BEYOND SCREENS: UTILISING OUTDOOR PROGRAMMING TO SUPPORT DIGITAL LITERACY DEVELOPMENT AND OTHER SKILL-BUILDING INITIATIVES IN NORTH AMERICAN PUBLIC LIBRARIES

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ABSTRACT

Libraries within North America are invaluable and unique institutions that play a crucial role in community development. They promote essential skills such as digital literacy, communication, and modern educational and career skills through a variety of public initiatives and programs.
Though the value of these establishments and their current offerings are well recognised, further potential may lie in the increased provision of outdoor library services. Although the benefits technology provides to society are undeniable, the prevalence of screens in daily life and the potential negative impact of excessive screen time highlights the importance of fostering meaningful connections with the outdoors and developing skills in environments outside of the digital realm.

Given the limited existing material on this specific topic, the following research seeks to explore the definite benefits outdoor programming may offer when it comes to digital literacy development and other skill-building initiatives in North American public libraries. In doing so it considers two gaps: that between communities and technology arising out of a lack of digital literacy skills, and that between nature and technology which results in the alienation of communities from the environment. An interpretivist philosophy and inductive approach were therefore observed in conducting a review of 100 libraries' programme offerings, in addition to surveying 21 library professionals regarding the future potential of outdoor programmes with relation to digital literacy and other library services.

KEYWORDS

public libraries, library programming, outdoor education, outdoor recreation, digital literacy, skill development

1. Introduction

Since the widespread introduction and popularisation of the internet in the late 1980s and 1990s, public libraries have been at the forefront of institutions providing free access to both physical technology and relevant training (Real, Bertot, and Jaeger 2014; McCallum 2003), enabling communities to adapt to ongoing advancements and harness new technologies (Jaeger et al., 2012; McShane 2011; Wooden 2006). With the growing prevalence of generative artificial intelligence (GAI) and other large technological developments in our society at present (Yoon, Andrews, and Ward 2022; Palmer 2021), a significant portion of libraries' community objectives are placing an increasingly strong emphasis on digital literacy, both as a distinct concern and as a key contributor to broader skill development (Flores et al., 2021; Panzarella 2020). Whilst many libraries currently target these aims through the provision of programming, as recognised by the American Library Association (cited in Lu, Tian, and Chiu 2023 p.4) as "services or events in a group setting developed to meet the needs or interests of an anticipated target audience," including skill workshops, technology help sessions, online materials, and other tech-centric resources (Oh and Mon 2024; Norlander et al., 2020), maintaining engagement and upholding accessibility in the face of limited resource constraints are ongoing challenges for these organisations and may be better achieved through a wider variety of services.

Outdoor programming (ODP) is a term used to encompass a range of activities which take place outdoors, including those within the realms of outdoor education and outdoor recreation (Mullins, Lown-Trudeau, and Fox 2015). The unique benefits of such activities date back to well before the previous century but are equally well documented in the modern day when it comes to enhancing specific learning and skill development objectives (National Centre for Outdoor Adventure and Education 2024; Cottrell and Cottrell 2020), many of which are present within contemporary libraries' own learning and development initiatives. Though a sizeable portion of public libraries in the United States currently facilitate outdoor programming, with 57% of those surveyed in a key study also reporting an increased use of the outdoors during the pandemic (Lenstra and D'Arpa 2021; Eberle 2021; Negron 2021), very few actively incorporate this into digital literacy or practical skill courses, or furthermore recognise the full potential of such experiences when it comes to tackling existing resource limitations and promoting accessibility (Lenstra and Campana 2020).

1.1 Aims and Objectives

The research described here aims to evaluate how outdoor programming can be effectively implemented by public libraries to enhance existing skill-development initiatives and bridge the gap between traditional and digital literacy skills, through achievement of the following objectives:

- Identify the key aims of modern libraries' strategic plans and examine how these goals as well as the programmes set out to achieve them have evolved since COVID-19.
- Evaluate the impact of a full range of outdoor library programmes on communities, as well as their ability to achieve specific library objectives.
- Determine specific ways in which outdoor programming can be effectively implemented by libraries to target traditional and digital literacy skills.
- Forecast future developments in library demands and services and examine how outdoor programming may fit into long-term library strategies and visions.

A clear overview of current programmes and modern library goals within North America is presented in the following literature review, along with a thorough evaluation of specific aspects of these programmes and the key benefits offered by various outdoor activities. Having identified areas for improvement as well as any gaps in current research, the subsequent section details the methodology behind the study conducted; one which took an inductive approach to analysing data collected through both 21 survey results and analysis of public information regarding programmes

across 100 different libraries. It should be noted that the scope of this research is limited to publicly funded libraries within the Unites States and Canada, though many observations and conclusions drawn may well be applicable to a range of international institutions.

2. Literature Review

When considering a research aim such as the one at hand, where existing material concerning the full topic is limited, it is beneficial to examine several distinct subjects within the area of study identified (Wisker 2018). With relation to the objectives specified above, these have been established as the following key areas of literature for integrative review, and are examined individually before undergoing synthesis in the latter portion of this section:

- **Modern library goals, objectives, and community development initiatives:** what do 21st century libraries within North America prioritise in their programming, and what skills are being promoted throughout? Where do these libraries and programmes currently fall short?
- **Outdoor programming activities, objectives, and outcomes:** what do current outdoor programmes look like and what are their benefits and limitations?
- **Identifying the gap between technology, libraries, and nature:** what is missing from current library programming regarding both digital inclusion and environmental awareness?
- **Bridging the gap:** which types and parts of outdoor programmes can be used within libraries, and how can these contribute to specific learning initiatives? What are some key examples of successes?

2.1 Modern library goals, objectives, and community development initiatives

To address the aim and objectives of this research it is vital to first understand the role of modern public libraries, in this case within the context of North America, in promoting skill growth and community development. While Burr (1975) argues that it proves difficult to define a set of universal goals for such a large group of discrete institutions in equally diverse circumstances, we may recognise that on a fundamental level, libraries reflect the goals of the communities they inhabit and by extension, the people which they serve (Lu, Tian, and Chiu 2023; Strenstrom, Cole, and Hanson 2019; Song 2009). For public libraries, this has historically involved information provision, literacy promotion in a variety of contexts, facilitation of community and civic engagement, and enhanced support for education and career skills (Whiteside et al., 2022; Sei-Ching and Vakkari 2015). While these goals remain at the core of libraries' missions, since the late 1990s there has been an increased emphasis placed on the importance of digital literacy (Strover 2019; Rusbridge 1998), along with other career skills, in response to what Panzarella (2020) and Jaeger et al. (2012) recognise as the growing demand for such skills within society at large.

This demand has only been exacerbated in the past five years due to the COVID-19 pandemic mandating large societal and workplace changes as well as emphasising the digital divide (Flores et al., 2021; Vassilakaki and Moniarou-Papaconstantinou 2021), an issue which Strover (2019) notes libraries have been well positioned to tackle since its birth, largely due to their ability to act as a "third space" and provide accessible sites for learning and communication, a stance which is well established and supported by scholars including Aabo and Audunson (2012) and Hernandez-Perez, Vilarino and Domenech (2020).

The intention to address these specific issues to provide community support can be observed not only in national standards and guidance set by both the American and Canadian Library Associations (Canadian Federation of Library Associations 2016; American Library Association 2013), but throughout the overwhelming majority of individual library mission statements and development plans published in the past decade (see Table 1). In analysing these initiatives, each outlines a variety of programmes and services designed to promote the aforementioned skills, including professional

skill workshops, specific technology training, access to online learning resources, maker spaces, tech labs, and targeted career development sessions, among a variety of other events and activities (Oh and Mon 2024; Smith 2019: Born, Henkel, and Mainka 2018).

Table 1: Overview of Library Initiatives and Strategies
Key goals from recent strategic plans of 15 randomly selected North American Libraries

Library and Name of Strategic Document	Year	Literacy, learning, and achievement	Social justice	Cultural enrichment	Digital literacy	Community engagement	Accessibility, diversity, and inclusion	Collection development	Sustainability	Staff and patron outreach	Play-based learning	Technology and access
Auburn Hills Public Library "Strategic Direction"	2019- 2022					■	■		■	■		■
Bellingham Public Library "Strategic Plan"	2020- 2024	■				■	■			■		■
Brantford Public Library "Strategic Plan"	2023- 2027					■	■	■				
Chicago Public Library "Strategy"	2020- 2024					■	■	■		■		
Denton Public Library "Strategic Plan"	2023- 2028				■	■	■	■				
Guelph Public Library "Strategic Directions"	2023- 2024		■			■	■			■		
Hamilton Public Library "Strategic Plan"	2023- 2026				■	■	■			■		
Norfolk Public Library "Strategic Plan"	2020- 2025	■				■				■		■
Oshawa Public Libraries "Strategic Directions"	2020- 2023	■			■	■	■		■			
Ottawa Public Library "Strategic Plan"	2023- 2028					■		■		■		
Roxbury Public Library "Strategic Plan"	2022- 2025	■				■		■	■			
Saint Paul Public Library "Strategic Direction"	2019- 2022				■	■	■			■	■	
Seattle Public Library "Strategic Direction"	2020- 2022	■	■	■	■	■						
Toronto Public Library "Strategic Plan"	2020- 2024		■			■	■		■	■		
Vancouver Public Library "Strategic Plan"	2020- 2025			■	■	■	■					

Whilst the types of programmes detailed above and the impacts which public libraries currently have on their communities are undeniably positive (Chaterjee, Samanta, and Dey 2021; Sei-Ching and Vakkari 2015), many still fall short in achieving their desired outcomes, especially when it comes to

accessibility, inclusivity, and ultimate engagement (Lu, Tian, and Chiu 2023; Laffoon 2022; Whiteside et al., 2022), largely due to a number of key challenges including funding and resource limitations, lack of appropriately trained staff, physical space constraints, and inability to maintain relevant programming in response to constantly evolving technological advancements (Norlander et al., 2020; Born, Henkel, and Mainka 2018; Real, Bertot, and Jaeger 2014).

2.2 Outdoor programming activities, objectives, and outcomes

Outdoor programming is a term often used to encompass a variety of organised activities and educational practices which are conducted outdoors (Outdoor Education Advisors Panel 2024), ranging from scouts camping trips, to school football classes, to corporate teambuilding retreats, with Gadais et al. (cited in Beauchamp et al., 2022) suggesting it is most beneficial to group such activities by the way each intends to use the outdoor environment, whether for sport, learning, or action (see Figure 1).

Within this realm we may then consider two distinct disciplines, outdoor education, which concerns facilitated experiences centred around learning or skill development (O'Brien 2022), and outdoor recreation, which is significantly more self-driven and for the primary purpose of leisure (Institute for Outdoor Learning 2023; Mullins, Lown-Trudeau, and Fox 2015; Higgins 2000). The Institute for Outdoor Learning (2023) provides a detailed overview of the term outdoor learning and associated activities (see Table 2), while also highlighting a number of its key benefits, all of which are recognised across the industry and throughout national guidance issued by the Outdoor Education Advisers' Panel (OEAP), National Center for Outdoor Adventure and Education (NCOAE), and National Outdoor Leadership School (NOLS), among others.

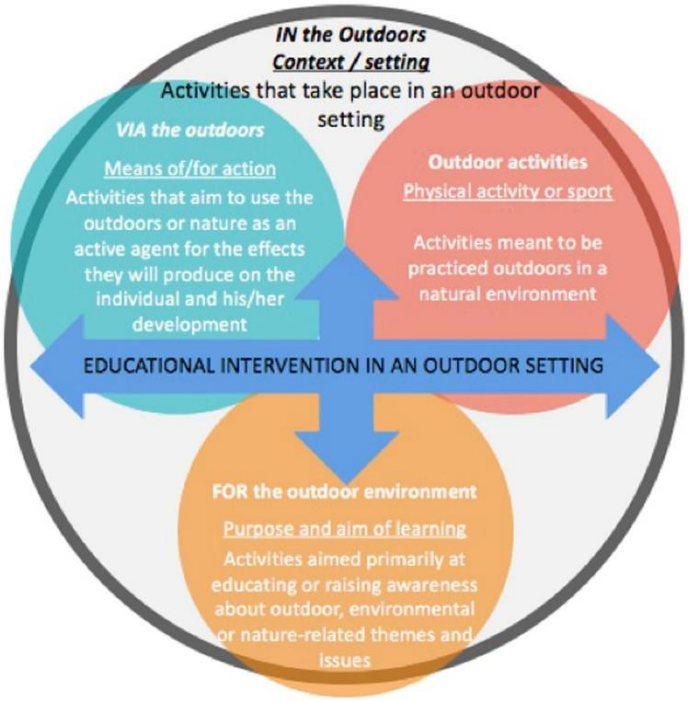

Figure 1: "Intentions to Use the Outdoors" (Gadais et al. cited in Beauchamp et al., 2022)

Table 2: "Outdoor Learning" (The Institute for Outdoor Learning 2023)

OUTDOOR LEARNING "An umbrella term for actively inclusive facilitated approaches that predominantly use activities and experiences in the outdoors which lead to learning, increased health and wellbeing, and environmental awareness."		
What activities and experiences? Outdoor sports * Adventures * Nature * Expeditions * Field Studies * Curriculum * Play * Initiative and group tasks * Ropes challenge courses * Forest schools * Arts * Bushcraft * Green crafts * Conservation *	**How does the learning happen?** Outdoor education * Adventure education * Leisure and holiday activities * Environmental education * LiNE * Forest schools * Green care * Activity/ sport coaching * Outdoor therapy * School grounds * Experiential learning * Place based * Expeditions *Eco tourism	**Why is it of value?** Personal and social development * Social justice * Health * Wellbeing * Environmental action * Organisation, role effectiveness * Academic achievement * Community development

Key benefits of outdoor education including cognitive, social, and skill development are largely a result of its characteristic experiential learning style (Pokorney and Abbas 2022; Moseley et al., 2019; English Outdoor Council 2018; Martin and Franc 2017) working in combination with unique environmental factors (O'Brien 2022; Cottrell and Cottrell 2020), while outdoor recreation offers a similar array of gains in addition to health, wellbeing, and lifestyle benefits (Mullins, Lowan-Trudeau, and Fox 2015). In summary, both areas of programming provide extremely valuable, unique experiences and present enormous opportunities for organisations to facilitate these whilst also promoting their own values and mission, and potentially circumventing key resource constraints such as lack of indoor physical space, limited funding, and imperfect staff expertise (Outdoor Education Advisors Panel 2024; Morrison 2022).

Whilst these capabilities have been recognised with regard to outdoor *recreation* by those such as Wichman (2012) and Kroski (2024) in published recommendations for straightforward and low-cost library programming, the full potential of outdoor *education* remains largely overlooked when it comes to enhancing STEAM programming as well as simply exploring alternative delivery routes to accommodate a variety of learning styles and facilitate an accessible learning environment.

2.3 Identifying the gap between technology and nature

As technology has advanced and become an increasingly pervasive and largely unavoidable part of our society (Panzarella 2020), the detrimental effects of excessive screentime and unregulated use of electronic devices have been well-documented and are an ongoing topic of research and discussion in medical and academic circles, particularly when it comes to such effects on youth development and the psychology of working adults (Reed et al., 2022; Colley, Bushnik, and Langlois 2020; Ferguson 2017). The magnitude of this issue, whilst often contentious, is well documented and even prompted Louv (cited in Caudell 2021, p.10) to coin the term "nature-deficit disorder," in which people, especially children, are effectively disengaged from the natural world and therefore lack environmental literacy. Whilst the benefits many technologies provide are undeniable, and often irreplaceable, studies such as those described by Sanders et al., (2019) suggest that moderation is integral to avoiding adverse effects (Ferguson 2017), a feat which has become drastically more complex since 2020 when many libraries and other aspects of life shifted to primarily, or even exclusively remote delivery (Lenstra and D'Arpa 2021; Real 2021).

Vassilakaki and Moniarou-Papaconstantinou (2021) consider explicitly the impact which COVID-19 has had on libraries as public spaces, noting that the "cumulative effect of space" has historically been one of the key contributors to a sense of community and social capital in public libraries, an effect which is much more difficult, if not impossible to the same degree of success, to achieve through remote programming when compared to physical (Flores et al., 2021; Hernandez-Perez, Vilarino, and Domenech 2020). Lenstra (2021) however, argues that "during the pandemic the work of public librarianship shifted not only to virtual spaces, but also to outdoor spaces," and that as libraries are still part of outdoor spaces, their work and services should be contextualised as such whilst also centering sustainability and environmental literacy as key goals alongside digital learning. In fact, given growing public awareness of the climate crisis and related environmental issues in the US alongside a number of ALA resolutions which recognised the need for libraries to exist as sustainable institutions (cited in Laffoon 2022), many have recently increased their focus on environmental literacy and the promotion of environmental connection within their communities in line with nationwide campaigns such as the Nature Everywhere Communities initiative which specifically brands libraries as some of the chief institutions capable of bridging the gap between nature and the wider community (Pallais 2024).

Even given the dominant nature of technology at present which heavily contributes to this alienation of communities from the natural world around them (Colley, Bushnik, and Langlois 2020), the concept of a "digital divide" between certain demographics and their access to technology or the skills to use it is similarly well recognised (Flores et al., 2021; Real 2021; Jaeger et al., 2012), especially when it comes to rural libraries which Real, Bertot, and Jaeger (2014) explain often lack the same level of technological infrastructure as many of their non-rural counterparts. While the acknowledgement of this divide is the driving force behind many of the digital literacy initiatives mentioned previously, many of these libraries lack the public funding necessary to support such digital programmes by purchasing new technology or investing in specialised training for staff (Real 2021; Panzarella 2020). Given these two distinct gaps, one between technology and nature and the other between people and technology, and the unique ways in which they affect dissimilar communities, a single solution may not be possible for all libraries and instead requires a deeper understanding of all factors involved.

2.4 Bridging the gap: key examples of successes

Numerous researchers have examined the ways in which libraries implement outdoor, and more often specifically environmental programming into their services (Devine and Appleton 2023; Morrison 2022), however the majority of these studies measure environmental literacy, and rarely consider the potential for such programming to touch on technology and digital literacy. In detailing the benefits of these programmes however, scholars such as Negron (2021) highlight the range of possible solutions which outdoor programmes present to the issues detailed throughout this section, the nature of which depend on the style of programmes and resources available to the library in question (Lenstra and Campana 2022). Conversely, a number of scholars have detailed the value of utilising technology within outdoor programming in other contexts (Hills and Thomas 2019; Hougham et al., 2018; Velestianos et al., 2015), highlighting the potential for such integration within similar library programmes. Given the wide variety of what may be recognised as outdoor programming within public libraries at present, it is sensible to consider three distinct classes of activities, categorised by both environment and intention in a similar fashion to the suggested model of Gadais et al., Figure 1, as follows:

I. **Traditional library activities conducted outdoors** – e.g., a book club held in a local park; Story Walks (Lenstra and D'Arpa 2021); a guest speaker session hosted outdoors.
II. **Activities conducted outdoors, which utilise technology** – e.g., an organised hiking group which learns to use AI to identify local flora; a robotics workshop with the aim of building and programming a bot to assist with litter pickup on a nearby beach.

III. **Traditional outdoor activities conducted offline or remotely** – e.g., a low ropes session which promotes communication and conflict resolution skills; a backcountry hike for a group of teens designed to foster resilience and encourage physical wellbeing.

While the second presents the most straightforward method for utilising technology and the outdoors in unison, each of these areas present unique opportunities for libraries to engage communities in innovative ways and address a different aspect of the desired outcomes for library programmes identified in Section 2.1, as presented in Table 3 below. The examples included present an interesting array of existing programme options, however, they are not commonplace in many libraries at present.

Table 3: Overview of Types of Existing Outdoor Library Programmes

Types	Targeted skills/ positive outcomes	Example Programmes:
I. Library activities, conducted outdoors	- Health and wellbeing benefits - Fosters connection with the environment - Inclusive and accessible - Mitigates indoor limitations	- StoryWalks (outdoor reading/ walking activity which became popular during the 2020 lockdown) (Lenstra and D'Arpa 2021) - Book clubs, book sales, story times, performances, events, yoga groups (Eberle 2021)
II. Outdoor activities, enhanced through tech	- Targeted skill development - Increased awareness of broader technology applications - Fosters environmental literacy - Broadens the range and diversity of digital literacy programming	- Geocaching (type of outdoor scavenger hunt requiring a handheld navigation device) (Velestianos et al. 2015) - AI used to aid in plant or fungi identification on a local hike (Natalini 2023) - Specific technology used to observe local salmon populations as part of a summer STEM programme (Velestianos et al., 2015)
III. Outdoor activities, conducted offline/ remotely	- Skill development (personal and social skills, communication, problem solving, team building) - Fosters environmental literacy and education in natural sciences - Health and wellbeing benefits	- Low-ropes course for underprivileged teens used to encourage personal development (OEAP 2024) - Use of library-provided National Parks pass results in increased cultural awareness of Indigenous lands and people - "Nature schools" for young children proven to benefit both cognitive and physical health outcomes (O'Brien 2022)

*Note: in this case, "remotely" refers to remote outdoor locations rather than a digital session of sorts

3. Methodology

3.1 Theoretical Framework

In conducting the research defined below it was vital to consider the philosophy, or system of beliefs (Saunders, Lewis, and Thornhill 2019), driving this work along with the approach taken to conducting it (Abdulkareem, Ismaila, and Jumare 2017; Greenfield 2016). In this case interpretivism was observed, largely leaning towards a traditionally constructivist paradigm, meaning multiple realities are recognised and thought to be created through the variety of cultures and social lenses which exist, and are consequently subject to the interpretations of those observing them (Saunders, Lewis, and Thornhill 2019; Wisker 2018). This philosophy allows the researcher to consider the diversity of perspectives which may influence the truths observed, as well as account for the inevitability of the researcher's own lived experience influencing the research in some capacity (Hjorland 2005), though in this case, measures were taken to ensure this did not reach the severity of observer bias. This is an

appropriate belief system with which to confront the research aims at hand and was conducive to the inductive research approach detailed below (Okoko, Tunison, and Walker 2023; Wisker 2018).

3.2 Research Design and Method

When considering the aims and objectives of this report to determine an appropriate research method, it was imperative to recognise that these encompass two very distinct topic areas, namely the current implementation of outdoor programming in public libraries, and the potential relationship between libraries, outdoor programming, and skill development. Given the major differences between these areas and the types of information most relevant to studying each, a mixed-methods approach was selected in order to enable quantitative analysis of current programme offerings, alongside preserving the complexity involved in investigating the future potential of such programmes through qualitative methods, as these generally benefit examinations into the realm of human behaviour and social phenomena (Billups 2021; Agius 2013).

Similarly, an inductive approach allowed for theories to be built upon observations (Naeem et al., 2023), a progression which is additionally valuable when confronting a topic such as this where limited research and established theories currently exist (Wisker 2018). Given these elements of research design, it remained vital to continually reflect upon the reliability and relevance of the data collected from each source throughout the process to ensure that biases were minimal or otherwise accounted for where unavoidable (Greenfield 2016). This philosophy also drove the use of semantic codes in thematic analysis as opposed to latent codes which rely on the researcher's perception of the text rather than concrete observations (Braun and Clarke cited in Saunders et al., 2023).

3.2.1 Quantitative Research Method

To fully develop a strong understanding of where public libraries currently stand in terms of outdoor programming, a sample of 100 institutions was selected, as outlined in Section 3.2.3, from which data on the type, number, and frequency of programmes offered by each was drawn from publicly available information including the libraries' websites, social media pages, and digitally published statements. The information gathered was documented in Microsoft Excel, drawing inspiration from the framework of Barchas-Lichtenstein et al. (2020) for categorising library programmes and using several established scales to standardise data before being organised systematically and undergoing analysis and synthesis as described in Section 3.3.

It was vital to record not only the number of programmes offered by each library but the frequency at which each programme was run (see Table 4 and Table 5 below), as this metric provides a more reliable indication of the popularity of each programme while accounting for seasonal availability. Therefore, the frequency readings documented were based upon the average frequency of a programme over a total of four months across the entire calendar year. Additionally, it became evident in preliminary research that it was necessary to distinguish between outdoor recreation and outdoor education programmes in the data collection phase to better inform data analysis and discussion surrounding ultimate results.

Table 4: Average Programme Frequency by Library Settlement Classification

*Frequency is quantified as the number of times a programme was offered by a library within an average calendar month.

	Average Frequency by Settlement Area							
Programmes by Category	**Urban (L)**	**standard deviation**	**Urban (S)**		**Suburban**		**Rural**	
Literacy	**132.0**		**55.2**		**37.1**		**11.2**	
Story time	104.5	(123.2)	44.0	(20.3)	28.3	(27.5)	9.4	(6.0)
Book club	27.5	(23.2)	11.2	(9.8)	8.7	(8.5)	1.8	(0.7)
Art	**97.4**		**90.8**		**38.4**		**25.9**	
Art Workshops	73.2	(102.2)	40.8	(37.0)	17.4	(27.0)	5.3	(7.0)
Writing Workshop	11.0	(2.2)	9.7	(3.2)	5.9	(2.2)	3.0	(1.7)
Movie night	5.8	(11.6)	12.4	(18.9)	7.1	(5.7)	2.5	(0.0)
Band/ performance night	2.6	(2.7)	11.7	(21.4)	2.2	(2.8)	2.0	(0.0)
Music activity	2.2	(1.6)	4.1	(5.2)	2.4	(2.1)	2.3	(1.5)
Sidewalk chalk	1.4	(1.8)	10.7	(11.5)	0.1	(0.0)	0.0	(0.0)
Rock or snow painting	1.0	(0.0)	1.0	(0.0)	1.1	(1.2)	0.1	(0.0)
Nature craft	0.4	(0.2)	0.3	(0.0)	1.8	(1.8)	10.0	(7.0)
Nature illustration class	0.0	(0.0)	0.3	(0.0)	0.3	(0.2)	0.2	(0.1)
Nature photography workshop	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.5	(0.0)
General Skills	**68.2**		**18.1**		**21.6**		**11.9**	
Health and wellness workshops	51.5	(112.7)	13.0	(8.5)	14.9	(17.3)	5.9	(6.8)
Language learning classes	16.6	(16.1)	5.1	(3.7)	6.8	(4.3)	6.0	(5.7)
Digital Literacy	**46.3**		**22.8**		**19.4**		**9.3**	(0.0)
Computer and tech help	40.8	(9.1)	18.4	(4.4)	14.3	(6.1)	5.3	(0.0)
Coding club	5.5	(28.2)	4.4	(17.9)	5.1	(5.9)	4.0	(2.4)
Education	**59.3**		**40.7**		**21.6**		**9.8**	
STEAM workshops	31.7	(41.8)	20.0	(20.9)	11.6	(12.1)	2.4	(1.8)
Student study-skills workshops	21.5	(34.1)	8.4	(14.9)	2.0	(0.0)	4.5	(0.7)
STEAM presentations/ events	3.1	(0.0)	10.0	(14.7)	4.3	(4.0)	1.1	(1.2)
Sustainability event	2.3	(0.0)	1.0	(0.0)	2.5	(0.4)	0.5	(0.6)
Native heritage presentation	0.8	(0.4)	1.3	(0.6)	1.2	(0.9)	1.3	(1.1)
Outdoor Education	**18.1**		**10.8**		**10.3**		**4.7**	
Garden classes	10.7	(1.7)	4.7	(3.1)	3.2	(1.8)	1.0	(0.0)
Story walk/ StoryWalks	2.3	(1.6)	2.0	(0.4)	2.0	(0.0)	1.0	(0.6)
Bird walk/ club	1.8	(1.5)	1.0	(0.0)	0.7	(0.3)	1.0	(0.0)
Fishing class	1.0	(0.8)	0.0	(0.0)	0.1	(0.0)	0.0	(0.0)
Nature center presentation	0.7	(0.4)	1.0	(0.0)	4.0	(0.0)	0.3	(0.0)
National Park presentation	0.4	(0.5)	1.0	(0.0)	0.3	(0.0)	0.4	(0.5)
Outdoor-specific guest speaker	1.1	(1.2)	1.2	(1.1)	0.1	(0.0)	1.0	(0.0)
Career Skills	**14.5**		**6.1**		**7.7**		**2.0**	
Employment assistance	6.8	(6.6)	4.5	(3.9)	5.6	(5.9)	1.0	(0.0)
Entrepreneurship training	1.9	(0.3)	0.7	(0.5)	0.8	(0.4)	0.0	(0.0)
Financial literacy workshop	5.9	(4.7)	0.9	(0.2)	1.3	(1.7)	1.0	(0.0)
Outdoor Recreation	**11.0**		**2.5**		**3.5**		**8.0**	
Hiking club	2.3	(1.5)	1.0	(0.0)	2.1	(2.7)	2.0	(0.0)
Bike club (seniors)	4.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Outdoor games class	2.0	(0.0)	0.0	(0.0)	0.8	(0.4)	1.0	(0.0)
Outdoor teen club	2.0	(0.0)	0.5	(0.0)	0.0	(0.0)	5.0	(0.0)
Bicycle club (youth)	0.7	(0.5)	1.0	(0.0)	0.6	(0.5)	0.0	(0.0)
Community Engagement	**2.4**		**4.3**		**2.3**		**0.1**	
Farmer's market	1.0	(0.0)	2.3	(2.5)	1.0	(0.0)	0.0	(0.0)
Fundraiser event	1.1	(1.2)	1.0	(0.0)	0.5	(0.4)	0.1	(0.0)
Volunteer training	0.3	(0.0)	1.0	(0.0)	0.8	(0.4)	0.0	(0.0)
Other								
All other programmes	**98.7**		**64.1**		**31.1**		**8.4**	

Table 5: Average Programme Frequency by Library Region

	Average Frequency by Region						
Programmes by Category	**Southeast**	**Pacific NW**	**Southwest**	**South**	**Rocky Mt.**	**Northeast**	**Midwest**
Literacy	**28.0**	**46.9**	**49.2**	**46.9**	**51.4**	**20.4**	**27.5**
Story time	15.3	26.9	38.6	38.6	44.1	15.3	15.3
Book club	12.8	20.0	10.6	8.3	7.2	5.2	12.2
Art	**79.4**	**60.1**	**45.9**	**79.4**	**56.8**	**52.8**	**68.0**
Craft workshops	30.0	37.4	27.7	49.6	42.4	21.3	53.8
Writing workshop	5.4	2.0	2.3	2.7	3.6	2.1	3.4
Movie night	13.4	9.5	3.9	8.3	2.5	19.0	3.7
Band/ performance night	16.8	0.4	4.0	4.8	1.3	3.5	1.2
Music activity	0.5	1.5	1.0	13.0	1.5	2.4	3.0
Sidewalk chalk	12.1	4.0	0.0	0.0	0.0	2.1	0.7
Rock or snow painting	1.0	1.0	0.0	0.3	0.1	1.0	1.0
Nature craft	0.3	4.0	7.2	0.8	5.5	1.1	0.5
Nature illustration class	0.0	0.3	0.0	0.1	0.0	0.3	0.3
Nature photography workshop	0.0	0.0	0.0	0.0	0.0	0.0	0.5
General Skills	**72.9**	**9.8**	**24.3**	**23.1**	**22.3**	**9.4**	**25.0**
Health and wellness workshops	62.9	1.0	9.0	20.4	12.3	6.4	14.0
Language learning classes	10.0	8.8	15.3	2.7	10.0	3.0	11.0
Digital Literacy	**14.1**	**2.7**	**7.1**	**2.1**	**2.1**	**1.0**	**53.8**
Computer and tech help	10.9	0.0	2.3	1.5	0.0	0.0	0.0
Coding club	3.3	2.7	4.8	0.6	2.1	1.0	53.8
Education	**14.1**	**23.9**	**45.9**	**4.7**	**10.1**	**53.9**	**3.2**
STEAM workshops	10.1	12.0	14.0	2.7	0.1	12.0	1.0
Student study-skills workshops	2.0	10.5	0.4	0.0	0.1	21.3	1.0
STEAM presentations/ events	2.0	1.0	27.7	0.0	1.5	1.0	0.5
Sustainability event	0.0	0.4	3.9	1.5	7.2	0.6	0.7
Native heritage presentation	0.0	0.0	0.0	0.6	1.3	19.0	0.0
Outdoor Education	**12.7**	**9.3**	**17.3**	**49.7**	**9.0**	**7.2**	**8.7**
Garden classes	0.8	3.0	0.0	0.0	0.0	2.1	4.7
Story Walk/ Storywalk	10.0	3.0	6.3	0.8	4.0	4.0	0.5
Bird walk/ club	0.0	0.5	2.5	0.8	1.0	1.0	1.0
Fishing class	0.0	0.0	0.0	0.0	0.0	0.1	1.0
Nature center presentation	1.0	0.3	1.3	0.0	2.0	0.0	1.2
National Park presentation	0.6	0.0	0.0	0.1	2.0	0.0	0.3
Outdoor-specific guest speaker	0.4	2.5	7.2	48.1	0.0	0.0	0.0
Career Skills	**8.7**	**52.1**	**19.3**	**48.4**	**47.9**	**7.0**	**8.8**
Employment assistance	6.5	1.0	14.0	0.3	42.4	4.0	3.0
Entrepreneurship training	0.9	0.0	5.1	44.1	2.5	2.0	4.5
Financial literacy workshop	1.3	51.1	0.3	4.0	3.0	1.0	1.3
Outdoor Recreation	**0.3**	**10.8**	**24.4**	**20.4**	**12.8**	**21.2**	**39.5**
Hiking club	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Bike club (seniors)	0.0	8.8	9.0	0.0	0.0	12.8	9.3
Outdoor games class	0.0	2.0	0.0	0.0	0.8	0.0	11.0
Outdoor teen club	0.0	0.0	0.1	0.0	10.0	6.4	2.9
Bicycle club (youth)	0.3	0.0	15.3	20.4	2.0	1.0	16.3
Community Engagement	**1.0**	**27.0**	**71.6**	**57.6**	**4.7**	**2.4**	**3.0**
Farmer's market	0.8	4.0	70.6	0.0	0.0	0.0	0.0
Fundraiser event	0.0	0.0	0.0	49.6	1.0	2.4	0.2
Volunteer training	0.3	23.0	1.0	8.0	3.7	0.0	2.8
Other							
All other programmes	**38.0**	**30.8**	**70.6**	**48.1**	**30.1**	**20.0**	**34.8**

3.2.2 Qualitative Research Method

Whilst both interviews and focus groups are some of the most effective ways of gathering qualitative data and provide many distinct benefits in this respect which would likely have been optimal for the purposes of this research (Saunders 2015; Morgan 2011), the feasibility of organising a statistically significant sized group of working professionals, especially within the realm of library programming, to participate in student research at such a peak time of year for many proved extremely challenging. For this reason, a controlled online survey was instead selected as the most viable qualitative research method as this allowed individuals to contribute asynchronously and significantly more

anonymously than in an interview setting (Saunders, Lewis, and Thornhill 2019), whilst also encouraging more participants to interact with the research due to time and effort requirements being significantly lower (Billups 2021, Perna 2020).

The survey design was kept extremely simple with the intention of refraining from overwhelming any potential participants, whilst questions themselves were designed to be as open-ended as possible to both reflect the style of questions which would have been present in an interview and refrain from persuading or inducing skewed responses as a result of leading questions. The survey was conducted using Google Forms software as it provides a built-in mechanism for email recording to prevent duplicate responses and offers a clean look with easily understandable features which are familiar to many. The cross-compatibility of this Google programme also ensured that results were easily exportable to Excel for more streamlined import into the software ultimately used for thematic analysis.

3.2.3 Library Sampling

In selecting a sample of libraries to examine their programme offerings, it was necessary to ensure an even and diverse range of institutions were selected, whilst also refraining from biased sampling to minimise the risk of inaccurate, skewed, or cherry-picked results (Staller 2021). In order to achieve this, 25 libraries were chosen from randomly selected states based upon the below criteria, for a total of 100 libraries across six distinct geographic areas and four categories of settlement classification.

- **Urban (L)** – a library from the largest city (by population) within the state
- **Urban (S)** - a library from a randomly generated (smaller) city within the state
- **Suburban** - a library from a randomly generated suburban area/ state county
- **Rural** - a library from a randomly generated rural area/ state county with population <50,000

The cities and counties in question were randomly generated using Microsoft Copilot to ensure as minimal bias as possible before the reliability of the final list was verified through further investigation, though the accuracy of the ultimate data collected may be limited due to the amount of information made publicly available by each library online. For example, throughout the collection phase, rural libraries were observed to have less developed websites and social media presences than larger and more urban library systems, with limited information advertised regarding programmes or services overall. As a result, any conclusions drawn from this data must be assessed with the knowledge that all observations were based upon digitally accessible materials alone and may not accurately reflect each library's true range of services if these were not advertised in full on either a website or public social media platform.

3.2.4 Survey Participant Sampling

Similarly, whilst distributing the survey link and encouraging participation, it was important to strive to obtain as varied and unbiased a sample as possible. Homogeneity and "snowball sampling" were of particular concern as these are common within qualitative research specifically (Staller 2021), and inadequate sampling may result in an overall lack of generalisability in results (Tenny, Brannan, and Brannan 2022; Morgan 2011), though this is widely accepted as a limitation of such research and is not a key concern for this study when considering the objectives listed in Section 1.1 (Smith 2017).

To achieve this, volunteers were sourced using a range of tactics, including enquiries on library-specific forums within North America and social media posts on semi-professional sites, namely LinkedIn, Meta, and Research Gate. This ensured that the sample, whilst purposive (Staller 2021), remained as unbiased as possible by limiting researcher input and provided ample opportunities to recruit an assortment of participants who are collectively somewhat representative of the wider population being studied (Saunders, Lewis, and Thornhill 2019), though there remains some concern

around a lack of diversity within online spaces themselves skewing the results gathered from such forums.

Ultimately, the sample obtained for this research was much smaller than originally desired as generally larger numbers in the range of 50 to over 100 respondents are loosely recognised to be significant when it comes to graduate research and questionnaires in particular, though this is extremely dependent on a variety of factors such as sample-to-item ratio and the analysis methods selected (Staller 2021; Memon et al., 2020; Wisker 2018). Given both the time constraints of the research described here, as well as the intended analysis method and use of results, the 21 responses obtained, whilst having some potential limitations in terms of exhaustivity and applicability, were adequate for the purposes of this research and nevertheless provided ample insight into this topic to inform a meaningful discussion of the results.

Participant demographics were tracked through survey responses to monitor diversity in the sample as well as better inform data analysis, with key metrics displayed below in Figures 2, 3, and 4.

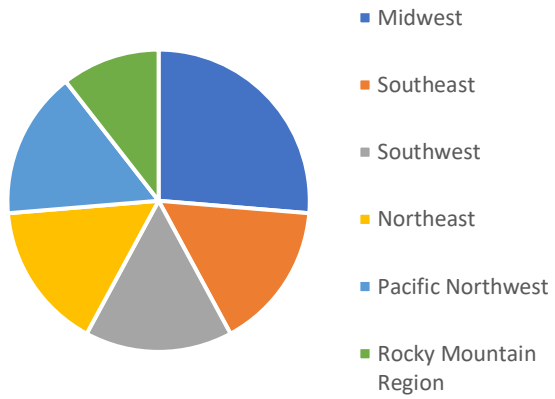

Figure 2: Survey responses by region

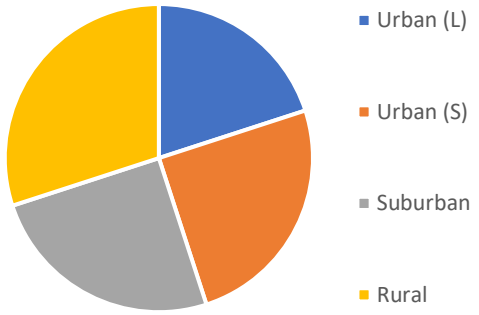

Figure 3: Survey responses by settlement type

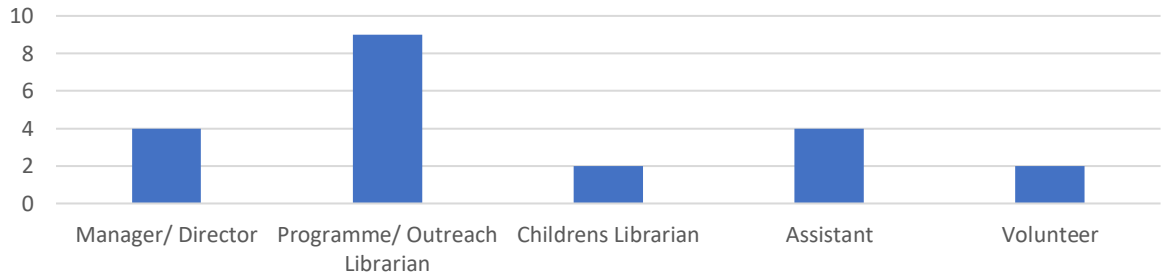

Figure 4: Survey responses by participant job title

3.3 Outcomes and Analysis

3.3.1 Systems and Software

Given that the quantitative dataset concerning existing programmes was recorded in Excel from the start, and that this software provides all the data analysis and visualisation tools necessary to process the data in question, Excel was the natural choice for this process and allowed the resulting tables and charts to be linked directly into the final Word-processed report with ease.

Excel proved similarly useful in the visualisation of key qualitative data outcomes, however Taguette was first needed to facilitate the primary stage of thematic analysis known as coding (Naeem et al., 2023), in this case descriptive coding specifically. This software was not only open source but was accompanied by a host of informative articles and user guides to facilitate a seamless analysis and is well documented in its ability to enable effective fragmentation and logical reduction of large data sets into more manageable groups of information (Hagman 2021), after which thematic analysis is made much simpler (Naeem et al., 2023).

After the coding of each response in Taguette using an inductive approach, this information was categorised and thematically analysed in Microsoft Word to draw links between codes and develop an understanding of the data's key themes. Throughout the process, each complete survey response and its highlighted quotes were tagged using a randomly assigned user number along with the region and settlement classification, if given, to provide basic context for each quote when used within a separate context (e.g. "R5 – Midwest – Urban").

3.3.2 Reflexive Thematic Analysis

The practice of thematic analysis is recognised here not as an alternative to content analysis, but as a form or variation of such (Okoko, Tunison, and Walker 2023), characterised by its theoretical flexibility and value within interpretivist ontologies (Braun and Clarke 2013). Adopting this method supported the inductive approach described above, as it required careful examination of the codes identified to then establish groups and themes, leading to the eventual development of theories which were later tested against the wider data set (Naeem et al., 2023). The reflexive branch of this analysis style, proposed by Braun and Clarke (2019), was of particular use in this context as it requires the researcher to be "fully cognisant of the philosophical sensibility and theoretical assumptions informing their use of thematic analysis" (ibid p. 594), and not only recognises but accounts for the role of the researcher in engaging with and analysing the data (Byrne 2022). Throughout this process it was also necessary to continually refine both code groups and themes and evaluate any prospective findings for both reliability and relevance to the topic (Billups 2021).

3.4 Practical considerations

Though the theories and methods detailed above established a solid framework for this research, several practical and logistical considerations were anticipated and accounted for, namely regarding resources and ethics, which enabled the research to succeed.

3.4.1 Resource Requirements

As briefly mentioned above, the qualitative methods labelled for data collection and analysis were fairly labour-intensive and required careful planning and time management in order to accomplish. A timeline for 4-month project completion was developed in line with recommendations published by Wisker (2018), with the longest periods of focus being for the data analysis and data collection stages.

As the project described was conducted as part of a university programme rather than professional research, no funding existed, meaning all participant recruitment, data collection, and data analysis were conducted using software which was either open-source, or made available to students by RGU. In this case, both the tools used for the survey itself, and each variety of data analysis were open source or previously available to the researcher through other means. Whilst recruiting group participants without any resources to offer as material compensation did prove difficult and likely resulted in a smaller sample size than otherwise could have been achieved, many other graduate projects are conducted in this way and have recorded successful results despite these challenges.

3.4.2 Ethics

Prior to proposing this research, all relevant aspects of RGU's Research Ethics Policy were carefully considered and the Student Project Ethical Review Form was completed in full. To ensure this project remained compliant with University policy, and therefore also with GDPR, there were a few key aspects of the outlined process which required vigilance, including participant consent, data storage, and data usage (Billups 2021).

As part of every social media and forum post with the intention of gathering survey responses, the purpose of the research was made clear to potential participants, along with the implications of their chosen involvement. It was made especially clear that participants had the power to withdraw their consent at any point throughout the process, and that this would be honoured by the removal of all their data from the set.

All data collected was, and will continue to be, stored securely on a password protected external hard drive and accessed only through a single password protected computer until the final results for this report are ratified. Additionally, this data was fully anonymised prior to any form of analysis through the replacement of any given names with pseudonyms and the removal of any other identifying characteristics. In doing so, all data presented in the following section is free from personal identifiers and has been referenced without further limitations.

4. Results and Discussion

Whilst both methods of data collection yielded valuable results which offer real insight into the research aims outlined above, each highlights information regarding a distinct aspect of these objectives; for example, website analysis provided wide-ranging insight into the current programme offerings of various libraries and the large-scale factors which influence these, in comparison to survey responses which revealed far more about the specific considerations precluding the running of outdoor programmes as well as their perceived impact on communities and the futures which library staff foresee for them.

4.1 Programme Analysis Results

Systematic analysis of the quantitative data collected from the 100 libraries selected above yielded a large set of information regarding the most common programmes offered by libraries in North America and more notably the frequency at which these activities are offered at each. This list then required refining to categorise activities and ultimately enable appropriate comparisons between outdoor, digital literacy, and other skill-focused programmes to examine their respective prevalence within modern libraries and observe any trends across various states, regions, or settlement classifications, of which there were many.

Two primary output tables can be referenced in Table 4 and Table 5, while specific data points relevant to the themes identified have been visualised and presented below in conjunction with the findings of both the literature review and qualitative survey.

4.2 Librarian Survey Results

Given the pool of responses and the trends observed between them based upon systematic coding and subsequent collation of those codes into groups, a list of key themes was extracted and further developed utilising an inductive approach (see Table 6 below, for a summary of these themes). The ultimate findings aligned with many of the themes observed in the literature review of this report, however the library staff surveyed also presented several original considerations such as asynchronous programme offerings, differences in accessibility between indoor and outdoor spaces,

and the severity of the implications which an area's climate may have on its ability to offer regular outdoor programming. These points, along with other themes of note, are detailed below along with clear support provided by key quotes and data visualisation where appropriate.

Table 6: Results of Thematic Analysis of Survey Data

Code	Code Grouping	Overarching Themes
hosting outdoor orgs partnership organisations large events public parks	**Outdoor connections beyond regularly scheduled programming**	Many libraries have **connections to the outdoors beyond scheduled programming** which may be just as if not more impactful than programmes themselves (ex. community partnerships, connections with outdoor-aligned organisations, materials kept in stock).
community gardens public performances hikes and walks gardening/ environmental work scavenger hunts	**Recreational/ community-focused outdoor programmes**	The majority of outdoor programmes referenced by libraries are centred around simply providing a positive environment outside and **bringing communities together** in a unique way. This is particularly effective in such outdoor spaces as they **rarely have strict limits on attendance** due to larger space availability.
nature hikes and walks outdoor learning centres guest speakers steam programmes	**Education-focused outdoor programmes**	Libraries also offer a range of more **outcome-oriented programmes** such as **STEAM** classes and specific **career skills** courses. These are in **high demand given current initiatives** and are typically offered indoors, with some provision outdoors depending on the course and the time of year.
geocaching career-readiness programmes	**Skill-focused programmes**	
story times story walks	**Literacy-focused outdoor programmes**	Outdoor **story times** and **story walks** are **extremely popular programmes** at many libraries and **promote early literacy** amongst young children whilst also providing open spaces for exploration and other activities.
outdoor programme goals community involvement sustainability skill building target demographics early learning	**Outdoor programming goals**	The goals of each programme differ depending on the programme type, target demographic, and unique library mission. The majority of programmes described are **designed for young children and teens** with the aim of providing meaningful programming in an **alternative environment** and fostering **environmental literacy** along with **community engagement.**
covid provision over time	**Past factors influencing current programming.**	Programme provision and attendance were significantly **disrupted by COVID-19 lockdowns**, though this has had a variable effect on different libraries. Many possess strong desires when it comes to future programme offerings, but **lack of funding** is a common limitation.
lack of funding future plans	**Future programme aspirations**	
weather seasons travel time flexible programmes	**Additional considerations for outdoor programming**	Outdoor programming offers **distinct advantages** to indoor programming but also has certain **insurmountable limitations**, especially depending on the library's location, the demographics of its area, and the time of year.
sensory-friendly experiences	**Accessibility**	

accessibility utilising other spaces		
digital literacy goals digital literacy offerings online courses tech in outdoor programmes	**Digital literacy**	**Digital literacy** is an overarching goal and has a direct impact on libraries' communities but often **lacks the funding necessary to be fully developed** and offered at the scale desired. There is **very little true overlap between digital literacy and outdoor programmes** at present.
attendance and popularity	**Programme attendance and popularity**	Attendance is highly dependent on the type of programme, though some librarians note that different **patrons have specific preferences** when it comes to outdoor or indoor offerings specifically. The most popular outdoor programmes by far are kid story times, with movie nights in local parks and certain STEM programmes being similarly successful.

4.3 Key Findings

4.3.1 COVID-19's Lasting Impact on Libraries

Whilst review of current literature established that COVID-19 lockdowns had a huge influence on libraries and their programming, and thus inspired inquiry into how this affected the development and provision of outdoor programmes, remarks by librarians such as R10 and R18 revealed that these programmes have not only expanded in some cases since early 2020, but continue to play a large role in the delivery of safe and accessible services for elderly and immunocompromised patrons. The full range of survey responses also exposed meaningful detail regarding the timing and exact factors driving the need for outdoor programmes and thus provided greater context for a discussion around its benefits and permanent uses.

For the purposes of the survey conducted and therefore analysis of these results, the timeline presented in Table 7 is used to recognise three distinct phases of the wider USA's response to the pandemic, with recognition that that federal response was purely guideline-based, whilst enforceable restrictions varied from state-to-state (Centers for Disease Control and Prevention 2023), and therefore inspired various responses from libraries across different circumstances.

Table 7: COVID-19 Timeline in Line with Federal Guidelines

(Information taken from: Centers for Disease Control and Prevention 2023; Alexander et al., 2021; Netburn 2021)

"Phase"	Government Legislation/ Guidelines
Initial Lockdown **Mar 2020 - Jun 2020**	Many states issue "stay-at-home" orders and close all non-essential public services and businesses. Public gatherings are prohibited, and schools are mandated to transfer to remote delivery.
Mandated Restrictions **Jun 2020 - Mar 2021**	Mandatory mask ordinances for indoor spaces and public transportation continue to be enforced in many states. Public gatherings are recommended to remain under 10-25 people depending on state guidelines.
Recommended Behaviour **Mar 2021 - Dec 2021**	Most state and city ordinances are lifted, allowing citizens to make their own choices in line with current CDC and public health guidance. Some public institutions and businesses remain cautious and limit in-person activity past the end of most legal restrictions.

The vast majority of libraries, both researched and surveyed, adhered to an identifiable pattern of behaviour in line with the phases denoted above, with respondents largely echoing literature and news reports which suggest that public libraries, similarly to most institutions at the time, were forced to close any physical locations and halt all in-person programming in favour of adapting completely remote services and digital programme offerings (Real 2021; Vassilakaki and Moniarou-Papaconstantinou 2021). As regulations shifted from total prohibitions to calculated restrictions in phase two, primarily limiting the size and location of public gatherings, respondents 4, 11 and 18 suggest small outdoor programmes became not only possible to deliver at a comparable level to pre-COVID times, but were one of the cleanest, safest, and cheapest ways to encourage community engagement and combat isolation during such a difficult time for many, as exhibited in programmes such as Russell Library's socially distanced "Book Yak on a Kayak" book club (American Library Association 2021) and the widespread popularisation of outdoor Story Walks in 2020 (Lenstra and D'Arpa 2021).

This capability only strengthened as restrictions eased further and encouraged individuals to return to regular activities, as both small- and large-scale outdoor programming provided a highly valuable low-risk environment for patrons with prevailing concerns around COVID transmission in which they could access library services whilst maintaining personal boundaries and necessary safety precautions. Whilst in 2024 most formal restrictions and guidelines have been completely lifted, this principle remains in that those who are at higher risk of infectious disease transmission may avoid visiting indoor public spaces for extended periods of time. R16 and R20 were particularly cognisant of this fact and described the measures their respective libraries have taken to continue to promote open-air spaces and create low-risk environments for elderly, immunocompromised, and otherwise cautious patrons to ensure equal access to programming.

> *As we started returning to indoor services one of our big safety measures was an air filtration system for our main activities room. So now we keep that running whenever we have group meetings but there are definitely still folks who will only come to outdoor events or wear a respirator indoors. We try to have at least one or two of our book clubs in a nearby park at least once a week when the weather is nice so that they can attend.* (R16 – Rocky Mt. – Urban (L)*)*

> *Our library serves a lot of senior citizens [because] the retirement home is nearby. They tend to visit in mornings when we're quieter and our staff tend to wear masks when they're visiting because some of them are still worried about getting sick.* (R20 – Midwest – Suburban)

R3 and R11, among others, also noted that the desire to work around state restrictions regarding indoor gatherings led to their libraries' development of intentional outdoor programming and drive to create or locate suitable outdoor spaces for the first time. R3 and R9 specifically detailed the ways in which their workplaces partnered with other local organisations such as churches and the parks department to utilise outdoor spaces and bring communities together, whilst others described the building of outdoor pavilions (R6) and community gardens (R7; R5) to provide designated spaces which remain under library ownership.

In creating these programmes during such a trying time, the majority were reported to receive overwhelmingly positive public reception, with attendance increasing following the second phase of the pandemic, and many respondents still hopeful that their new building projects and programmes will continue to grow in popularity and scale over the coming years.

4.3.2 Accessibility

The often open and less restrictive nature of outdoor spaces is a valuable environmental factor in programme provision which not only offers a lower-risk transmission alternative to indoor spaces as described above but can also contribute to the larger accessibility of such programmes when it comes to accommodating participants with more complex sensory needs or limited mobility (The Institute for Outdoor Learning 2023; Lafoon 2022). Outdoor education is well documented in its ability to deliver accessible experiences and make a wide range of accommodations based upon participants' abilities (Children and Nature Network 2024; Pokorney and Abbas 2022), and thus has great potential in this respect; however, this did not appear to be a driving factor behind the provision of outdoor programmes as described by the vast majority of survey respondents, though both R4 and R10 did note distinctly positive outcomes related to the sensory-friendly capabilities and alternative nature of the programmes highlighted. This suggests that this specific capability of outdoor programming may be underutilised, especially considering the limitations of some library facilities as highlighted in the below statement, though other participants also noted that the accessibility of outdoor spaces for those with mobility issues is highly dependent on the terrain of the area in question, a consideration also highlighted by Lafoon (2022). Some libraries such as Allegheny County Library (cited in Lenstra and Carlos 2019) have already taken this fact into account with the planning of programmes such as their senior walking groups which only meet at explicitly accessible trails and have a strong carpool system in place for those without access to cars or public transportation.

> *Only the first floor of our main branch is wheelchair accessible and our main meeting room is on the third floor. We have measures in place for getting books and other materials to wheelchair bound visitors but it's been hard trying to find a workaround to be able to include them in our regular programs. One thing we've been able to do in the past is have some of our teen clubs and guest speaker events set up in the big garden at the back of the building because it's a nice flat open space.* (R19 – Pacific Northwest – Rural)

Whilst accessibility, though mentioned briefly, did not emerge as an overwhelming theme within the survey data, review of individual libraries' programmes exhibited strong support for specific outdoor activities such as sensory field days, communication and problem-solving based activities, and an abundance of programmes targeted towards children who may experience behavioral challenges, all of which centered inclusivity and accessibility as clear motivators. These observations align with the diversity, equity, and inclusion initiatives identified in common library strategies during the literature review and provide evidence to support the further use of outdoor programmes to achieve these objectives on a larger scale. Ultimately, the success of these programmes suggests that much in the same way which outdoor education provides alternative learning opportunities for students struggling with traditional learning environments, outdoor library programming presents an alternative to traditional programmes in a way which is beneficial for patrons of all ages who may be incompatible or experience difficulty with structured indoor settings.

4.3.3 Outdoor Programme Considerations

Given the unique nature of outdoor programming, in addition to the distinct benefits detailed herein, there are a number of key factors which survey respondents identified as necessary to consider in organising any variety of activity in the outdoors, primarily arising from the need to preemptively plan for a variety of possible scenarios due to the irregularity of outdoor environments in comparison to easily controlled indoor facilities. By far the most pressing concern expressed by 76% of respondents was the unpredictability of weather on the day of a pre-planned event, with the two most popular strategised reactions to inclement weather being the preparation of an alternative but similar programme and the possible cancellation of the event with short notice. In a similar vein, a number of respondents from the South and Midwest in particular noted that their libraries' ability to deliver outdoor programming and attendance of their programmes is limited to very specific and often very short periods of the year due to the climate of the area being prone to extreme

temperatures or natural disasters (R2; R3; R4), though some such as Mercer Public Library (2024) in Wisconsin appear to balance this reduction in outdoor activities during certain months with indoor environmental programming such as natural-science-focused STEM workshops and wildlife-themed reading series.

R15 also highlighted that hosting outdoor programmes anywhere, but especially at a public park or partner site, requires an additional level of planning, staff training, and risk assessment to account for potential hazards in a new location, potentially increasing the resources needed to introduce new programmes, as well as inspiring some hesitation in prospective participants. Additional risk factors identified in responses include the presence of wildlife and insects, the potential for various flora to pose a threat to those with allergies, and a larger increase in general safety concerns due to overall exposure, especially when hosting children's programmes. The cost of purchasing new outdoor equipment was also raised as a concern by R5, though in reference to a specific area of programming for community gardening and thus may not be strictly applicable to all scenarios.

Concerns surrounding transportation were also heavily emphasised in responses from two programming librarians based in urban settlements, noting that not only may nearby motorways pose safety concerns, but conversely a lack of public transportation to more remote locations or partner sites may act as a barrier to participation for many, particularly lower-income patrons. R8's observation that their library's "outdoor programs pull from patrons that tend to have more financial resources, and have personal transportation," re-emphasises this concern once again from an urban perspective, though with the limited sample obtained for the survey and non-specific inclusion of this topic in the research objectives, it is unclear whether a lack of discussion from rural settlement based respondents is simply due to research limitations, or whether this is indicative of a true difference between how citizens are able to engage with outdoor programmes in various environments as suggested by Real, Bertot, and Jaeger 2014.

In a similar vein, numerous respondents from both small and large urban areas noted a lack of suitable "green" spaces in which library events could be held; however, analysis of current programmes revealed that such defined spaces are not necessarily needed to encourage outdoor exploration with activities such as urban walks and scavenger hunts able to be conducted throughout cities and suburbs alike regardless of available park land (Pallais 2024; Wilkinson Public Library 2024). Whilst this style of programme appears underutilised when observing its presence in only two of the 100 libraries analysed, with the overall demand for programming growing whilst 35.38% of librarians consider the size of their facilities inadequate for programming purposes (Kukiolczynski and Liu 2021), the need to consider innovative and expansive use of public spaces is becoming increasingly pressing.

4.3.4 Specific Programmes, Popularity, and Outcomes

Preliminary review of the data collected from each of the 100 libraries sampled immediately revealed a clear trend in the scale and frequency of programme provision across different settlement areas, with larger urban areas clearly offering the highest number of sessions per month across all categories of programming (see Figure 5); although the standard deviation amongst urban libraries was much higher than other regions in a number of specific programme cases, likely as a result of the diversity of populations and needs within various cities.

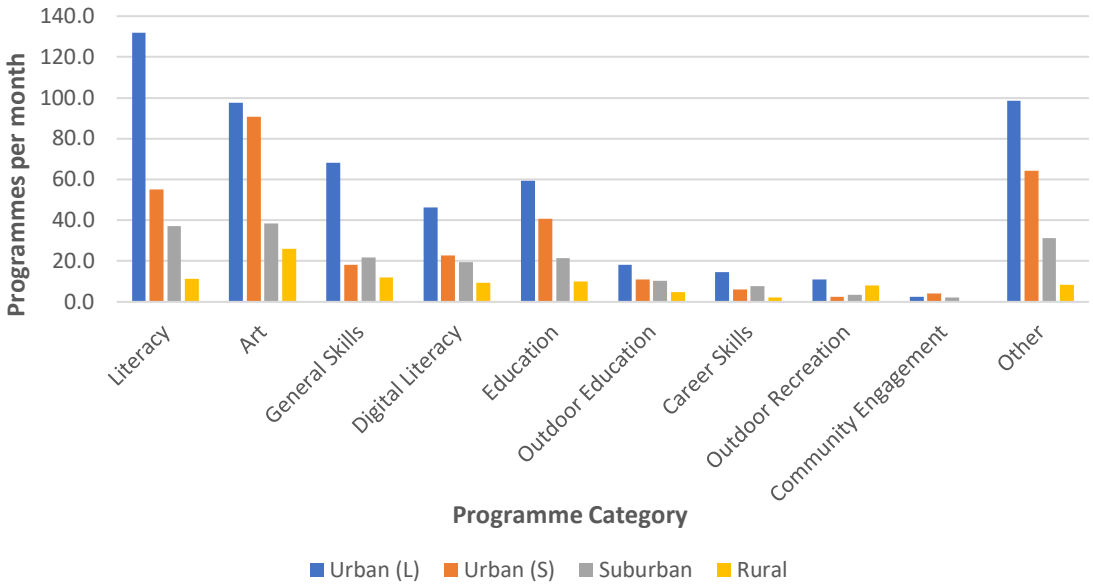

Figure 5: Average Programme Frequency by Settlement Area

Though the popularity of specific programmes varied significantly across the defined areas, overall distribution and key programme popularity are consistent with Sin and Vakkari's (2015) past observations, noting literacy and art remain the most popular programme categories throughout the country. Within these subdivisions, storytimes and craft workshops emerged as the two most frequently offered programmes in every settlement area by far, with 84% of total libraries offering the former and the average frequency of each (per month) being 46.6 and 34.2 sessions respectively, collectively making up around 35% of total programme events at the majority of institutions.

Though the provision of specific programme types as pictured above appears to largely follow the overall trend in programme frequency when it comes to settlement areas, outdoor programmes specifically stood out from this in terms of the proportion of libraries' total programme offerings, with rural libraries holding nearly 3 times the proportion of total outdoor programmes as compared to large or small urban libraries (see Figure 6). A number of situational and environmental factors may account for this when considering the unique circumstances of rural libraries both in terms of their challenges and inherent closeness to outdoor environments, as exhibited in R18's comment as follows: "we're really lucky to be nearby a lot of really great state parks and a reservoir… so we like to take advantage of those when we're organising our STEM programs to make them really hands on." Whilst this proximity factor highlights the greater convenience of outdoor programming for suburban and rural libraries, Singh, Mehra, and Sikes (2021) propose that outdoor, and specifically agricultural programmes provide additional benefits to rural communities due to their propensity for being both isolated and underfunded (Real, Bertot, and Jeager 2014), therefore rendering the community engagement inspired by programmes such as farmers markets and community gardens irreplaceably valuable, especially when recognising the prevalence of agriculture within many aspects of such rural societies.

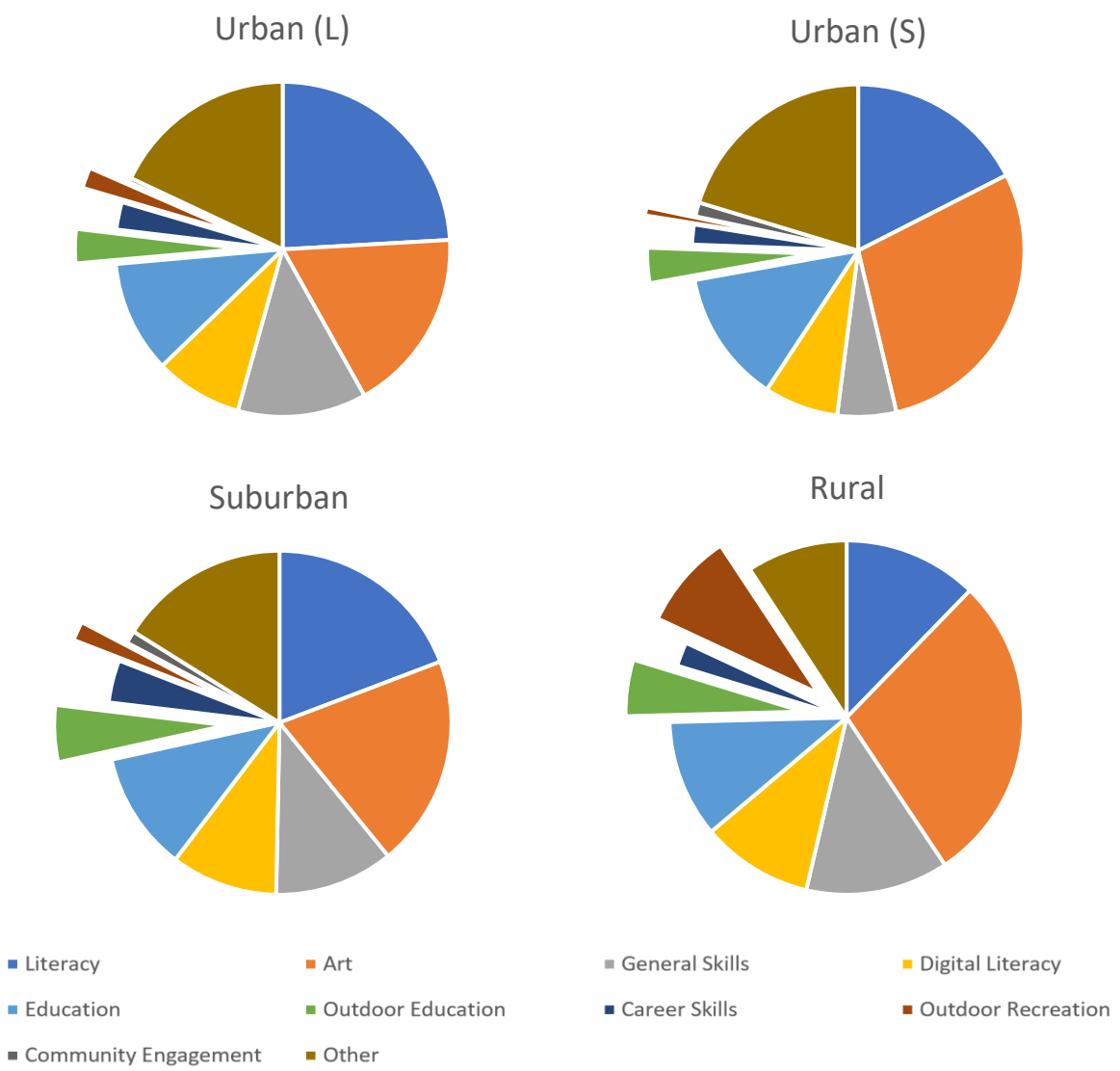

Figure 6: Average Programme Category Breakdown by Settlement Area

Analysis of the same figures according to region (see Figure 7) did inspire a number of additional observations regarding the provision of different types of programmes, however, with there being seven regional divisions to consider in this case, it is unclear whether these notes may be truly attributed to regional factors, or if groupings of smaller quantities allowed the data to be more easily influenced by specific libraries' results, especially considering the uneven distribution of settlement areas within each region.

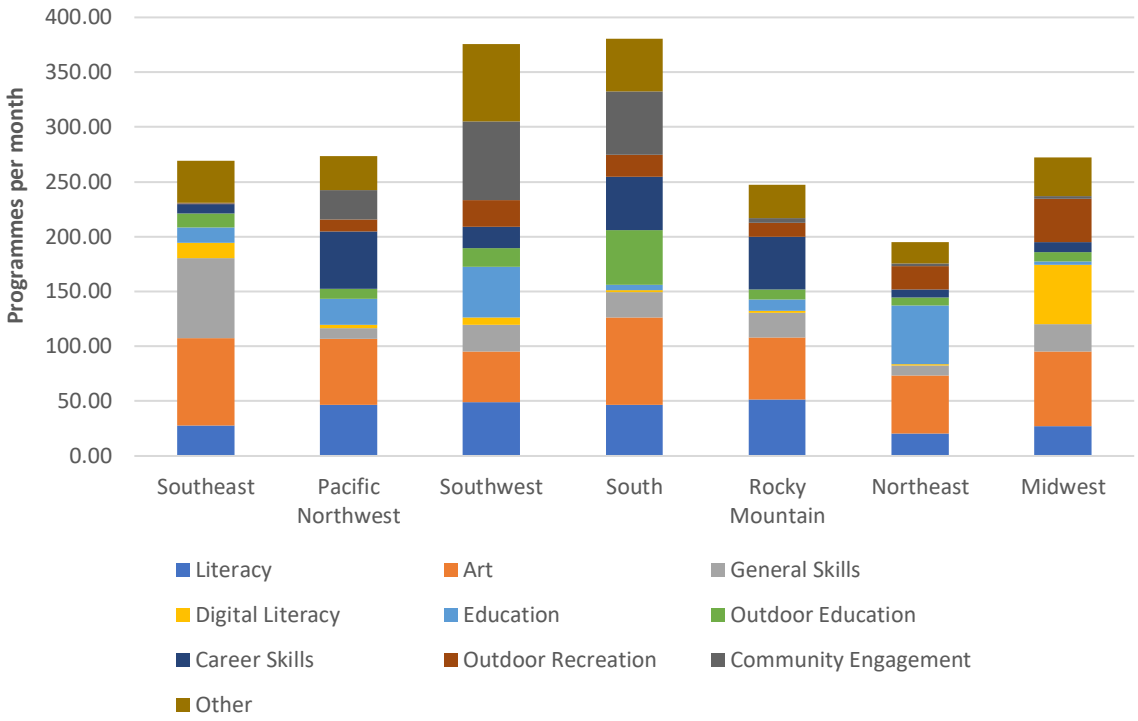

Figure 7: Average Programme Frequency by Region

Although these results did not highlight a significant, discernable correlation between the region of each library and its specific programme offerings, within the context of this research it is noteworthy that the Midwest provided nearly double the frequency of outdoor recreation programmes compared with any other region, whilst the same is true of the South when it comes to outdoor education. Plausible elucidations for this result are tied to the significant cultural differences between certain regions of the USA resulting in disparities in library usage and programme popularity (Lenstra and Carlos 2019; Donnelly 2013), as well as climate variances and consequent weather patterns potentially effecting certain programmes' viability as described previously by survey respondents. Even given these possible explanations it is unclear how exactly such factors influenced the results above due to a lack of relevant qualitative insight or more detailed information on the Midwest or South specifically, though this may be a valuable observation which requires future investigation to determine appropriate applications of this research to different communities.

Overall, when considering the three realms of outdoor programmes presented in Figure 1, the activities observed here appear to be spread fairly evenly across all three categories of intentions to use the outdoors, with a slightly stronger focus on those "meant to be practiced outdoors" such as physical activities. With outdoor programmes making up a mere 3.8% of total library programmes across the country on average, specific activity offerings were fairly limited in comparison to other categories such as literacy or art, though those observed were fairly diverse in terms of primary focus and targeted age demographics. Of the ten most frequently offered programmes represented in Figures 8 and 9, gardening classes and clubs were by far the most popular, likely as a result of 14% of libraries surveyed also hosting or having connections to community garden facilities, and 21% being home to seed libraries. Beyond such classes, outdoor storytimes exhibited positive levels of popularity comparable to indoor storytimes, with walking, hiking, and cycling clubs also close in terms of frequency and seasonal availability.

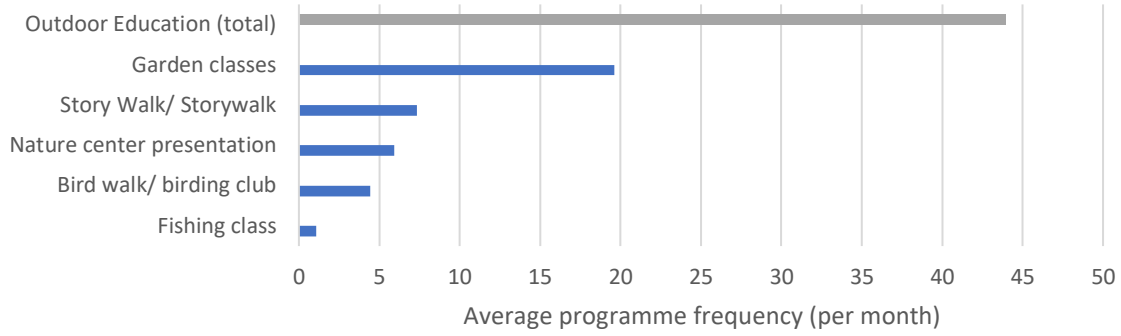

Figure 8: Five Most Popular Outdoor Education Programmes

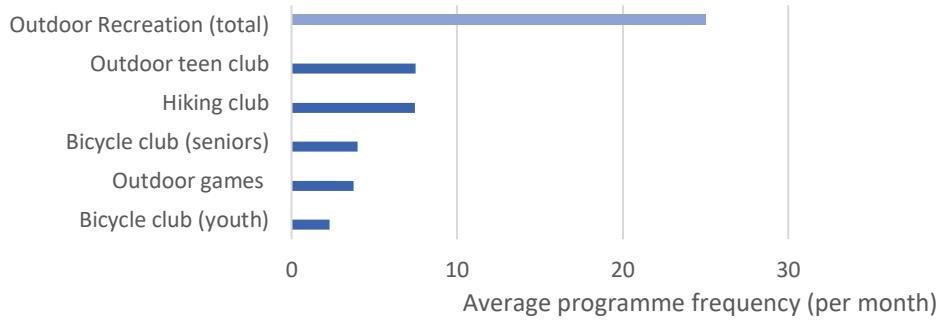

Figure 9: Five Most Popular Outdoor Recreation Programmes

4.3.5 Outdoor Programme Outcomes

Though many of these activities may be offered purely for patron enjoyment, even recreational activities promote basic wellbeing and facilitate connection with the environment (R8, R13), whilst other outdoor activities possessed more targeted aims such as storytimes which further literacy development and early learning (R3; R4), outdoor games which encourage teamwork and problem resolution skill development (R2; R13), and conservation walks which establish environmental awareness and stewardship (R3; R9)(also see Table 4). Though these benefits were noted offhand by a number of respondents, when asked plainly "how do outdoor programmes contribute to the achievement of your library's goals and community initiatives?", the vast majority of individuals simply asserted that 'as all programmes should contribute to their library's mission, outdoor programmes should too,' but did not indicate specific examples of targeted outcomes. This anecdotally suggests that the development or design of many of these programmes may not be strictly intentional or in direct response to specific initiatives, but is rather based upon patron demand and successful programme popularity, though it should be noted that a number of the more intensive outdoor programmes observed in library analysis did indicate clear programme goals and skill development outcomes.

For example, Saint Paul Public Library (2024) clearly pinpoints the desired skills and ultimate outcomes of each of the programmes included in its "Nature Smart" project which is driven by the "Cities Connecting Children to Nature" (CCCN) challenge, whilst the programme description for each of Wilkinson Public Library's (2024) "Mushroom Festival" events includes a detailed outline of both the programme expectations and expected participant results. Establishing and documenting these goals is vital in both facilitating intentional programmes to better achieve these outcomes as well as

holding libraries accountable to ensure they are working towards the objectives identified in strategic mission statements (Pokorney and Abbas 2022; Moseley et al., 2019; Goulding 2016). Whilst the benefits of this practice are more apparent when such goals are identified prior to conducting the activities in question, alternatively, Singh, Mehra, and Sikes (2021) retrospectively consider the key outcomes of three agriculture-based initiatives within rural library communities and clearly identify a number of specific benefits for both patrons and libraries themselves, including skill training as a result of community garden involvement, education and environmental awareness from engagement with local farmers markets, and an overall increase in support for library programmes and services. Similarly, a number of respondents heavily emphasised the community engagement capabilities of outdoor programming, particularly those from either rural communities or the Midwest (R3; R10), suggesting that public visibility and the opportunity to connect with other community members in an open space contributes significantly to a library's image and presence within such a community, ultimately increasing use of services.

Table 8: Outdoor Programming in Relation to Specific Library Goals and Current Limitations

	Outdoor programming benefits	**Outdoor programming limitations**
Library goals/ elements of strategic mission		
Community engagement	• Can ensure the library is highly visible in public spaces and encourage collaboration/ community partnerships. • Sense of shared neutral space similar to library itself. • Documented success in boosting subsequent library usage.	• Inclement weather may affect attendance or cause events to be cancelled.
Diversity, equity, and inclusion	• Potentially more accessible in some regards (low-infection risk, often step free depending on terrain, sensory-friendly options) • Low-cost options may provide disadvantaged library patrons with opportunities to engage with the outdoors for the first time.	• At times may be less accessible for those with limited mobility, particularly wheelchair users. • Transportation to locations other than the library may act as a barrier for select patrons. • Unfamiliar environments may raise various issues.
Literacy, learning, and achievement	• Alternative (experiential) educational style. • Solid foundation for outdoor storytimes/ Story Walks and select STEM programmes. • Excellent way to teach transferrable skills such as communication, problem solving, teamwork, organisation, and resilience.	• Not suitable for all learning styles or education goals.
Cultural enrichment	• Indigenous heritage presentations and discussions regarding or utilising the outdoors may be easier to share in such an environment. • Larger outdoor areas offer the space for larger events to be held such as dances and performances.	• Prevailing cultural biases may mean some patrons feel unwelcome in or unwilling to engage with certain types of programmes.
Sustainability and environmental literacy	• Directly connects children and adults of all ages with nature. • Boosts awareness of environmental issues and fosters environmental stewardship.	• Added factor of needing to consider programmes' impact on the environments being used (Leave no Trace).
Digital literacy	• Variety of extremely low-cost, low-	• Requires appropriate equipment

	equipment activity options which still teach basic coding/ transferrable technical skills. • More involved programmes requiring mobile devices have huge potential for positive enrichment.	and staff training. • Few options for alternatives in case of weather or technical difficulties. • Low funding for mobile devices which can be used outdoors.
Current indoor programme limitations		
Lack of space	• Outdoor areas typically present larger spaces for use. • Lack of confinement also makes new/ unique activities possible.	• Outdoors may not be suitable for all programme purposes. • Highly dependent on weather conditions.
Lack of funding	• Outdoors can offer a range of low-cost recreational and educational programmes.	• Low-cost only to a certain extent. At some point gear or other materials may need to be purchased for some activities.
Lack of staff or staff's limited knowledge	• Many activity plans already exist to help facilitate programmes without significant additional training. • Partnering with outdoor organisations can allow for outside staff to take over running programmes.	• May require training on increased hazards/ risk assessments at minimum.
Lack of diversity in programme options	• Allows for a more varied programming offering to keep patrons engaged and enthusiastic. • Represents a fairly new and unexplored avenue for future programming options.	• Certain programmes only viable on a seasonal basis.

4.3.6 Digital Literacy Development in Outdoor Programming

Specific inquiry into the current digital literacy-focused outdoor offerings of respondents' libraries returned extremely limited results, with the only concrete examples of such programming given being mobile device lending schemes which then enable individuals to explore the outdoors independently (R11; R15), and more explicit GPS device lending arrangements to facilitate geocaching (R14), a practice involving the use of GPS devices to locate hidden objects in the outdoors which was also highlighted across numerous libraries in the systematic analysis of library programmes (Indiana State Library 2024; Wilkinson Public Library 2024). Additional programmes noted in the analysis include San Diego Public Library's (2024) "Ecologik" series in which patrons learned valuable computer coding skills with the aim of understanding wildlife conservation and Jesup Memorial Library's (2015) nature-focused digital photography workshops.

The notion of teaching basic coding skills in outdoor environments, or "unplugged coding" is well established and strongly supported by both outdoor educators and computer scientists for its benefits beyond the digital realm as well as its ability to teach foundational skills with very little equipment or specialised staff training (Akiba 2022; Bergqvist 2021), and whilst the vast majority of survey respondents identified digital literacy as a key goal for their libraries at present, almost every library analysed offered exclusively traditional, fully digital coding and computer programming courses. Though several individuals expressed interest in introducing technology-aided outdoor programmes to their own libraries, many noted that their libraries currently lack the funding necessary to supply participants with the necessary devices and materials (R1; R13). Whilst the success of the Ecologik programme therefore demonstrates the viability of its concept should other libraries seek to capitalise on the benefits of outdoor learning to further their coding programmes, it

may not be a model which is accessible to all other libraries, some of which may instead benefit from a more skill-focused approach to learning in an outdoor environment, particularly a method which would then enable those skills to be transferred and applied digitally. Ultimately, this is still a developing niche of programming and whilst theoretical support for the benefits of such programmes is strong (Pallais 2024; Hills and Thomas 2019; Hougham et al., 2018; Velestianos 2015), demonstrating excellent potential, examples of programmes which combine both disciplines into a single activity specifically within a library setting remain extremely limited at present.

4.3.7 Beyond Scheduled Programming

In addition to the regularly scheduled programming detailed above, research revealed that many libraries across the country facilitate access to resources which support community member's interactions with the outdoors, mainly either through partnerships with outdoor organisations or through equipment lending programmes (see Table 5). Whilst the existence of these various schemes and resources were unable to be factored into the above statistics regarding programme provision, it remains important to consider these as a separate element of library programming as they encourage outdoor engagement outside of scheduled programming much in the same way that asynchronous MOOC offerings or device-lending services support digital literacy programming.

Table 9: Summary of other outdoor services offered

Partnerships/ connections to other orgs	Materials available to borrow
- Museum/ zoo passes - Garden passes - State and national park passes - Mini library provided at nature centre - Meeting spaces offered at the library to outdoor organisations (Girl Scouts, 4H, BSA, etc.)	- Litter clean-up kits - Nature exploration kits (various) - Physical maps available for checkout - "Library of Things" including outdoor gear (shovels, tents, rucksacks, hiking poles, etc.) - Seed libraries - Access to online databases and MOOCs
Other	
- Farmers' markets - Community gardens	

R11 specifically noted that offering services through partners can be doubly beneficial as they "utilise the partner's volunteer or membership base and are run by them, the library just hosts or provides support," therefore both boosting engagement and lessening the burden associated with organising and running a full library-based programme. Similarly, R15 and R8 noted the great advantages to hosting programmes in public parks, as both these places and libraries exist as free, collaborative, and moreover neutral spaces which once combined allow regular visitors of either to be exposed to a similar environment with different capabilities whilst also benefitting the parks department in return (Libraries and Parks for All 2024; Pallais 2024; Schull 2008), a factor which has contributed to the partnership of many libraries with local park and forest services (Tchou 2022, Lenstra and Carlos 2019). The inherent visibility gained by occupying such an exposed public space also establishes an excellent dynamic for outreach events and fosters community engagement.

The asynchronous nature of offerings such as material lending schemes, online courses, and museum or park passes is key in that these provide options for community members who may struggle in group settings or else follow a work or study schedule which is averse to the timings of library programmes. Keeping these available as options in addition to regularly scheduled programming both promotes accessibility across the board and facilitates further, independent learning (Tchou 2022).

4.3.8 Future Development

Whilst current outdoor programming within libraries may be considered limited in terms of both quantity and scope, with specific examples of exemplary offerings not yet being widespread, the success of a number of the programmes detailed above and their positive community reception indicates huge potential for libraries in future, particularly when it comes to furthering community engagement for those located in rural areas (Singh, Mehra, and Sikes 2021, Real, Bertot, and Jaeger 2014), or facilitating skill development and environmental stewardship in more urban locations with less regular access to natural spaces (Pallais 2024; Schull 2008). In examining the survey responses collected, it is clear that the greatest barrier to increasing outdoor programming is the lack of sufficient funding described in Section 4.3.6, whilst concerns surrounding climate and seasonal availability were raised as more of a factor to be considered in the planning process than an outright limitation.

Several respondents, particularly those with existing outdoor programmes and facilities, expressed significant interest in expanding these offerings where possible, for example R5 noted that their library's community garden was only built very recently, so there is currently a large opportunity to develop this service in parallel with relevant programming. Others such as R14 and R11 highlighted a desire to further involve partners in their library programming and move to outsourcing some of the labour involved in both planning and running these to combat lower levels of library staff and their limited experience in specialised areas. Whilst hiring contractors is commonplace in outdoor and other organisations, this practice may require more thought before being fully embraced by libraries who in some cases prefer to involve volunteers from local communities to address staffing shortages rather than hiring additional staff, though costs associated with the partnerships suggested here may be negotiated on a case-by-case basis. These points along with additional opportunities for positive use of outdoor programmes are detailed in Table 4 and provide ample support for the implementation of such programmes wherever possible to better achieve the common objectives of libraries' strategic mission statements.

5. Conclusion and Recommendations

Whilst existing research into the ability of outdoor library programmes to promote digital literacy and broader skill development within public libraries is extremely limited, sufficient resources exist to support the assertion that outdoor programmes contribute to many of the same skills targeted by modern library initiatives (Lenstra and Campana 2022; O'Brien 2022; Martin and Franc 2017)(also see Table 4), and possess an additional wealth of health and wellbeing benefits which may assist in counteracting the negative effects of unregulated technology use in our society at present (Children and Nature Network 2024; Institute for Outdoor Learning 2023; Lenstra 2021). The research detailed herein set out to advance this perspective using the data collected through analysis of libraries' programme offerings and survey responses from information professionals in public libraries across the USA, though whilst the methods chosen yielded valuable data regarding wider programme provision, the current limited presence of outdoor programmes, the main subject of investigation, within most libraries and therefore the libraries of the respondents surveyed consequently reduced the direct relevance of survey results which ultimately provided far less insight into the specified research aims than initially desired.

Nevertheless, these discussions highlighted numerous benefits of outdoor library programmes such as improved accessibility for those with alternative learning or sensory needs, lower-risk alternatives for those concerned with airborne infection transmission in the wake of COVID-19, and increased capabilities for community engagement due to higher public visibility and larger activity spaces, though a lack of clear intention behind programme planning indicates that many of the more specific benefits associated with outdoor activities such as personal, social, and skill development may currently be overlooked when it comes to assessing these programme aims and greater outcomes.

These responses also provided visibility of the evolution of library programming over the past five years as well as future aspirations and the shared goals driving library service provision, all of which, when viewed in tandem with evidence of positive outdoor programme outcomes, strengthen the case for the future provision of targeted outdoor library programming.

Given the limitations of the research as mentioned above, this topic would benefit greatly from a more focused investigation of specific programmes which explore the ability of outdoor programming to further digital literacy initiatives, as little information on this subject was provided by the survey responses collected here. An appropriate method for ensuring adequate depth is achieved in future research may involve identifying specific libraries or individuals involved in the exemplary provision of outdoor programmes with digital elements, and interviewing these specific parties to gain a better understanding of the more precise factors involved in planning, executing, and analysing the benefits of such programmes, along with providing real insight into a comparison between these activities and a wider collection of library programmes.

Ultimately, this is clearly a developing niche of programming which will likely gain popularity as support for outdoor education grows and its benefits are more widely recognised, meaning further investigation into the topics above would support this constructive library growth and expand upon the research detailed herein which was successful in identifying these areas for growth as well as evaluating key elements such as programme goals and capabilities which will factor into future studies and consequent decisions to eventually aid positive community development.

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