

Original Article

Assessing the Quality and Responsiveness of Reference Service in a Science-Oriented School Library

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Abstract

This study examined the effectiveness of reference services offered at the Science-Oriented School Library in Quezon City. Reference services are central to supporting academic and research activities, providing users with both physical and digital pathways to relevant information. The study employed descriptive research and involved 28 participants, comprising students, faculty members, librarians, and library staff who regularly utilized the science high school library. Results indicate that users are generally satisfied with the quality and promptness of assistance provided, particularly in traditional face-to-face interactions. However, several challenges were identified, including difficulties in resource retrieval and shelving, inadequate technological infrastructure, limited library budgets, staffing and human resource constraints, and insufficient promotion and user awareness of digital services. Recommendations include improving infrastructure, enhancing staff training, adopting artificial intelligence, and promoting both traditional and digital reference services. The findings underscore the importance of continuously assessing and upgrading reference services to meet the evolving needs of 21st-century learners.

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1. Introduction

Reference services in libraries have long been regarded as a fundamental component of academic support, serving as the bridge between users and the vast body of information necessary for research and learning. These services encompass both traditional interactions, such as face-to-face consultations, and modern digital methods, including email assistance, online chats, and social media communication. With the shift toward digitalization in education, libraries are now expected to evolve their service models to meet the dynamic needs of their users. In the science-oriented school library, reference services are designed not only to assist students and faculty in locating information but also to provide research guidance and promote information literacy. The European Commission (2022) emphasized the importance of science and mathematics in society. In this regard, school libraries offer pathways for learners to understand better and apply STEM (science, technology, engineering, and mathematics) education in real-world contexts (Mdodana-Zide, 2024). Libraries provide students with unique opportunities to engage with STEM subjects, which can increase their interest in pursuing STEM fields (Roark, 2024).

As educational institutions increasingly adopt digital platforms, libraries are compelled to implement hybrid reference services to accommodate a diverse user population. Effective reference services not only ensure access to resources but also foster an environment of academic collaboration and inquiry. Reference services in school libraries are vital for supporting STEM education in several ways, including access to resources, promoting information literacy, supporting inquiry and problem-solving, integrating technology, encouraging curiosity and innovation, and facilitating collaboration (Barber, 2022).

While numerous studies have investigated reference service quality in academic, public, and secondary schools, there remains a gap in research on this specific service in a science-oriented school library setting. A science-oriented high school library differs from a normal school library. This specialized library provides advanced textbooks, journals, and research papers in the sciences and mathematical disciplines. Likewise, it supports experimental work, research projects, and scientific investigations that are essential in the community. The science high school aligned its curriculum specifically with STEM (science, technology, engineering, and mathematics). As a result, there is insufficient understanding of how reference services support STEM-related learning, research, and experiments, as well as the challenges they encounter in delivering these services within a science-focused learning environment.

To bridge this gap, the study assessed the state of reference services at a specialized science-oriented institution, with particular emphasis on user awareness and satisfaction, the responsiveness of librarians and library staff, and the integration of digital tools. By focusing on a science-oriented institution, the study provided contextual evidence of how reference services supported STEM education, research activities, and access to print and digital resources. Its findings offered insights into

improving library operations in similar science-oriented school settings and served as a basis for policy formulation, enhanced user experiences, and the strategic planning of future library services.

Through an evaluation of existing practices, the study highlighted the strengths and areas for improvement in delivering quality reference services aligned with the institution's educational mission. In particular, it contributed new knowledge by demonstrating how infrastructure-related concerns, such as unstable Wi-Fi connectivity, limited space, and staffing shortages, affected science students' access to specialized digital journals and laboratory resources that were not commonly available in general high school libraries. This contextual focus ensured that the recommendations were grounded in the challenges STEM learners face in a science-oriented environment. Unlike general libraries, this setting demonstrated the need for reference services to respond to highly technical information needs, making the study relevant not only to the institution but also to other specialized schools facing similar demands.

Ultimately, the study aimed to contribute meaningful insights to the field of librarianship, particularly regarding the role of reference services in enhancing overall library operations in specialized science-oriented institutions. Furthermore, it identified the library's strengths and opportunities for improvement, which could provide better support for the school community. It also emphasized the importance of providing traditional and digital reference services that were responsive to the community's evolving information needs.

2. Methodology

2.1 Research Design

This study utilized a descriptive research design to evaluate the effectiveness of reference services at the Science-Oriented School Library.

2.2 Research Locale and Participants

The study was conducted in a science-oriented high school library located in Quezon City. The research focused on gathering detailed feedback from students, faculty, and library staff during the 2024-2025 academic year. Data were collected using multiple methods, including structured survey questionnaires, librarian interviews, and direct observation. The triangulation of data-collection techniques enabled a comprehensive understanding of the quality and accessibility of reference services.

The study involved 28 participants, comprising students, faculty members, librarians, and library staff who regularly utilized the science high school library. Participants were selected through purposive sampling. The respondents were chosen based on their availability and willingness to participate in the study. Given the limited

number of participants, the results of this study do not fully represent all library users. Furthermore, only one faculty member participated in the study. The faculty-related interpretation and results cannot be generalized to the entire faculty population. Therefore, the findings should be viewed as reflections of the respondents' experiences rather than the entire school community. Future studies similar to this study are encouraged to include a larger population and a more balanced sample of students, faculty, and librarians to provide a comprehensive assessment of the reference services.

2.3 Instrument of the Study

The survey instrument was divided into four main sections. The first section collected demographic profiles of students, faculty members, and staff. The second section assessed participants' awareness and use of traditional and digital reference services, including the extent of their use of science-oriented library resources and the challenges they face in accessing these services. The third section measured the students' satisfaction with the delivery of reference services to the community. Finally, the fourth section collected qualitative insights into the challenges encountered and the participants' perceptions regarding the operation of reference services.

The researchers employed a research-made questionnaire consisting of Likert-scale items and interview guides. Furthermore, the questions measured the key aspects of reference services, including accessibility, responsiveness, adequacy of collection, quality of assistance, and user satisfaction.

To ensure the validity and relevance of the research instruments, the survey questionnaire and interview guide were reviewed by one expert in Library and Information Science. The expert assessed the clarity, structure, and alignment of the questions with the study objectives. Feedback and recommendations from the reviewers were incorporated into the instrument revisions.

The indicators used in the study were designed to assess how the librarian responded to users' information needs, the quality of reference service provided, the challenges, and users' overall experience of reference services.

Likert-scale questions were used to quantify user satisfaction, while open-ended responses and interviews provided qualitative insight into challenges and perceptions. Interviews with librarians explored the range of services offered, methods of evaluation, barriers encountered, and proposed improvements.

2.4 Data Collection Procedure

After securing permission from the schools' librarians, the researchers coordinated with the participants to schedule data collection. Informed consent letters were sent to participants.

Questionnaires were administered via Google Form format. The researchers explained the study's objectives and the instructions for answering the survey.

Furthermore, the researchers assured participants of confidentiality and voluntary participation. The interviews were administered in a private room with comfortable ventilation. Completion took about 10 minutes per respondent.

2.5 Data Analysis

Descriptive statistical methods were used to interpret quantitative data, while thematic analysis was applied to qualitative responses.

2.6 Ethical Considerations

The study complied with the ethical guidelines. The researchers obtained permission from the school librarians for the data-gathering procedure. Participation was voluntary, and participants could withdraw at any time without any penalty. The researcher declared no conflicts of interest in the study. The data were stored in a separate, password-protected file accessible only to the researcher and the adviser. No personally identifiable information was used in any reports or publications. In accordance with the principles of justice and fairness, the participants were treated without judgment or prejudice.

3. Results

3.1 Quantitative Findings

Table 1. Respondent classification.

Classification	Frequency	Percentage
Student	16	57.1%
Admin/Staff	11	39.3%
Faculty	1	3.6%
Total	28	100.00%

A total of 28, comprising students, faculty, and staff, participated in the study. The majority of the participants (57.1%) are students, while 39.3% are from the admin/staff, and the remaining 3.6% are faculty of the Science-Oriented High School.

Table 2. Traditional reference service.

Type of Traditional Reference Service	Frequency	Percentage
Face-to-Face Consultation with the Librarian	17	60.71%
Telephone consultation with the Librarian	0	0%
None	11	39.29%
Total	28	100.00%

Findings from the study reveal a high level of user awareness and appreciation for traditional reference services. 60.71% of respondents prefer face-to-face consultation with the librarian, while the remaining 39.29% selected “none,” indicating their unfamiliarity with the traditional reference service. Likewise, this finding may indicate that the respondents are independent when it comes to searching and retrieving information. This traditional mode of interaction remains the most utilized and preferred, as it offers immediate assistance and personalized support.

Table 3. Digital reference service.

Type of Traditional Reference Service	Frequency	Percentage
Webcam/video conferencing reference	0	0%
Chatbots/ online chats	3	16.66%
Email reference	7	38.88%
Web form/Google form	7	38.88%
None	6	33.33%

Table 3 shows the utilization rate of the digital reference service. Both email reference and web form received 38.88%, while chatbots/online chats received 16.66%, indicating respondents' awareness of the digital reference service. In addition, 10 out of 28 respondents (35.71%) did not answer the question, which may indicate that they had not used any digital reference service or chose not to answer. Among the 18 respondents, six (6) selected "none," indicating they had not availed themselves of any digital reference service. Since the item allowed multiple responses, the total frequency exceeds the number of respondents. Thus, frequencies reflect the number of selections made, and percentages are based on the total responses received.

Table 4 shows that the respondents generally have a positive perception of the library's reference service, with an overall mean score of 3.51. Moreover, Nine out of thirteen statements received a rating of “*extremely agree*”. The librarian's responsiveness to users' requests received the highest mean score (3.72), followed by sufficient training for library staff (3.68) and the accuracy of the librarian/library staff (3.65). The professionalism, competency, and availability of librarians in handling library concerns and provision of the OPAC system received a mean score of 3.64. These results emphasized the importance of librarians and library staff in implementing the reference services, which positively contributed to their research, academic, and information needs.

Furthermore, three statements achieved a mean score of 3.60 and were interpreted as “*extremely agree*”, indicating high satisfaction among respondents. These include their high satisfaction with the outcomes of their reference transactions,

provision of adequate, relevant, and up-to-date information, and availability of digital resources and databases for STEM-related research.

Table 4. Satisfaction of participants in using reference service.

Reference Services Statement	Mean Score	Interpretation
1. I usually go to the reference section to ask some queries.	2.80	Agree
2. The librarian is always available, patient, and helpful in handling my reference questions.	3.65	Extremely Agree
3. The librarian is well-trained and professional in responding to clients' queries.	3.64	Extremely Agree
4. The librarian responds to the user's request/concern promptly.	3.72	Extremely Agree
5. I am satisfied with the result of my reference transaction.	3.60	Extremely Agree
6. Reference service (traditional and digital) offered by the library is effective in meeting the academic and research needs of the users.	3.44	Agree
7. The librarian provides reliable and accurate information to my queries.	3.52	Extremely Agree
8. The librarian provides current and up-to-date information.	3.60	Extremely Agree
9. The library provides access to electronic resources/databases.	3.60	Extremely Agree
10. The library provides access to the OPAC (Online Public Access Catalog), which is available on the school's website.	3.64	Extremely Agree
11. The library provides digital reference assistance to library users.	3.40	Agree
12. The library promotes the use of reference services (traditional and digital) to library users effectively.	3.40	Agree
13. The library staff are trained to deliver quality reference service to library users effectively.	3.68	Extremely Agree
Total	3.51	Extremely Agree

On the other hand, four statements attained an interpretation of “agree”, indicating satisfaction among respondents. These include the quality of information received by library users (3.52) and the effectiveness of reference services on the respondent's educational development (3.44). Moreover, the availability of digital reference assistance and promotion of reference services both received a mean score of 3.44, while the user's frequency of visiting the reference section obtained the lowest rating of 2.80.

Table 5. Challenges that affect the utilization of reference service.

Challenges that Affect Reference Service	Frequency	Percentage
Inadequate facilities	11	57.89%
Lack of library personnel	4	21.05%
Limited budget	7	36.84%
Long delays in answering users' queries	0	0%
Lack of skills in reference management	0	0%

Table 5 shows that despite the strengths, the study uncovered notable challenges. Inadequate library facilities were the most frequently cited issue (57.89%), followed by budget limitations (36.84%) and staffing shortages (21.05%). These issues impede the expansion and effectiveness of both traditional and digital reference services. Librarians also identified the lack of promotional strategies and unstable internet connectivity as barriers to optimizing user experience. Moreover, 9 out of 28 respondents (32.14%) did not answer the question, which may indicate that they had not experienced any challenges in reference service or chose not to answer. Since the item allowed multiple responses, the total frequency exceeds the number of respondents. Thus, frequencies reflect the number of selections made, and percentages are based on the total responses received.

3.2 Qualitative Findings

The interview with the librarians reported that their school library supported STEM education by offering both traditional and digital reference services. The resources and services offered by their school library aim to meet the diverse needs of learners, strengthening their knowledge and application of STEM education in the real world. Furthermore, librarians conduct annual evaluations of library resources to ensure adequate, high-quality, and up-to-date resources. Moreover, the challenges they experience in implementing the reference services include resource retrieval and shelving issues, technological infrastructure issues, budget constraints, limited human resources, and the promotion of digital services.

Based on the provided responses, the following are the key themes related to the challenges the librarian experienced during the implementation of the reference service.

Theme 1. Resource Retrieval and Shelving Issues

According to the librarians, one of the challenges they encountered is material misplacement that can affect timely access to library resources. Misplaced resources may delay the efficient location of specific materials and reduce the accessibility and availability of resources.

“Many students often return the books on the wrong shelves, making it harder for us to look for the specific material quickly. This problem causes delays and consumes time to retrieve the materials needed (Participant B)”.

Theme 2. Problems with Technological Infrastructure

Some librarians reported slow internet connection in the library, which may affect students’ efficient research and academic work. Slow internet connectivity can hinder students’ access to STEM-related digital resources.

“The internet connection in the library is slow, which makes it difficult for the students to search for digital resources. This results in difficulty in completing their school-related tasks (Participant A)”

Theme 3. Limited Library Budget

Librarians emphasized that a constrained library budget influences the delivery of reference services. Limited financial resources may affect the acquisition of books, subscription to journals and digital databases, library systems, facility improvements, and the provision of technological tools essential to information services support.

“Limited library budget hinders us from expanding library resources and upgrading the facilities, which affects the quality of library service we can provide (Participant D)”.

Theme 4. Staffing and Human Resource Constraints

Beyond financial and infrastructure issues, librarians also reported staffing shortages as a challenge. With limited personnel, the library struggles to provide consistent reference services, particularly during peak academic periods.

“Since there are limited librarians in this library, it is hard for us to assist library users properly and promptly (Participant C)”.

Theme 5. Insufficient Promotion and User Awareness of Digital Services

Although digital tools such as online databases, email, and live chat are available, librarians observed that many students remain unaware of these services or underutilize them.

“Many library users are not aware of the library’s digital resources and services. It is a challenge for us to create effective promotion of the library services we offer here. (Participant A)”.

4. Discussion

4.1 Quantitative Findings

The findings on the use of traditional reference services may indicate that the respondents are independent when it comes to searching and retrieving information. This traditional mode of interaction remains the most utilized and preferred, as it offers immediate assistance and personalized support. This preference indicates that students value quick help, personal support, and direct communication when seeking information. Woods and Hsu (2020) showed that even library staff who are not professional librarians can still provide good reference services if they focus on clear communication and quick responses. This supports the idea that personal consultation remains very effective. Similarly, Ekwueme et al. (2020) found that students were highly satisfied with traditional services such as face-to-face interaction and current awareness programs. These studies confirm that, even amid the rise of digital platforms, traditional reference services remain important for user satisfaction and the overall success of library services. Bodemer (2023) noted that traditional reference service as strong support for learners’ research queries and help them locate physical resources, such as books and journals, through face-to-face interactions.

Based on the responses, some of the respondents occasionally use the digital reference service, specifically the email reference and Google Form. The findings support the study by Jamogha and Jamogha (2022), which revealed that library users at ACE Library Ondo were unaware of the digital reference service. This underutilization suggests a need for improved promotion and training on the use of digital tools. These results show that while traditional services remain strong and trusted, digital services are underused due to low awareness and infrastructure issues. To stay relevant, libraries need to balance the strengths of face-to-face support with better promotion and modernization of digital tools.

Nine out of thirteen statements on satisfaction of the respondents in using the reference service received an interpretation of “extremely agree”. These results emphasized the importance of librarians and library staff in implementing the reference services, which positively contributed to their research, academic, and information needs. These findings align with studies that emphasize the value of well-trained librarians in enhancing user satisfaction and academic performance (Ekwueme et al., 2020; Esmailzadeh et al.,2020). The International Literacy Association (2022) emphasized the role of school librarians in promoting literacy, collaborating with teachers to improve learning, fostering lifelong learning, and creating a dynamic

environment with full access to physical and digital resources. Similarly, professional development and staying up to date with emerging trends are crucial in librarianship (Reed et al., 2025). In addition, the findings indicate the dedication and commitment of librarians/library staff in meeting the community's information needs. This also shows that the library collections are highly relevant and aligned with STEM education. The provision of digital resources highlighted the library's innovation in improving its electronic collection, fostering digital literacy among respondents. Agarwal (2025) noted that digital libraries align with students' digital habits, which can reignite reading and foster lifelong learning. This can also make resources more accessible and engaging for learners. Konlan et al. (2025) highlight the significant role of digital services in libraries, such as enhanced access, updated learning materials, streamlined library operations, and improved user experience. This suggests the importance of digital platforms and remote access tools in facilitating students' research and learning. On the other hand, four statements attained an interpretation of "agree", indicating satisfaction among respondents. The International Literacy Association (2022) noted that to assist students in locating and retrieving accurate information, school librarians must be knowledgeable about reference materials and electronic databases.

Inadequate facilities are reported as the most frequently cited challenge affecting their navigation of the reference service, followed by a lack of library personnel and budget constraints. These findings echo broader trends in library service delivery, where insufficient infrastructure and funding constrain modernization efforts (Ekwueme et al., 2020; Esmailzadeh et al., 2020). Agarwal (2025) stated that school libraries require essential infrastructure, including adequate space, furniture, proper ventilation, and lighting. Ijeh and Sambo (2025) identify challenges in secondary school libraries, including poor ventilation, limited technological resources, and inadequate library funding. Similarly, a recent study by Lagas and Isip (2023) reported that Philippine school libraries face barriers, including a lack of staff and poor promotion. These findings demonstrate the effectiveness of reference services in supporting the research and academic development of library users.

4.2 Qualitative Findings

Based on the librarian interviews, the science school library offers a combination of traditional and digital reference services, including Online databases, card catalog, readers' advisory, reference collections, technology assistance, and reference desk inquiries. The said services aim to meet the needs of diverse users by combining modern and traditional methods. Recent trend analysis indicates significant evolution in reference services driven by technological advancements, including virtual reference services (email, video conferencing), and other tools that enhance user engagement and support (Kleikha et al., 2025). Integrating digital communication tools such as email, live chat, web forms, and video conferencing in reference service allows students to seek library assistance remotely (Ashikuzzaman, 2025). With this,

library users can connect with librarians from any location at any time. This also widens the library's access to distance learners and off-campus researchers. For science-oriented schools, the combination of traditional and digital reference services helps meet the diverse information needs of the community. This supports STEM-related learning, research, and experiments, as well as evidence-based learning, by providing access to information in various formats. The findings imply that science-oriented libraries should balance traditional and digital reference services to enhance library operations.

Furthermore, they conduct a semi-annual evaluation that helps to assess the effectiveness of their services, focusing on adapting resources to changing academic needs and enhancing technological support. Furthermore, the Science-Oriented Library also ensures librarians' adaptability, enabling them to effectively address both basic and complex inquiries from clients or users. For science-oriented libraries, collection assessment is vital to ensuring adequate, relevant, and up-to-date library resources that support the evolving demands of the community. As STEM-related information changes rapidly, regular assessment of the library resources ensures that students and teachers have access to current books, scientific journals, and other resources that support scientific teaching, learning, and research. School librarians should be trained in collection development to expand library offerings, both in print and digital formats, to meet the diverse needs of the community (International Literacy Association, 2022).

Maestro (2022) found that promotion of services via social media significantly increases user engagement, underscoring the importance of awareness strategies. Without active promotion, students may continue to rely primarily on traditional services, limiting the potential of digital reference tools. Stronger campaigns, orientations, and integration of digital literacy into the curriculum are needed to maximize service adoption and ensure equitable access.

To enhance library services, librarians focus on aligning collections with the curriculum, providing tailored user assistance, and promoting library resources through events, digital platforms, and printed materials. These initiatives aim to increase engagement and awareness. Strategies to address these gaps include targeted user education, adoption of artificial intelligence tools, and collaboration with other institutions to expand access to resources. Furthermore, to ensure that their services remain up to date and aligned with current trends, librarians are actively engaging in continuing professional development to enhance their competencies and support the academic needs of 21st-century learners. Flierl and Henkalinė (2023) presented a paper at the Association of College and Research Libraries (ACRL) with the title "Redesigning Reference Services for Academic Success," which describes the ability of reference librarians not only to provide facts to library users but, more importantly, to help them achieve their full academic potential. As noted by Corpuz (2020), library professionals possess excellent interpersonal and communication skills, enabling them to respond promptly to library inquiries.

Recommendations derived from the findings include conducting awareness workshops, offering professional development programs for librarians, and developing user-friendly digital guides and tutorials. It is also recommended that the administration allocate additional funding to library operations and explore income-generating projects to support service enhancements. Moreover, strategic use of social media, interactive promotional campaigns, and continued librarian training can significantly boost the visibility and usability of reference services. Overall, while the library provides valuable resources, addressing funding, staffing, and infrastructure challenges is crucial for continued improvement and relevance in supporting users' needs.

5. Conclusion

The responses gathered from the 28 participants reveal the active role of science-oriented libraries in ensuring access to reference services. Their responses indicate regular utilization of both traditional and digital reference services. The findings revealed that the majority of respondents preferred to use the traditional reference service, specifically face-to-face transactions with librarians, as it builds a trusted professional relationship, provides real-time answers, and allows immediate clarification of library concerns. On the other hand, low utilization of the digital reference service requires extensive promotion to educate and encourage library patrons to explore and maximize this service, which allows them to access numerous digital materials remotely, fostering accessibility, digital literacy, and expanded online learning.

Based on the data presented, the respondents were highly satisfied with the implementation of the reference service. The findings revealed that their use of the reference service is driven by the professionalism and prompt responses of the librarians, the availability of digital resources, and the adequacy of library resources. The results show the effectiveness of the reference service in cultivating students' lifelong learning skills, strengthening their critical research competencies, and deepening their information and digital literacy.

The combined findings from the survey and interview revealed the challenges that impede the utilization of reference services, including inadequate facilities, insufficient personnel, insufficient promotion of library programs, and limited financial resources. Addressing these challenges will contribute to more efficient, accessible, and responsive library services that support teaching, learning, and research within the Science High School community. Ultimately, this study underscores the importance of strategic planning and inclusive service delivery in transforming reference services to meet the expectations of 21st-century learners.

6. Recommendations

Based on the study's findings, the Science High School Library should organize professional development and user awareness programs, such as reference management workshops and training sessions, to strengthen librarians' competencies and improve users' satisfaction with library services. The administration should also allocate sufficient financial resources to enhance the library's services, facilities, collections, and technological equipment, including reliable internet connectivity for the efficient delivery of online services. User-friendly guides, written materials, instructional videos, and online tutorials should be developed to increase awareness, accessibility, and effective use of reference services. The library should further explore effective strategies to promote digital reference services via online chat, email, social media, blogs, and interactive events. Regular collection mapping and users' needs assessments should also be conducted to ensure that library resources remain current, relevant, and aligned with the STEM-based curriculum. Finally, partnerships and collaborations with other science-oriented libraries should be established to expand users' access to information and maximize the use of participating libraries' collections and resources.

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Conflict of Interest Statement

The author declares no conflict of interest related to the conduct and publication of this research.

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