

Bridging Science and Society: Libraries as Partners in Citizen Science: A Rapid Review of Literature

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ABSTRACT

Citizen science enables public participation in scientific research, often facilitated by institutions such as libraries, schools, societies, NGO's etc. which can play a significant role in promoting and supporting these initiatives. Analysis of global literature reveals that libraries are emerging as contributors or vital partners in citizen science. Though citizen science approaches have wide applications in the Global North, such remain relatively rare in the Global South. Sri Lanka's potential in developing citizen science initiatives is enormous due to its rich biodiversity, environmental challenges and pressing social issues. However, Sri Lanka lacks documented frameworks, case studies, or practical guidance on library engagement, preventing libraries from leveraging their resources despite the country's potential. Consequently, it is unclear how libraries and librarians in the country can contribute to citizen science projects effectively.

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This review addresses this gap by examining global practices to provide actionable insights for Sri Lankan libraries. A rapid review approach was employed, drawing on peer-reviewed and grey literature on citizen science and libraries. Searches in Scopus and Web of Science identified 21 relevant articles (2004–2024), supplemented by authoritative online sources to ensure comprehensive and up-to-date insights into library involvement in citizen science. The review focuses on two preliminary questions relevant to the context. 1. How can libraries support citizen science projects? 2. What are the contributions and roles of librarians in citizen science? According to reported studies, libraries can provide support in four ways: 1. Organising and hosting citizen science events, 2. By providing spaces for collaboration and learning, 3. Providing infrastructure and equipment, and 4. Supporting open access to knowledge resources and establishing data repositories. In the emerging domain of citizen science, librarians play a pivotal role acting as connectors, facilitators, educators and data curators. The study recommends future research to identify the challenges and barriers that prevent librarians from actively engaging in citizen science.

Keywords: *Citizen Science; Community Science; Crowd-sourced Science, Participatory Research, Sri Lankan Libraries, Capacity Building, Open Science*

Introduction

What is Citizen Science?

Scientific research has long been a somewhat foreign or inaccessible concept for the general public or people outside academia. Historically, citizens have often viewed scientific research as spectators, not as active participants or

even direct beneficiaries. The professionalisation of science in the 18th century marked a turning point that widened the divide between amateur enthusiasts and professional scientists (Eitzel et al., 2017). This divide continued to grow over the following centuries as scientific research became increasingly complex and shifted from fieldwork to more specialised laboratory settings. However, bridging science and society is essential, as wisely emphasised by Smallman (2018), “for science to reach its full potential, it must be set free of its laboratories and take its rightful place – at centre stage in everyone’s lives” (p. 253). The concept “citizen science” offers a way to bridge this gap, creating opportunities for collaboration between professional scientists and the general public (Harrington, 2019). Such collaboration is seen as a two-way process, empowering citizens to play a role in research activities that yield benefits and discoveries for society as a whole (Ignat et al., 2018).

Early reports of citizen science projects and the term CS appeared in publications such as MIT technology review (1989) and Cornell Laboratory of Ornithology magazine (1996) (Boney et al., 2015). The term citizen science was formalized through Alan Irwins book in 1995 ‘Citizen Science: A Study of People, Expertise, and Sustainable Development’ (Follett & Strezov, 2015; Vohland, 2021). Subsequently the term was added to Oxford Dictionary (2016) which defines citizen science as scientific work carried out by members of the general public, in collaboration with or under the direction of professional scientists, often facilitated by institutions such as libraries, schools, societies, NGO’s etc. Although the term came into use much later, the concept has been practiced as early as 1900. For example, the Christmas Bird Count project of the Audubon Society in the United States encouraged volunteers to collect data on bird populations and is considered

the longest-running citizen science project (LeBaron, 2021). Citizen science is a quickly evolving field that is mobilizing people's involvement in information development, social action and justice, and large-scale information gathering. Currently, a wide variety of terms and expressions are being used to refer to the concept of citizen science and its practitioners (Eitzel et al., 2017) and still lacks universal definition due to diverse applications across contexts (Follett & Strezov, 2015; Vohland, 2021). The concept overlaps with crowdsourcing, participatory research, collaborative mapping, and civic engagement (Eitzel et al., 2017; Fraisal et al., 2022; Rathnayake et al., 2020).

Functioning of Citizen Science Projects

Citizen science projects are frequently launched to address a current problem or research question while also strengthening the general public's capacity to participate in science. The objectives of citizen science projects include funding research, enhancing the scientific knowledge base through publications, providing data and analytics to inform management plans and developing public awareness of and interest in science (Follett & Strezov, 2015). It also lays the foundation for long-term implementation of policies (Özden & Velibeyoglu, 2021).

Through citizen science, vast amounts of data can be collected efficiently and cost-effectively, allowing researchers to tackle complex issues. Such projects encompass various forms, depths, and aims of collaboration across a broad range of scientific disciplines, including astronomy, biology, geology, archaeology, biodiversity monitoring, environmental conservation, public health, urban planning and design, architecture etc. (Hekker et al., 2018; Kullenberg & Kasperowski, 2016).

Citizen science is built on four key features: (a) anyone can participate, (b) participants follow a common protocol to ensure high-quality, combinable data, (c) the data contributes to real scientific conclusions, and (d) scientists and volunteers collaborate and share openly accessible data (Flagg, 2016). In this context, ‘any participant’, regardless of background is considered a citizen scientist, typically a member of the public who contributes to scientific research, often in collaboration with professional scientists (Oxford Dictionary of English, 2016).

For citizen science projects to be feasible, firstly, it must be sensitive to the interests and concerns of the community, secondly, the potential for citizens to generate trustworthy scientific knowledge should be high (Irwin, 1995). Technological advancements in information science, such as data informatics, graphical user interfaces, geographic information system-based web applications, the Internet and smart devices, have further increased the feasibility of citizen science, enabling remote data sharing and analysis across diverse locations (Dickinson et al., 2012; Roger et al., 2023).

According to Bonney et al. (2009), three models for public participation in scientific research occur based on the extent of citizen involvement in the research process: (1) contributory projects, where citizen participation is largely limited to contributing to data collection and recording; (2) collaborative projects, where the involvement of non-scientists also includes data analysis and, possibly, interpretation; (3) co-created projects, where citizen participants are actively involved in most or all steps in the scientific process. In the first two types of participation, citizen scientists are involved merely as research assistants who are not involved in the planning of the

research process. By contrast, co-creation means that citizens participate collaboratively in the decisions regarding the research process (Table 1).

Table 1
Models for public participation in citizen science projects

Step in the scientific process	Steps included in contributory projects	Steps included in collaborative projects	Steps included in co-created projects
Choose or define question(s) for study			X
Gather information and resources		X	X
Develop explanations (hypotheses)			X
Design data collection methodologies	(X)	X	X
Collect samples and/or record data	X	X	X
Analyze samples	X	X	X
Analyze data	(X)	X	X
Interpret data and draw conclusions	(X)	(X)	X
Disseminate conclusions/translate results into action	(X)	(X)	X
Discuss results and ask new questions			X

Note. X = public included in step; (X) = public sometimes included in step.

Note. Adapted from "Public Participation in Scientific Research: Defining the Field and Assessing Its Potential for Informal Science Education," by R. Bonney, H. Ballard, R. Jordan, E. McCallie, T. Phillips, J. Shirk, and C. C. Wilderman, 2009, Center for Advancement of Informal Science Education. <https://files.eric.ed.gov/fulltext/ED519688.pdf>

A Growing Global Movement

Citizen Science Projects (CSPs) are closely aligned with major international treaties, conventions, and agreements that promote public participation in scientific endeavors. For example, biodiversity monitoring projects such as iNaturalist support the Convention on Biological Diversity (CBD, 1992) (Chandler et al., 2017). Climate related projects that track temperature variations, carbon emissions, or sea level rise, such as NASA's Global Observer, follow the United Nations Framework Convention on Climate Change (Bonney et al., 2016; UNFCCC, 1992) . CSPs that monitor wetland ecosystems, water quality, or bird populations (eBird project) are relevant to Ramsar Convention on Wetlands, 1971 (Sullivan et al., 2014). The Aarhus Convention, 1998, which emphasises public access to environmental information and participation, also strengthens citizen-driven initiatives such as open air quality monitoring (Schade & Tsinaraki, 2016).

International policy frameworks further support citizen involvement in science. UNESCO's guidelines encourage public input in scientific processes, contributing to democratization of research (UNESCO, 2021). Similarly, the European Union's open science policy recognizes citizens as valid contributors to scientific knowledge (European Commission, 2014). Citizen science is considered one of the eight pillars of Open Science by the Open Science Policy Platform, an EC Working Group (OSPP, 2018). The Open Science Roadmap of the European Association of Research Libraries (LIBER) highlights citizen science as part of cultural change and endorses libraries as partners in these efforts. The League of European Research Universities (LERU) provides guidelines for raising awareness, supporting CS activities in research funding and evaluation processes (Wyler et al.,

2016). Formal structures are also emerging globally with organisations like the Association for Advancing Participatory Sciences (AAPS) in U.S., European Citizen Science Association (ECSA) in Europe, ACSA in Australia, and growing networks in Africa and Asia.

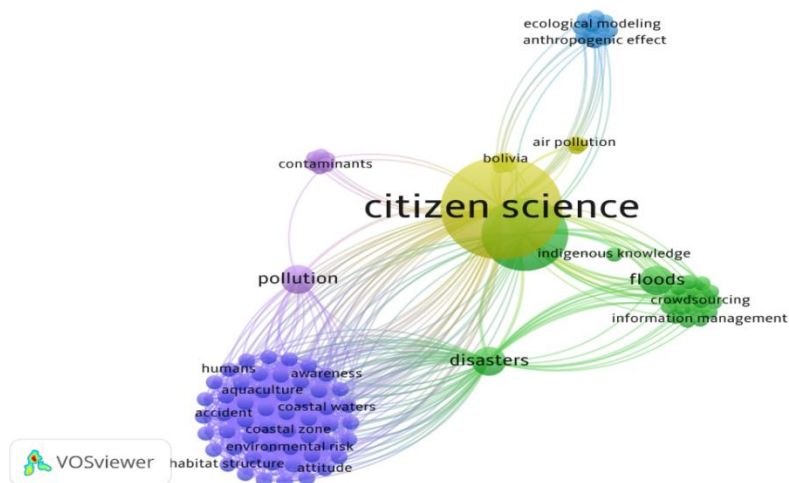
Interest in citizen science has grown rapidly over the past two decades, as reflected through number of projects and research publications (Hecker et al., 2018; Kullenberg & Kasperowski, 2016). These projects contribute data to globalefforts while empowering communities and strengthening participatory democracy. Overall, CSP contributes directly to monitoring and achieving UNESCO SDGs, particularly SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land).

Citizen science initiatives in Sri Lanka

Though citizen science approaches have wide applications in the Global North, such remain relatively rare in the Global South (Rathnayake et al., 2025). Sri Lanka's potential in developing citizen science initiatives is enormous, as Sri Lanka has been listed among 36 global biodiversity hotspots by the Convention on Biological Diversity (IFAW, 2024). On the contrary, biodiversity and ecosystem stability are deteriorating day by day. Citizen science can be used to address environmental issues as well as other social, economic issues. Empirical studies on citizen science projects in Sri Lanka included in Scopus and Web of Science bibliographic databases from 2017 to 2025 can be mapped as shown in Figure 3. It shows several interconnected clusters, which demonstrate dispersion of CS projects across multiple domains.

Figure 3

Co-occurrence of keywords in Sri Lankan citizen science research



Source: Generated by Authors

The central citizen science hub (yellow) connecting all other themes, represents the fundamental participatory approach where non-scientists contribute to scientific research in Sri Lanka, serving as the organising framework for various environmental monitoring initiatives. The Indigenous Knowledge and Disaster Response cluster (green) connects traditional ecological knowledge with modern disaster management, particularly for floods in Sri Lanka. Cluster depicting Ecological Modelling and Anthropogenic Effects (Blue) uses citizen science to monitor and model human impacts on ecosystems, including air pollution in rural areas and tracking effects on wildlife like jungle cats in Sri Lanka. The purple cluster - Pollution and Contaminants Monitoring focuses on community-based tracking of environmental pollutants, prominently featuring the citizen response to the M/V X-Press Pearl ship disaster that contaminated Sri

Lanka's beaches with plastic nurdles. Coastal and Marine Ecosystems (blue), covers citizen science initiatives in coastal waters, aquaculture, habitat structures, and marine environmental risks, particularly along Sri Lanka's coastline.

In 2014, Karunarathne urged scientists to use this invaluable and important tool properly to transform the research culture in the country. Current technological infrastructure in the country remains supportive for such initiatives: As of January 2025, Sri Lanka had 29.3 million mobile connections (127% of the population) with 93.3% being broadband-enabled, indicating the widespread mobile access. Internet penetration reached 53.6%, with 12.4 million users, marking a 7% increase from the previous year. Social media usage stood at 8.2 million users, or 35.4% of the population (Datareportal, 2025). Though Karunarathne (2014) pointed it out, convincing people to participate in scientific research would be a challenge. The electronic and printed media should play a vital role linking researchers with the general public, and it could be a blessing in disguise for Sri Lankan library systems.

Libraries and Citizen Science

Analysis of global literature reveals that libraries are emerging as contributors or vital partners in citizen science by providing tools, spaces, and expertise for citizen science projects (Mumelaš & Martek, 2024). Their involvement not only supports scientific research but also enhances their community value, attracting more visitors and enriching their roles as community knowledge hubs.

Historically, libraries have strived to serve beyond their walls, catering to disadvantaged and marginalised populations who might otherwise lack access to information. These initiatives were known as outreach services. Over the years, outreach has evolved, with libraries hosting activities that cater to various interests and needs, such as book clubs, skills development programs, training activities, workshops, and wellness programs. In Sri Lanka, institutions like the Outreach Services Division of University of Moratuwa and the regional library network and Foundation for Library Awareness (FOLA) of South Eastern University of Sri Lanka have demonstrated the transformative power of library outreach, bridging gaps in information access and empowering local communities with information (Seneviratne & Weerakoon, 2024). Krishanthi and Gamage (2024) explored the commitment of Sri Lankan university libraries in achieving SDGs and highlighted their localized activities in comparison to global practices such as seed libraries, zero-waste initiatives, recycling projects, sustainable landscaping, rainwater harvesting etc. However, the involvement of Sri Lankan librarians in raising environmental literacy and strategic management of natural resources cannot be overlooked (Jayawardena & Seneviratne, 2024; Lavanya et al., 2025; Navaneethakrishnan & Sivakumar, 2015, 2016; Rubini et al., 2023). Such initiatives highlight libraries' role as community-centered institutions, a foundation that seamlessly supports the integration of citizen science today. With their established outreach experience, libraries can now extend their services to help engaging the public in scientific research. Libraries' deep-rooted community connections enable them to facilitate citizen science projects that foster learning and promote active involvement in societal progress.

Why should libraries engage in citizen science

Libraries' engagement in citizen science offers both internal and external benefits. Externally, it strengthens community partnerships, attracts new users, and enhances the library's visibility and public image while positioning them as partners in scientific and social progress (Mumelas & Martek, 2024). By involving citizens in research, libraries become active spaces for collaboration and shared learning rather than traditional book-centred institutions (Golumbic et al., 2017). They also promote the idea that “science is for everyone”, bridging the gap between academia and everyday life.

Internally, citizen science involvement improves staff skills, supports collection development, and encourages innovation in library services (Ignat et al., 2021). Participation also offers professional development opportunities for librarians through activities like data management and community engagement (Duerinckx et al., 2022; Kaarsted et al., 2021). Overall, citizen science enhances the relevance of libraries in the digital age.

Aim and Objectives

Published global literature reveals the evolving role of libraries as hubs and librarians as facilitators for citizen science. Examining these roles highlights the transformative potential of Sri Lankan libraries as well. However, Sri Lanka lacks documented frameworks, case studies, or practical guidance on library engagement in citizen science, preventing libraries from leveraging their resources despite the country's rich biodiversity and environmental challenges. Consequently, it is unclear how libraries and librarians in the country can contribute to citizen science projects effectively. This rapid review addresses this gap by examining global practices to provide

actionable insights for Sri Lankan libraries. Therefore, the main aim of this rapid review is to analyze the global literature on the involvement of libraries and librarians in citizen science and draw insights to inspire the local library community. The review focus on two preliminary questions relevant to the context.

- How can libraries support citizen science projects?
- What are the roles and contributions of librarians in citizen science?

By answering the above questions, the review aims to inspire similar initiatives among local communities.

Method

This research adopts a rapid review methodology, which simplifies the selection and review process compared to systematic reviews. Rapid reviews are conducted with the needs of the decision maker in mind and involve a close relationship with the end-user (Haby et al., 2016). While methodological shortcuts can increase bias risk (Haby et al., 2024), the authors adhered to recommended practices to minimize this limitation.

The review draws from peer-reviewed articles and grey literature. Given citizen science's evolving multidisciplinary nature, peer-reviewed sources alone may not capture current practices. Therefore, authoritative websites (European Citizen Science Association, SciStarter, government initiatives) were included for pragmatic examples and current data, selected based on credibility, institutional affiliation, recency, and relevance (Scistarter, 2020).

A literature search was performed in November 2024 using "citizen science AND (libraries OR librarians)" in TITLE, ABSTRACT, and KEYWORDS fields across Scopus and Web of Science. From 400 Scopus results, 42 peer-

reviewed English articles were selected; Web of Science yielded 17 additional articles. After removing duplicates, 21 articles (2004-2024) were identified, with 9 describing direct library involvement. Combining scholarly and grey sources enhances the review's comprehensiveness and practical applicability.

Findings

1. How can Libraries support citizen science projects

According to reported studies, libraries can contribute in four ways to the CSPs: a. Organising and hosting citizen science events, b. By providing spaces for collaboration and learning, c. Providing infrastructure and equipment, and d. Supporting open access to information resources and establishing data repositories. Sometimes a library may support just one of these activities, while others may engage in several, depending on their resources and community needs.

(a) Organising, hosting citizen science projects

Public libraries, in particular, are well-positioned to become "societal knowledge hubs" by organising CS projects and encouraging citizen science participation (European Commission et al., 2023). The European Citizen Science (ECS) project provides a good example for this initiative. Ten public libraries across Europe organized local community events and focus groups on citizen science, demonstrating how libraries can serve as community hubs for collaborative scientific activities (Chalant, 2024). In addition, many case studies from Europe, such as the France Bevk Public Library Citizen Science project; "the seed library" (<https://zenodo.org/records/13223079>); "living labs" project in public libraries in Barcelona, Spain; Intermunicipal Network of Libraries of Beiras and Serra da Estrela (RIBBSE) in Portugal,

demonstrates the potential of public libraries to partner with other organizations and launch CS projects. Libraries were the driving force behind these projects, choosing themes, organising and energising activities in their communities, and establishing partnerships (Pimentel & Gomes, 2024). In April 2024, US libraries and their diverse communities were engaged in a programme called “One Million Acts of Science” by hosting, promoting, and participating in events and projects engaging the public in research ranging from the total solar eclipse to Alzheimer’s to nature and the All of US program (Moundalak, 2024).

Examples from Academic libraries include projects like SPIOLL (a biodiversity monitoring initiative) where University of Bordeaux host citizen science events and exhibitions. Additionally, the University College London and the University of Barcelona have been highlighted for their direct engagement in organising citizen science projects, serving as institutional case studies of library-led initiatives (Ignat, 2018). The National and University Library in Zagreb Croatia, has implemented citizen science activities, positioning itself as a key organiser and implementer of such initiatives within its community (Mumelas & Filipeti, 2025).

In the “A Healthier Funen” project, libraries on the island of Funen, Denmark, collaborated with University Library of Southern Denmark (SDU), alongside with Odense University Hospital and a regional broadcaster. The University Library holds joint leadership with the Faculty of Health Sciences in the Citizen Science Network at SDU, playing a collaborative role in the project (LIBER Citizen Science Working Group).

(b) Providing spaces for collaboration and learning,

Libraries can provide both physical and virtual spaces for stakeholders in citizen science projects. When collaborations occur, libraries can provide spaces to host events, house collections or train participants. Public libraries in Barcelona have provided physical and social spaces for collaboration and learning by hosting co-creation activities involving librarians, library users, and professional scientists (Cigarini, 2020). Two public libraries in Slovenia had taken the leadership to co-host meetings for public libraries involved in citizen science, held in a social and creative hub that includes maker spaces (Chalant, 2024).

(c) Providing infrastructure and equipment

Libraries have established mechanisms for lending information resources to users. This practice is now extended to empower citizen science projects by lending specialized equipment. Many libraries lend equipment such as air quality sensors, camera traps, microscopes, recording equipment, 3-D printers, and technology such as design and statistical software (Ignat et al., 2018). This shows how libraries can act as local infrastructure hubs, by giving access to specialized equipment and enabling citizens to contribute meaningfully to scientific research even without their own equipment.

The lakes project in Denmark is a useful example where public libraries partnered with biologists from the University of Southern Denmark to map water quality in lakes. Libraries lent sampling kits, collected samples and helped recruit participants; acting as a link between researchers and the community.

North Carolina State University Library and over 50 North Carolina Public Libraries provide camera traps to monitor wildlife populations across the state. Libraries check kits in and out, volunteers and provide assistance on the camera trapping and data uploading process (Arizona State University, 2019).

In the United States, the Natural History Museum of Los Angeles County works with the Los Angeles County Library to develop community science kits. These include an instructional guide, field guides, a journal, and tools to support outdoor exploration. Children and parents can borrow kits for free from library. The Museum hosts events in libraries to introduce the kits (SciStarter, 2019).

Other examples come from Canada, the UK, Qatar and Poland. Toronto Public Library provides equipment and space for environmental monitoring while the British Library enables the public to join crowdsourcing projects through digital tools. Qatar National Library offers tools, technology, and software for projects. In Poland, libraries provide access to resources and offer technical infrastructure, although participation in these services is sometimes constrained by limited resources (Kowalska-Chrzanowska, 2024).

(d) Supporting open access to knowledge material and establishing data repositories

Libraries contribute to managing the citizen science knowledge ecosystem in two ways; by i). Establishing data collection portals where community members can submit findings and ii.) Providing access to educational material or access to ongoing project data. Ultimately, the data collected and shared through these portals can support local or global initiatives through information sharing.

The responsibility of libraries is to create sustainable communication channels where public input is valued and knowledge dissemination is streamlined. The data input procedures by citizens should be transparent and ethical (Hecker et al., 2018). Whereas the data /information storage and sharing should follow FAIR (Findable, Accessible, Interoperable, and Reusable) principles. For instance, the University of Southern Denmark and Qatar National Library have contributed to building and maintaining such data infrastructures, facilitating data collection and sharing for citizen science projects (Ignat, 2018).

2 Roles and contributions of librarians in citizen science

Throughout history, librarians have faced multiple challenges arising from technology and societal changes and have managed to evolve into a dynamic professional group. In the digital age, they have identified another new domain - citizen science, where they can play a pivotal role acting as connectors, facilitators, educators and data curators. Their contributions improve both the accessibility and effectiveness of CS projects.

(a) Community connectors - bridging scientists and the public

Librarians maintain solid relationships with community organisations, local government, and educational institutions. Therefore, they are well-positioned to act as the connection node between institutions/scientists and the public. Their role is to encourage public participation and support a collaborative research culture (Cohen et al., 2015). One example is the annual “Citizen Science Day Expo” by the San Diego Public Library, which brings the community and Citizen Science organisations together. This event allows the community to explore a wide range of research projects that need volunteers,

helping address the challenge many CS organisations face in raising awareness and recruiting participants (Arizona State University, 2019).

(b) Project facilitators – initiating and supporting citizen science activities

Librarians' role extends beyond just connectors. They support both the initiation and ongoing success of projects. Their responsibilities include community engagement, recruitment, documentation, and event organisation. Because librarians frequently interact with the community through community networks and local forums, they have a deep understanding of community needs. This insight enables them to identify and recommend citizen science initiatives that align with local interests.

Within library communities, there can be individuals and families interested in engaging in scientific endeavours to help address real-time issues and learn more about the surroundings. Since libraries have records of personal details and preferences of patrons, they can connect patrons with relevant projects (Recruit volunteers) (Arizona State University, 2019; Rabe, 2024).

Librarians are regularly engaged in marketing and promotional activities of library services. They can use their expertise to raise awareness of citizen science projects through targeted promotions using social media, newsletters, and collaborations with local organisations. Events such as citizen science fairs, workshops, and exhibitions allow libraries to showcase ongoing projects and highlight the societal benefits of public involvement in scientific research (Moundalak, 2024).

They also assist with project documentation, ensuring that data collection, outcomes, and best practices are recorded and shared, supporting transparency and knowledge dissemination (Cigarini et al., 2020).

(c) Educators - offering training and support for citizen science participation

Libraries are traditionally engaged in empowering communities by hosting workshops, training sessions, and boot camps based on local needs. Librarians can extend these services to educate the public about citizen science. This includes teaching standard data collection techniques, data validation, and critical analysis, ensuring that participants can contribute accurate and reliable data to scientific projects (Downs et al., 2021; Follett & Strezov, 2015). They can also offer activities to build information literacy and digital literacy skills.

Librarians may also offer training for their own community. For example, the Los Angeles Public Library has collaborated with the Global Learning and Observations to Benefit the Environment (GLOBE) Program to train a group of librarians to host hands-on Neighbourhood Science pilot programs at 13 branch libraries. These programs help improve participants' environmental and data literacy while promoting community involvement (SciStarter, 2019).

Librarians' technical skills, such as cataloguing, indexing, and abstracting, can also support citizen science. These skills can be used to create or contribute to toolkits that help start and maintain projects. Such toolkits usually include protocols, data collection forms, and educational materials to guide participants through the research process. By using standards to develop and manage these resources, librarians help ensure consistent and effective practices and make it easier to share the toolkits with other organisations.

(d) Data curators

Information management is a core responsibility of librarians. This includes collecting, storing and disseminating information. They can use their expertise to manage research data from CS projects by organising and curating datasets to ensure they are accessible, usable and reusable. Librarians also play a vital role in disseminating new findings, supporting both scholarly communication and public science awareness.

Librarians are known to have sound knowledge of intellectual property laws. Therefore, they can support citizen science projects by identifying legal and ethical issues, such as copyright and data protection, drafting terms of participation, and motivating good data handling practices (Hansen et al., 2021).

Quality assurance is essential in citizen science, as data collected by citizen scientists should meet scientific standards. Librarians can contribute significantly to quality assessment and quality control. This involvement enhances the reliability of research outcomes and strengthens trust between professional scientists and the public.

By taking on these diverse roles, librarians reinforce their position as indispensable facilitators of citizen science, promoting meaningful public participation and encouraging culture of shared scientific discovery.

Discussion

Public and academic libraries are increasingly seen as strong supporters of citizen science because they function as “knowledge hubs” within their communities. Their accessibility, inclusiveness, and ability to share

information make them ideal partners for citizen science initiatives. In many countries in the global North such as in Europe and the United States libraries have supported citizen science by hosting events, providing space for collaboration, lending equipment, and offering access to information resources and data repositories. These activities show how libraries can connect scientific institutions with the public.

In Sri Lanka, such initiatives are limited, yet the country's public and university libraries have significant untapped potential. With Sri Lanka's biodiversity, cultural heritage, and various environmental and health challenges, libraries could become platforms for projects on environmental monitoring, public health, or documenting indigenous knowledge.

The role of librarians in citizen science also goes beyond their traditional duties. Around the world, librarians act as connectors, facilitators, educators, and data curators. Because they work closely with a wide range of community groups, they can bridge the gap between researchers and the public. They also have strong information management skills—organising, storing, and sharing information—which are valuable for handling citizen science data. With these strengths, librarians can guide communities, provide learning resources, and support people as they engage with scientific processes.

Several countries already train librarians for citizen science work. For example, in Australia, public librarians have been trained to help citizens use scientific apps and tools to collect environmental data. In Sri Lanka, where citizen science is still developing, librarians can start by raising awareness, offering basic training, and working with communities. With proper support, they could eventually take on larger roles as facilitators of participatory

research, managers of community-generated data, and educators who inspire interest in science at the local level.

Conclusion and Recommendations

This rapid review highlights the growing role of libraries worldwide in supporting citizen science by offering space, equipment, information resources, and community engagement opportunities. Librarians act as facilitators, educators, and data managers linking citizens with scientific activities. In Sri Lanka, the absence of formal frameworks, case studies, and supportive policies limits the integration of citizen science into library services.

To strengthen this area, librarians should first receive training on citizen science, data handling, and community outreach. Libraries can then introduce citizen science activities through existing programs such as reading clubs, environmental events, or digital literacy workshops. Building partnerships with universities, research institutions, and NGOs will help create local projects suited to community needs. Over time, libraries may also develop small digital repositories to store and share project results. Finally, professional bodies should consider including citizen science in national library policies to support long-term growth.

By embarking on these initiatives, Sri Lankan libraries can become active partners in community-based research and help promote scientific literacy and public participation across the country. The authors also recommend that future studies examine the barriers and challenges that may hinder the integration of citizen science within library services.

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