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Curating Creativity: Library Services as Platforms for Art-Based Educational Experiences

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Abstract

Libraries have traditionally functioned as centres of knowledge, providing access to books, journals, and digital resources. This study investigates the role of libraries in fostering creative engagement and learning experiences through art-based educational interventions. Employing a descriptive research design complemented by statistical analysis, data were collected from a range of academic libraries that implement art-focused programs, workshops, and interactive exhibitions. Participants, including faculty members, students, and librarians, were selected using purposive sampling. Semi-structured interviews were conducted to capture perceptions regarding the effectiveness of these programs, participant engagement, and the innovative outcomes produced. Data analysis was performed using SPSS software, applying t-tests, ANOVA, chi-square tests, and correlation analyses. Observations were made on the interactions between participants and the environment during library visits, workshops, and exhibitions. Findings reveal that team workshops (mean 4.15 ± 0.59) and creative interactions (mean 4.08 ± 0.67) significantly enhanced participants' creativity. Additionally, curated art collections (mean 3.92 ± 0.66) were particularly effective in stimulating inquiry-based learning, demonstrating the potential impact of library art programs. The study concludes that libraries, as independent variables, function as dynamic platforms that promote creativity and holistic learning. Furthermore, it proposes a structured framework for evaluating art-based learning interventions, emphasising the transformative potential of library initiatives in nurturing creativity, collaboration, and enriched learning experiences for both students and faculty.

Keywords: Library Services, Art-Based Learning, Creative Engagement, Curated Art Collections, Student Creativity, Educational Innovation.

1. Introduction

For decades, libraries have been recognised as essential social institutions devoted to the acquisition and preservation of knowledge, offering access to books, periodicals, and digital resources (Chang and Hu, 2020). The domain of library services is currently undergoing a transformation that emphasises creativity, collaborative engagement, and experiential learning (Adeyeye and Akinlonu, 2024). In recent years, numerous libraries have undergone substantial changes, implementing programmes that foster creative thinking, facilitate arts-based educational interventions, promote collaborative learning, and support experiential modes of acquiring knowledge (Ivanova, 2024). Although higher education institutions have long aimed to cultivate learners capable of critical thinking and complex problem-solving, libraries are increasingly recognised as pivotal spaces for enabling such experiences (Kalota et al., 2025). A variety of art-based programmes and workshops have emerged as effective approaches to arts-based learning, employing inquiry-driven methods and focusing on

creative expression, interdisciplinary practices, and collaborative engagement (Abidin et al., 2024). These initiatives reduce the historical academic reliance on libraries while offering students and faculty access to resources and ideas previously unavailable.

Despite growing acknowledgment of libraries as facilitators of creative spaces, there remains a notable scarcity of empirical research examining the sustainability of creative engagement and educational outcomes produced by these programmes (Hannah et al., 2020). Traditionally, libraries were perceived primarily as repositories of knowledge, where books could be borrowed for quiet reading or educational purposes. However, contemporary libraries are evolving into community-oriented spaces that extend beyond the mere circulation of texts, even for academics balancing research commitments while maintaining a focus on inquiry (Radford et al., 2022). Libraries are now developing interactive environments that support innovative and creative expression (Kim, 2025). Facilities such as co-creation areas, makerspaces, exhibition galleries, digital studios, and collaborative spaces encourage both formal and informal participation, offering students, faculty, and the wider community opportunities to engage with materials in immersive and tactile ways (Rafique et al., 2020).

Learning in these contexts encompasses creativity, critical thinking, problem-solving, and associated cognitive dimensions. Libraries are progressively transforming into venues for expressive arts education, delivering workshops, exhibitions, and challenges that integrate artistic modes with research-informed knowledge (Decker, 2021). Beyond traditional art-based programmes, including painting, sculpture, and multimedia installations, research indicates that engagement with the arts can enhance creativity by encouraging novel perspectives, inventive approaches, and new problem-solving strategies (Ali and Gatiti, 2020). Through the development of personalised learning experiences that incorporate digital technologies alongside interactive spaces, libraries are increasingly establishing themselves as centres of creativity and engagement (Asim et al., 2023). Renovations often include art studios, multimedia laboratories, and interactive exhibits, all designed to foster creativity and provide visitors with opportunities to explore and engage with emerging ideas (Suresh et al., 2025). Consequently, libraries contribute to the creation of holistic learning environments that support participation in art-based educational interventions (Jha, 2023). Workshops, exhibitions, and performances hosted within library spaces position art as a vehicle for experiential learning, offering participants opportunities to create, reflect, and engage with new ways of knowing (Pauget et al., 2024).

1.1. Objective of the Research and Contribution

The study seeks to examine the function of library services as responsive platforms that enhance creativity, innovation, and experiential learning through art-based educational programmes, workshops, and interactive exhibitions. It focuses on how collaborative activities, curated art collections, and purposefully designed library spaces stimulate engagement, promote inquiry-based learning, and contribute to holistic educational outcomes for both students and faculty. The principal objectives of the research are as follows:

- To delineate the evolving role of academic libraries as innovative environments that foster creativity and collaborative learning through art-based educational practices.
- To describe the recruitment of participants, including librarians, faculty, and students, using purposive sampling, and to assess variables associated with creative engagement, collaborative learning, and inquiry-based learning through structured questionnaires and observational checklists.
- To provide empirical evidence demonstrating that curated art collections and collaborative workshops serve as effective mechanisms for enhancing creative engagement and inquiry-based learning.

1.2. System Overview

The research is structured into five main sections. Phase 2 provides a review of previous studies that have implemented arts-based learning experiences. Phase 3 outlines the methodological framework, including the statistical analyses employed to identify and evaluate library programmes. Phase 4 presents the research findings, highlighting results that substantially advance the study. Phase 5 concludes the research and discusses the implications for fostering creativity through library-based pedagogical initiatives.

2. Related Work

The awareness and preparedness of Nigerian academic librarians regarding the integration of artificial intelligence (AI) into library operations

were examined by Ajani et al. (2022). Findings indicated that although awareness of AI exists on a global scale, local implementation remains limited, and perceptions of readiness for AI adoption are mixed. The study recommended increased funding and human resource support to facilitate effective AI integration. Research on university libraries' responses during the COVID-19 pandemic revealed that while most physical library facilities closed, there was a marked expansion of online services, supporting enhanced learning outcomes through the combined use of digital technologies and traditional learning approaches (Acheampong and Agyemang, 2021). In some initiatives, cultural practices, simulations, and interactive platforms were employed to engage learners, resulting in improved performance, motivation, and skill retention compared with conventional methods (Blatt-Gross, 2023).

Lacey Bryant et al. (2022) described the integration of digital services in the National Health Service (NHS) knowledge and library framework, examining infrastructure, regional management systems, and resource discovery processes. These initiatives aim to ensure biomedical knowledge adheres to FAIR principles (findable, accessible, interoperable, reusable) while promoting digital literacy among citizens. Hasibuan et al. (2023) investigated strategies for developing digital collections in school libraries at Widura Library, SMK Negeri 3 Yogyakarta, using a qualitative approach comprising observations, interviews, and document analysis. Their findings indicated that digital collections were limited and largely restricted to e-books provided by the Ministry.

Hussain (2023) explored the role of AI in library operations through qualitative content analysis, discussing both the benefits and challenges of AI deployment along with remedial recommendations. Similarly, Abayomi et al. (2021) examined perceptions of AI among Nigerian library staff using a mixed-method survey of 80 librarians across eight libraries. Results showed general agreement that AI can enhance productivity and user satisfaction, although concerns regarding potential job displacement were cited as a primary factor limiting adoption. Hider et al. (2024) investigated the value, services, and challenges of public libraries in rural and remote regions of Australia, employing a survey with over 100 librarians and achieving a 40% response rate. Findings highlighted the significant role of rural and remote public libraries, including mobile outreach services, in promoting social inclusion and community engagement. Gupta (2025) further demonstrated that public libraries can support entrepreneurial activities among patrons using tools such as a business value calculator.

In the context of AI adoption, a librarian education development project was co-designed, co-implemented, and co-evaluated to assess service delivery, revealing enhanced ownership, co-participation, innovation, and engagement with patrons. The effectiveness of gamification in immersive virtual reality (VR) for library services was also investigated, with participants divided into gamified and non-gamified VR groups and evaluated through pre-tests, post-tests, and a three-month delayed test to measure knowledge acquisition, retention, and engagement. Additionally, the development of an automated news alert system at Jio Institute Digital Library in India, utilising Google News, Google Sheets, LibGuides, and AI tools such as ChatGPT, was implemented to provide curated updates for 287 companies, demonstrating scalability and efficiency.

3. Materials and Methods

This section provides an overview of the participants and the data collected from the study materials. Survey instruments were administered, and the relevant variables were analysed through three distinct approaches to evaluate library services that promote creative engagement and learning experiences via art-based educational interventions. Participants were selected using purposive sampling, as illustrated in Figure 1.

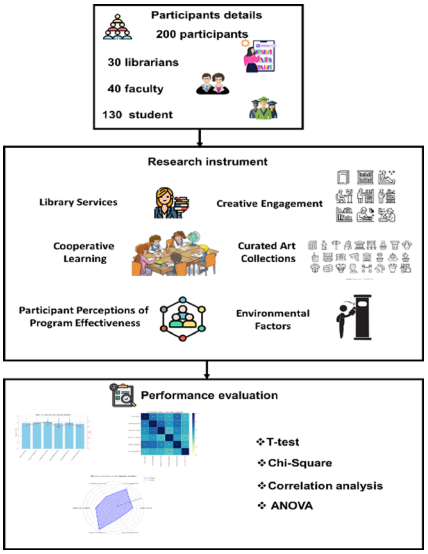

Figure 1: Overall Proposed Method.

3.1. Data Collection

Participants in the study comprised 200 librarians, instructors, and students, who were purposefully selected due to their direct involvement in art-related workshops, activities, and participatory exhibitions organised by academic libraries. These initiatives were designed to enhance creativity and enrich educational experiences through structured art activities.

- **Art-Centred Programs:** These initiatives were developed to encourage participants to engage their creative capacities and provided structured opportunities for artistic creation. Programs varied in duration, ranging from short-term projects to extended initiatives, and included activities such as art or writing exhibitions, creative theatre workshops, and collaborative art or research projects. The primary objective was to integrate creativity into the learning process while producing a tangible artistic outcome or experience.
- **Workshops:** Interactive workshops formed a central component of the research, enabling participants to engage in diverse creative processes. Commonly, workshops involved hands-on activities such as painting, sculpting, digital art, and storytelling through art. These sessions facilitated both individual creation and group collaboration. Participants were given opportunities to experiment with various art materials and tools, supported by the guidance of library staff.
- **Interactive Exhibitions:** These exhibitions showcased artworks created during workshops alongside selected pieces aligned with the workshop themes. They provided participants with a dynamic environment to engage with the art, encouraging reflection and critical thinking about the messages or concepts conveyed through the artworks.

3.2. Participants Details

Table 1 presents a detailed demographic profile of the 200 participants, categorised into three groups: librarians, faculty, and students. Within the librarian group, there were 30 participants, of whom 60% (18) were female and 40% (12) were male. Regarding age distribution, no librarians fell within the 18–25 range, 33.3% (10) were aged 26–35, 40% (12) were 36–45, and 26.7% (8) were aged 46 and above. In terms of professional experience, 16.7% (5) had 1–5 years, 26.7% (8) had 6–10 years, and 56.7% (17) had more than 11 years of experience. Librarians were not assigned to specific departments, as their responsibilities spanned general library services. The faculty group comprised 40 participants, with a gender distribution of 55% female (22) and 45% male (18). Age ranges included 12.5% (5) in the 18–25 bracket, 37.5% (15) in the 26–35 range, 30% (12) in the 36–45 range, and 20% (8) aged 46 and above. Experience levels were distributed as 37.5% (15) with 1–5 years, 30% (12) with 6–10 years, and 32.5% (13) with over 11 years. Faculty members were distributed across departments, with 30% representing Art, 37.5% Science, and 32.5% Engineering. The largest group consisted of 130 students, with 69.2% female (90) and 30.8% male (40). The majority were aged 18–25 (61.5%, 80 participants), while 38.5% (50) fell in the 26–35 age range. No students were represented in the 36–45 or 46+ age categories. Departmental distribution among students was 30.8% (40) in Art, 34.6% (45) in Science, and 34.6% (45) in Engineering.

Table 1: Demographic Details.

Demographic Category	Librarians	Faculty	Students	Total	Percentage
Number of Participants	30	40	130	200	100%
Gender					
Male	12	18	40	70	35%
Female	18	22	90	130	65%
Age Range					
18-25	0	5	80	85	42.5%
26-35	10	15	50	75	37.5%
36-45	12	12	-	24	12%
46+	8	8	-	16	8%
Experience (Librarians & Faculty)					
1-5 Years	5	15	-	20	10%
6-10 Years	8	12	-	20	10%
11+ Years	17	13	-	30	15%
Department (Students & Faculty)					
Art	-	12	40	52	26%
Science	-	15	45	60	30%
Engineering	-	13	45	58	29%

3.4. Evaluation Variables

The primary variables examined in this study include library services, encompassing art-based programs and workshops, and Creative Engagement, which pertains to active participation in such initiatives. The research also considers Collaborative Learning, whereby group-based activities enhance interaction, and Curated Art Collections, which are designed to stimulate intellectual interest. These variables are used to assess participants' Perceptions of Program Effectiveness and the extent to which programs achieve their intended outcomes. Environmental Factors serve as moderating influences, shaping the efficiency with which creativity and collaboration are utilised within library spaces.

- **Library Services:** This variable relates to the range of programmes, workshops, and services provided by the library that support creative and educational engagement. Library services may include art-focused initiatives, such as interactive workshops, art exhibitions, or collaborative projects, designed to nurture the creative capacities of students and faculty by offering structured artistic experiences (Orcutt et al., 2022). These services are regarded as the foundational mechanism for promoting creative expression and engagement within the library environment.
- **Creative Engagement:** Creative engagement measures the extent to which participants actively contribute to art-based programs offered by the library. This variable assesses how the library stimulates participation, encourages artistic creation, fosters collaboration, and expands participants' creative horizons (Hashim et al., 2022). High levels of creative engagement are typically associated with greater innovation, enhanced self-expression, and deeper connections to program content.
- **Cooperative Learning:** This variable captures participants' behaviours in group-based activities within library programs, such as collaborating on art projects or engaging in discussions. Cooperative learning involves sharing ideas and collaborating, supporting creativity, problem-solving, and social development. It fosters a community of shared values, embracing diversity and difference, and creates a dynamic, holistic learning experience.
- **Curated Art Collections:** Curated art collections refer to selected artworks displayed within the library to inspire and engage learners. These collections may include paintings, sculptures, or digital art, all intended to encourage inquiry-based learning and creative thinking. This variable evaluates how participants' intellectual curiosity is stimulated, fostering new ideas, questions, and connections within the context of the library's art offerings.
- **Participant Perceptions of Program Effectiveness:** This variable reflects participants' (librarians, faculty, and students) views on the extent to which library art-based programs facilitate creativity, collaboration, and engagement. Data are collected through surveys, interviews, or other feedback mechanisms, encompassing both quantitative and qualitative measures. This variable is critical for evaluating whether programs successfully meet educational and creative objectives (Sandberg, 2024).
- **Environmental Factors:** Environmental factors encompass the physical and social aspects of the library space that influence participant interactions and program engagement. These include elements such as lighting, spatial arrangements, resource availability, and the overall ambience of the library, whether "quiet" or "interactive."

3.5. Questionnaire Survey

The study aims to evaluate how library art programming influences creativity, collaboration, and learning. Both the survey and evaluation instruments focus on six primary variables: Library Services, Creative Engagement, Collaborative Learning, Curated Art Collections, Participant Perceptions of Program Effectiveness, and Environmental Factors. The survey also examines the physical and social aspects of the library, including spatial arrangements, lighting, and the availability of resources, which may either facilitate or constrain the creative experience. Respondents indicate their level of agreement with each statement on a 5-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree), reflecting their experiences with the library arts program across the measured domains. Sample questionnaires are provided in the Appendix.

3.6. Semi-Structured Interviews with Librarians, Faculty, and Students

The study examines the influence of library art

initiatives on creativity, collaboration, and learning through semi-structured interviews conducted with three participant groups: librarians, faculty, and students. Each group participated in two rounds of interviews, with each session lasting approximately one hour.

Semi-Structured Interviews with Librarians: During the first round, librarians discussed their roles in organising art programs and reflected on the ways these initiatives stimulate student creativity and collaborative engagement. The second round focused on obtaining librarians' evaluations of the art collections, assessing the effectiveness of these collections, and gathering recommendations for enhancing the programs.

Semi-Structured Interviews with Faculty: Faculty interviews followed a similar two-stage process. In the initial round, faculty members reflected on their experiences with previous art-residency programs, particularly considering how these initiatives foster student engagement and creativity. The second round sought faculty feedback on program effectiveness and explored suggestions for optimising contributions to student learning within the context of an art-based library environment.

Interviews with Students: Students also participated in two rounds of interviews. In the first session, they described their experiences with library art programs, focusing on how these activities supported creativity and collaborative learning. They reflected on the role of the library's art collections in shaping their creative processes and learning experiences. In the second round, students were invited to provide recommendations for program improvements and share insights on how the library enhances their creative practice.

3.7. Data Analysis

The impact of library-based art programs on creativity and engagement was examined through a variety of statistical methods. T-tests and ANOVA were employed to evaluate differences in mean perceptions among the participant groups, including librarians, faculty, and students. Chi-square tests were used to explore associations between categorical variables. Relationships between continuous variables were examined using correlation analyses, with Pearson's correlation applied for linear relationships and Spearman's rank correlation used for ordinal data. All analyses were conducted using the SPSS software package.

- **T-Test:** The t-test is employed to determine whether a statistically significant difference exists between the means of two groups. It assesses whether the observed differences are likely due to random variation or reflect a true difference within the population. The t-test is widely used in hypothesis testing, particularly when sample sizes are small, and the population variance is defined as shown in Equation (1).

$$s = \frac{\bar{W}_1 - \bar{W}_2}{\sqrt{\frac{\delta_1^2}{m_1} + \frac{\delta_2^2}{m_2}}} \quad (1)$$

$\bar{W}_1$ and $\bar{W}_2$ are the sample means, δ_1^2 and δ_2^2 are the sample variances, m_1 and m_2 are the sample sizes. It is applied to compare differences among participant groups, such as librarians, faculty, and students, in terms of the effectiveness of art-based programs or levels of creative engagement.

- **ANOVA:** ANOVA is a statistical technique used to determine whether the means of three or more independent groups differ significantly. It evaluates whether observed differences in the data reflect genuine variations between groups or are merely the result of random chance. In this study, ANOVA is applied to examine participants' responses, such as creative engagement and program effectiveness, across librarians, faculty, and student groups.
- **Chi-Square:** The Chi-Square test is a statistical method employed to assess whether an association exists between two categorical variables. It compares the observed frequency distribution of a categorical variable with an expected distribution, assuming independence between variables. Equation (2) is commonly used to analyse whether demographic characteristics or group classifications (e.g., librarians, faculty, and students) influence responses to questions, such as perceptions of library art-based program effectiveness.

$$W^2 - \sum \frac{(P-F)^2}{F} \quad (2)$$

W_2 is the chi-square statistic, P is the observed frequency, and F is the expected frequency. The chi-square test of independence can be applied. This analysis assesses whether perceptions of program effectiveness, categorised as effective or ineffective, differ across participant groups, including librarians, faculty, and students.

- **Correlation Analysis:** Correlation analysis is a statistical method used to assess both the strength and direction of the relationship between two continuous variables. This approach can reveal associations between variables, such as creative engagement and the perceived effectiveness of a program. For instance, it may test the hypothesis that higher engagement in library programs corresponds to greater perceived program effectiveness.

Pearson's correlation coefficient (r) is the most widely recognised measure for evaluating the linear relationship between two variables, as defined in Equation (3). The coefficient ranges from -1 to +1, where:

- +1 indicates a perfect positive correlation (as one variable increases, the other increases),
- -1 indicates a perfect negative correlation (as one variable increases, the other decreases),
- 0 indicates no correlation (no relationship between the two variables).

$$Q = \frac{m\sum Wz-(\sum w)(\sum z)}{\sqrt{[m\sum w^2-(\sum w)^2][m\sum z^2-(z)^2]}} \quad (3)$$

Equation (3) describes the *w and z* are the two variables, *m* is the number of paired scores, $\sum w$ is the sum of all values, $\sum z$ is the sum of all *z* values. The study utilises correlation analysis to examine the relationship between creative engagement and perceived program effectiveness. This approach enables an understanding of whether higher levels of creative engagement in art-based library initiatives correspond with increased perceptions of the programs' effectiveness in fostering creativity and supporting learning outcomes.

4. Results and Discussion

This study underscores the importance of library services as adaptable platforms for art-based educational initiatives. Overall, respondents reported enhancements in their creativity, collaborative skills, and engagement in inquiry-based learning as a result of the interventions. The findings suggest that such programs positively influence students' and faculty members' motivation, critical thinking, and experiential learning. Libraries therefore serve as dynamic environments that enable participants to engage with the educational process in a comprehensive and immersive manner.

4.1. Result of T-test

Table 2 and Figure 2 present a landscape analysis of the key variables associated with library art-based interventions. The library programs recorded a mean score of 3.98 ± 0.61, reflecting overall effectiveness. Participant engagement was notably high, with creative engagement scoring 4.08 ± 0.67 and collaborative learning 4.15 ± 0.59. Curated art collections (3.92 ± 0.66) and perceptions of program effectiveness in supporting experiential learning (4.05 ± 0.58) also demonstrated a positive impact on fostering inquiry-based learning. Environmental factors (3.87 ± 0.63) were similarly influential in shaping the learning experience. All variables produced statistically significant t-values ranging from 19.76 to 24.81 at $p < 0.001$, confirming that library programs are effective tools for promoting creativity, collaboration, and comprehensive educational engagement.

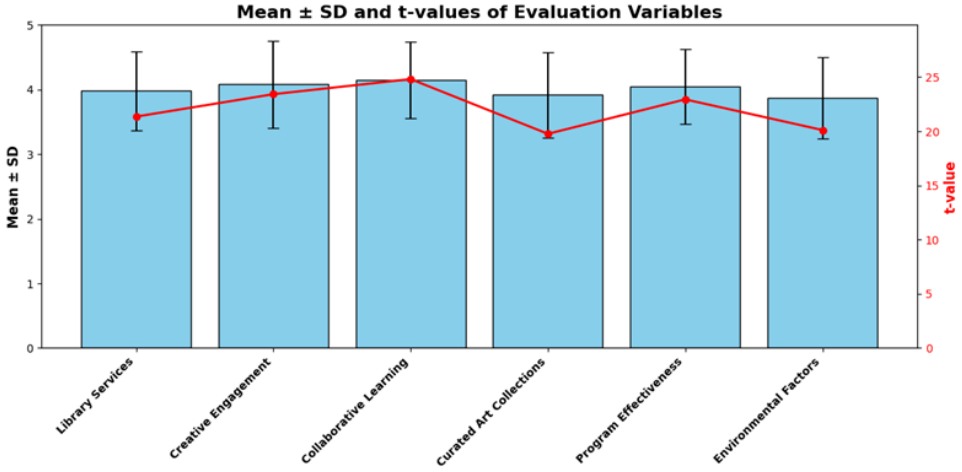

Figure 2: Comparison of the T-Test.

Table 2: Result of T-Test.

Evaluation Variable	Mean ± SD	T-Value	df	P-Value	Significance
Library Services	3.98 ± 0.61	21.35	199	<0.001	**p** < 0.001
Creative Engagement	4.08 ± 0.67	23.42	199	<0.001	**p** < 0.001
Collaborative Learning	4.15 ± 0.59	24.81	199	<0.001	**p** < 0.001
Curated Art Collections	3.92 ± 0.66	19.76	199	<0.001	**p** < 0.001
Program Effectiveness Perceptions	4.05 ± 0.58	22.94	199	<0.001	**p** < 0.001
Environmental Factors	3.87 ± 0.63	20.11	199	<0.001	**p** < 0.001

Note: DF-degrees of freedom.

4.2. Results of ANOVA

Table 3 indicates that participants exhibited statistically significant differences across all measured variables. Library Services demonstrated a significant effect ($F = 6.72$, $p = 0.002$), Creative Engagement ($F = 8.05$, $p = 0.001$), Collaborative Learning ($F = 5.48$, $p = 0.005$), Curated Art Collections ($F = 6.10$, $p = 0.003$), and Participant Perceptions ($F = 7.32$, $p = 0.001$). These findings suggest that art-based interventions within the library context can meaningfully influence participant engagement, collaborative practices, and learning outcomes in a library environment.

Table 3: ANOVA Results.

Variable	SS	df	MS	F	P-Value
Library Services	18.45	2	9.23	6.72	0.002*
Creative Engagement	22.30	2	11.15	8.05	<0.001*
Collaborative Learning	15.60	2	7.80	5.48	0.005*
Curated Art Collections	17.85	2	8.93	6.10	0.003*
Participant Perceptions	20.10	2	10.05	7.32	0.001*
Environmental Factors	13.75	2	6.88	4.92	0.008*

Note: SS: Sum of Squares, MS: Mean Square.

4.2. Result of Chi-Square

Table 4 and Figure 3 display the results of the chi-square analysis for key variables associated with library-based art interventions. Significant differences were observed for Library Services ($\chi^2 = 12.45$, $p = 0.014$) and Collaborative Learning ($\chi^2 = 9.87$, $p = 0.042$), indicating notable variations in participant responses. Curated Art Collections ($\chi^2 = 11.56$, $p = 0.021$) also reached statistical significance, reflecting their influence on learning outcomes. Creative Engagement ($\chi^2 = 16.32$, $p = 0.003$) and Participant Perceptions of Program Effectiveness ($\chi^2 = 18.74$, $p = 0.001$) were highly significant, demonstrating strong positive effects of library programs. Environmental Factors ($\chi^2 = 8.21$, $p = 0.084$) did not achieve significance, suggesting minimal impact on the measured outcomes.

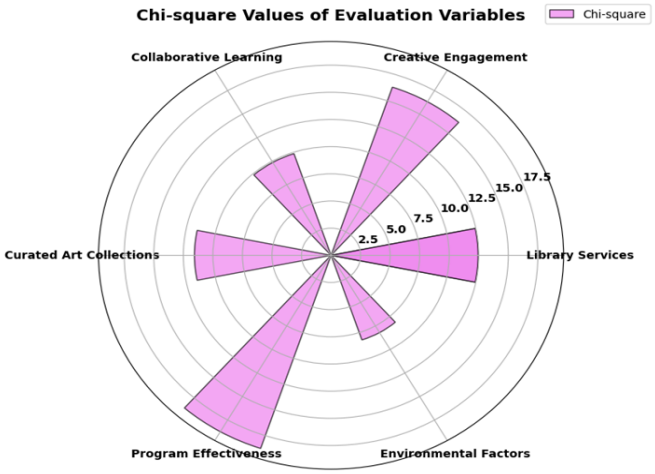

Figure 3: Representation of Chi-Square.

Table 4: Outcomes of Chi-Square.

Evaluation Variable	χ^2 Value	df	P-Value	Significance
Library Services	12.45	4	0.014	Significant
Creative Engagement	16.32	4	0.003	Highly Significant
Collaborative Learning	9.87	4	0.042	Significant
Curated Art Collections	11.56	4	0.021	Significant
Participant Perceptions of Program Effectiveness	18.74	4	0.001	Highly Significant
Environmental Factors (Library Space, Setup)	8.21	4	0.084	Not Significant

4.3. Result of Correlation Analysis

Table 5 and Figure 4 illustrate the correlation analysis of the key variables associated with library-based art interventions. Library Services showed negative correlations with Creative Engagement (r = 0.68) and Program Effectiveness (r = 0.72), suggesting that well-structured services facilitate participant involvement and enhance their perceptions of program contributions. Creative Engagement exhibited strong positive correlations with Collaborative Learning (r = 0.74) and Program Effectiveness (r = 0.71), highlighting the interdependent nature of interactive service activities. Curated Art Collections demonstrated moderate correlations with other variables, including Program Effectiveness (r = 0.58). Environmental Factors displayed the lowest correlations across all variable comparisons (0.44–0.53), indicating that while they contribute to stimulating creativity and learning, their impact is more limited and less influential than the other variables.

Table 5: Comparison of Correlation Analysis**.**

Variables	Library Services	Creative Engagement	Collaborative Learning	Curated Art Collections	Program Effectiveness	Environmental Factors
Library Services	1	0.68**	0.61**	0.55**	0.72**	0.49**
Creative Engagement	-	1	0.74**	0.59**	0.71**	0.52**
Collaborative Learning	-	-	1	0.47**	0.65**	0.51**
Curated Art Collections	-	-	-	1	0.58**	0.44**
Participant Perceptions of Program Effectiveness	-	-	-	-	1	0.53**
Environmental Factors	-	-	-	-	-	1

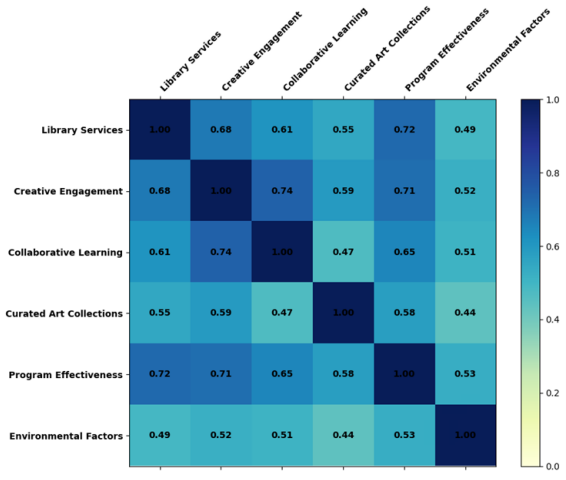

Figure 4: Outcomes of Correlation Analysis.

4.4. Discussion

A notable limitation identified in the study was the disruption of academic library services caused by the COVID-19 pandemic. During this period, libraries were unable to provide full access to physical collections, experienced delays or restrictions in collection development, and had to curtail some traditional services typically available to users (Chakraborty and Jana, 2021; Spettu et al., 2024). In other words, the pandemic hindered libraries' operational readiness, technological preparedness, and participation in management activities. Many libraries were not positioned to respond rapidly, restrict physical access effectively, or transition to hybrid or fully online services (Tosaka and Weng, 2022). Another significant constraint was the heavy reliance on digital infrastructure, which highlighted inequalities in access to technology and internet connectivity (Pergantis et al., 2022). Despite the expansion of online services, numerous students and communities faced limited or unreliable digital access, demonstrating the challenges of shifting entirely from a physical to a virtual library environment (Chisita and Chizoma, 2021). The findings further underscore the benefits of art-based interventions in libraries. Collaborative workshops and curated

art collections not only stimulate creativity and inquiry-based learning but also foster interdisciplinary collaboration, enhance engagement, and promote holistic learning for both students and faculty (Xu et al., 2024). These results emphasise the library's role as a dynamic and interactive environment that extends beyond a traditional repository of knowledge, providing a space for experiential learning, critical thinking, and creative development.

5. Conclusion

The study investigated the potential of academic library services to function as environments that foster creativity, collaboration, and experiential learning through art-based educational programs. It explored the extent to which purposefully designed spaces, including curated art collections, interactive workshops, and library settings, enhance creative interaction and support educational objectives at both individual and holistic levels for students and faculty. Employing a descriptive mixed-methods design, data were collected from 200 participants via semi-structured interviews, surveys, and observational methods. Quantitative statistical analyses, including t-tests, chi-square tests, and correlation analyses, demonstrated that library programming positively influences creative engagement, innovation, and collaborative learning, with workshops and curated art collections exerting the most substantial effects on inquiry-based learning. Findings indicated that collaborative workshops (mean = 4.15 ± 0.59) and elements of creative engagement, including attraction and annotation (mean = 4.08 ± 0.67), significantly contributed to participant creativity. Additionally, curated art collections (mean = 3.92 ± 0.66) served as effective stimuli for inquiry-based learning, underscoring the significance of library art programs. Limitations of the study included the use of purposive sampling, which may restrict generalisability, and the impact of the COVID-19 pandemic on physical library access, which exacerbated disparities in digital access. Future research should consider public and digital libraries, assess the long-term effects of art-based interventions, and examine the integration of emerging technologies such as artificial intelligence and virtual reality.

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Appendix

No.	Variable Assessed	Questions
1	Library Services	How satisfied are you with the variety of art-based programs offered by the library?
2		Do you feel that the library's art-centered programs support your creative development?
3		To what extent do you believe the library's art-based programs encourage artistic expression?
4		How well do you think the library's art-based programs are structured and organized?
5		Do you believe the library offers enough resources to support your participation in art-based activities?
6	Creative Engagement	How frequently do you engage in the creative activities provided by the library's art-based programs?
7		Do the library's art-based programs inspire you to explore new forms of art?
8		To what extent do you feel encouraged to express your creativity in the library's art programs?
9		How often do you find yourself experimenting with different art forms in library workshops?
10		How much does participating in library workshops motivate you to pursue your creative interests?
11	Collaborative Learning	How often do you work with others during library workshops or art activities?
12		To what extent does working in groups during library workshops improve your creative ideas?
13		Do you feel a sense of community when participating in collaborative art projects at the library?
14		How often do you exchange new ideas and perspectives with others during library art workshops?
15		Do you find collaborative learning in library workshops helpful for solving creative challenges?
16	Curated Art Collections	How inspiring do you find the curated art collections in the library?
17		Do the curated art collections in the library encourage you to think critically about art?
18		How often do you engage with the library's curated art collections to deepen your understanding of art?
19		To what extent do the curated art collections inspire you to explore new artistic concepts and techniques?
20		How much do the curated art collections in the library enhance your overall learning experience?
21	Participant Perceptions of Program Effectiveness	Do you feel that the library's art-based programs are effective in enhancing your creativity?
22		Do you believe the library's art-centered programs contribute positively to your personal growth?
23		How effective do you think the library's art-based programs are in engaging students and faculty?
24		Do you think that the library's art-based programs increase your interest in creative projects?
25		How well do the library's programs meet your expectations for creative learning outcomes?
26	Environmental Factors	Do you feel that the physical environment of the library supports your creative activities?
27		How well does the lighting and spatial arrangement in the library support creative work?
28		Does the library atmosphere encourage creativity and collaboration among participants?
29		How much does the availability of materials in the library enhance your artistic experience?
30		To what extent does the organization of the library space support both individual and group creative activities?