impacts on the water supply (R3)
8 DECENT WORK AND ECONOMIC GROWTH	EcoHub and BioD projects could be slightly contributed to promoting sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all, where both projects can create some attractions for people to explore the areas (R4)

Citizen Science (CS) + SDGs

11 SUSTAINABLE CITIES AND COMMUNITIES

Data from iNaturalist can contribute to an overview of impact of city development on the flora and fauna species surrounding us through mapping of water and air pollution (R1)

Somehow, Place-Based Water Quality Monitoring Monitoring can be linked to SDG 11, I think, make cities and human settlements inclusive, safe, resilient and sustainable (R2)

We want the community to be responsible and understand their place, so Place-Based Water Quality Monitoring Monitoring project was slightly related to SDG11 goal to make cities and human settlements inclusive, safe, resilient and sustainable. Also, responsible consumption and production because water quality is mostly affected by improper waste management (R3)

14 LIFE BELOW WATER

Of course, Place-Based Water Quality Monitoring indirectly linked to Life below Water, because part of this project was to understand how the water quality is related to water ecosystem (R3)

Citizen Science (CS) + SDGs

Inaturalist encouraged CS and create awareness especially on Life on Land and Life below Water (R1)

Place-Based Water Quality Monitoring was very much related Life on Land, because part of that is to understand how water quality is related to land ecosystem (R3)

The main goal of EcoHub project is promoting Life on Land. Most of our activities involved terrestrial area (R4)

Both Place-Based Water Quality Monitoring and Di Sekitar Kita Biodiversity projects involved partnerships with agencies and local authorities. After the project ended, we are still working together and are currently reframing Urban Biodiversity (R2)

Potential roles of libraries in CS projects

Disseminating CS data through physical and online exhibition	The library can organize a physical exhibition of CS project findings. For example, library can display the photos of Biodiversity species in the iNaturalist database in an onsite exhibition instead of virtual exhibition. You can go through the iNaturalist database and see the Creative Multimedia-typed photo, which you can donwload it freely. The physical exhibition is more effective to create awareness of CS than virtual exhibiton (R1) Our previous three projects had not involved library. But, I believed library can be as a venue for sharing session and exhibition related to CS project (R2)
Promote & Create awareness of Citizen Science to community	Nowadays, people like to search information online instead of going to library and find for the materials. So, what library can do to bring the people to the library is by promoting and creating awareness of CS projects. I believe library definitely has roles to play in CS. Think of how to engage people to come to library physically and virtually through CS project (R1)

Potential roles of libraries in CS projects

Resources Centre for Citizen Science

Since we have different stakeholders in CS, we also have different understanding of CS. Each ministries have their own data and community has their own perception or understanding of CS. So, I do hope that library can be a centre of resources for CS, especially SDG-related CS. The resources can be books and tools. So, if library can be a resource centre for all the information of CS that people need, it would be good. Also, there are so many online resources of CS such as ANECT data, iNaturalist as well as apps. For example, people who are interested in Biodiversity might not be aware of iNaturalist app, so I hope library can give exposure in terms local or global resources to these people (R3)

I think library can come in and be a storage site for the data that CS projects collect. Some people also have interested to know certain species, so they will upload the image in the CS platform to know more about the species. These data from the community are precious and valuable. So, library can act as a storage hub for all these data. Let say, after few years, people suddenly become more interested with the species, so they can go to the library database and search for it or library can confirm that species. Also, we can know what happen to the species over the years. To achieve this, library needs to engage the experts to verify the species ID (R1, R3)

I understand the main role of library is to archive all the information and data. But, archiving means the data stop there, there is no updating. For CS, the library can archive it but need to regularly updating it. I think the word "archive" is not suitable for CS (R1)

Potential roles of libraries in CS projects

Assist with data management and analysis

We have the data, but we don't have time and expertise to analyse the data. That is why I think library can help in sorting and analysing the data. Then, scientist can make conclusion from that analysis. We aware that library can help with the data management and analysis, but we are still hesitating to engage library in our CS project. I am quite surprised to have library is interested to collaborate and I am happily welcoming that (R3)

Challenges in CS projects

Engagement with community to get involved	During our Place-based Water Quality Monitoring project, not many people in the selected area were interested to participate. So, to overcome this, we promoted this project to the campus staff who are staying or working at the selected areas and invited them to participate. From this, we have expanded our networking (R2) Awareness on the biodiversity and nature among Malaysians are still low. Even though it is improving, the awareness is still low. Sometimes, the community prefer their contribution to be awarded with some renumeration. So, it is a big challenge for us to explain to them on how their contribution in CS also benefit them (R3)
Commitment from the Citizen Scientist	Sometimes, even we had provided enough training, the Citizen Scientist refused to participate in the project. We cannot force to join (R2)

Challenges in CS projects

Submission of incomplete, unnecessary, or dubious data	Previously, during Biodiversity project, even though we have provided the training, we still had received the biodiversity data that are not suitable for submission on iNaturalist. These data might be incomplete data which there was no coordinates provided, no images, or unnecessary or wrong images. It was such a waste because we cannot use those data. So, we need to revise and verify each data that have been submitted. However, the training is essential to get quality data (R2)

For BioD project, the researcher incorporated this project as an assignment for one university course. All the students who assigned to this course are required to submit biodiversity data they have captured on the iNaturalist platform. But, problems arose when students who were desperate to fulfil the requirement simply submitted the data and sometimes, they cheated. That is why expertise involvement is important to evaluate, verify and grade these kinds of dubious data. We can also specify the zoning if we have selected specific area as a study area (R3) |
| **Acknowledged by the agencies or ministries** | Currently, for the Place-based Water Quality Monitoring project, the agencies or ministries only look at this data as for environment educational purposes. We strongly hope the data can be used as a preliminary data, so it would help and support the agencies to further investigate the environment problems at the selected study area (R3) |

Significant Contribution

Exploring the Role of Citizen Science and Libraries in Achieving the Sustainable Development Goals

Encouraging cooperation in research and action for openness, consciousness, and participation in problem-solving involved library in citizen science project.

Contribution to the growing body of knowledge on Citizen Science and its potential for promoting sustainable development and achieving the SDGs

CONCLUSION

CITIZEN SCIENCE

SUSTAINABLE DEVELOPMENT GOALS (SDG)

LIBRARIES

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Thank You
For Your Attention

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