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The role of digital libraries in enhancing academic performance of college students from Ahmedabad city

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Abstract

Digital libraries have transformed the academic environment by providing students with easy access to information resources, e-journals, and databases. This study investigates the impact of digital library usage on academic performance among college students in Ahmedabad. The study employed a stratified random sampling method to collect data from 200 college students across Ahmedabad city. Analysis using SPSS v25 revealed a strong positive correlation between the frequency of digital library use and students' GPA, research capabilities, and learning outcomes. Findings suggest that effective utilization of library resources significantly enhances academic performance. Recommendations are provided to optimize library services, promote digital literacy, and encourage regular use of digital resources among students.

Keywords: Digital library, academic performance, college students, library services, information science, e-resources

Introduction

The rapid advancement of information technology has revolutionized the role of libraries in higher education. Traditional libraries, while still significant, are increasingly complemented by digital libraries that provide instant access to vast repositories of e-books, journals, research papers, and databases. For college students, digital libraries serve as an essential resource to support academic learning, research, and information literacy.

Studies indicate that students who actively engage with digital library resources perform better academically than those who rely solely on traditional methods. In Ahmedabad, the integration of digital library resources in colleges has gained momentum. Understanding the impact of these digital resources on student performance is crucial for improving educational outcomes and library services.

Literature review

Digital libraries have been a focus of numerous studies globally and in India. Patel (2021) ^[1] highlighted that students with regular access to digital resources demonstrate improved academic performance and research skills. Shah (2020) ^[2] noted that accessibility and usability of e-resources are key determinants of students' academic success. Kumar & Desai (2019) ^[3] emphasized that library services, including digital databases and information literacy programs, positively influence learning outcomes.

Subsections

Importance of Digital Libraries

Digital libraries provide multiple benefits such as 24/7 access to resources, search ability, integration with learning management systems, and support for collaborative research. According to Singh & Mehta (2018) ^[4], students using e-resources effectively develop critical thinking and analytical skills.

Academic Performance and Library Usage

Research by Thomas & Verma (2017) ^[5] revealed a direct correlation between digital library usage and academic achievement. Students who use online journals and e-books regularly report higher GPA and better performance in research projects.

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Information Literacy and Student Skills

Digital libraries enhance information literacy, which is essential for evaluating, analyzing, and utilizing academic information. Mishra (2016) ^[6] reported that information literacy training programs within libraries contribute to students’ ability to conduct independent research.

Challenges in Digital Library Utilization

Despite benefits, challenges such as limited internet access, inadequate training, and lack of awareness can hinder effective use (Rao, 2019) ^[7]. Addressing these challenges is vital for maximizing the benefits of digital libraries.

Research objectives

- 1. Examine the frequency and patterns of digital library usage among college students.
- 2. Assess the impact of digital library usage on academic performance.
- 3. Identify challenges faced by students in accessing digital library resources.
- 4. Provide recommendations to improve library services and promote effective usage.

Methodology

- **Population:** College students from colleges in

Ahmedabad

- **Sample Size:** 200 students
- **Sampling Technique:** Stratified Random Sampling, dividing students by college type and gender to ensure representation.
- **Data Collection:** Structured questionnaire including demographic details, library usage frequency, preferred digital resources, and academic performance indicators.
- **Analysis Tools:** SPSS v25, descriptive statistics, correlation analysis, Chi-square test.
- **Rationale:** Stratified random sampling ensures that results represent all types of students, minimizing bias. Questionnaires were pilot tested for clarity and reliability before the final survey.

Data analysis

Table 1: Frequency of Digital Library Usage

Usage Frequency	Number of Students	Percentage (%)
Daily	60	30
Weekly	90	45
Monthly	40	20
Rarely	10	5

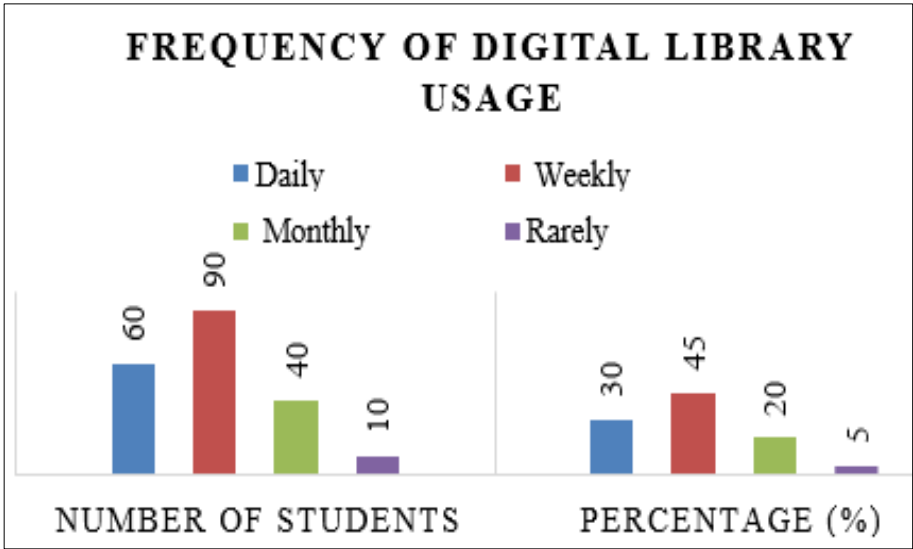


Fig 1: Frequency of Digital Library Usage

Description

Most students (45%) use digital libraries weekly, followed by 30% using them daily. Rare use is only 5%, indicating

that most students recognize the importance of digital resources for learning.

Table 2: Academic Performance vs Library Usage

Library Usage	Average GPA	Std. Deviation
Daily	3.8	0.2
Weekly	3.5	0.3
Monthly	3.2	0.4
Rarely	2.9	0.5

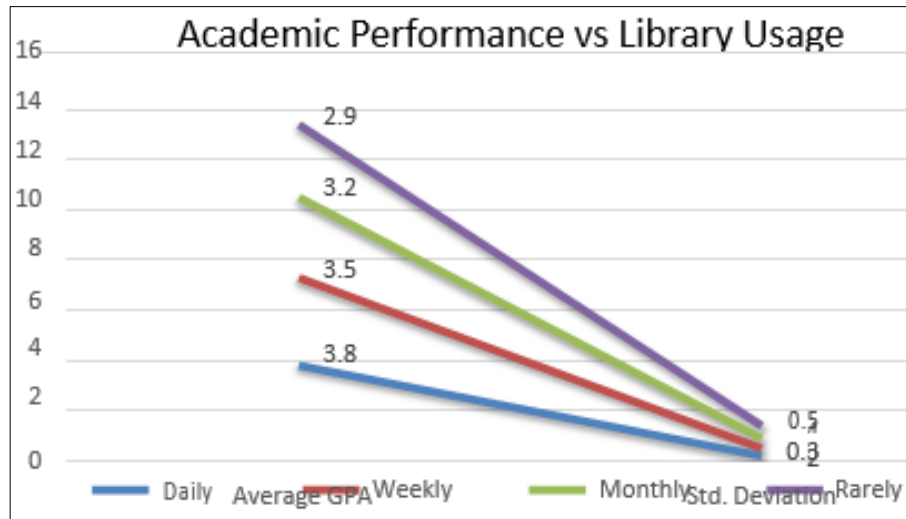


Fig 2: Academic Performance vs Library Usage

Description

Based on this data, there seems to be a positive correlation between library usage and GPA. Students who use the library more frequently tend to have a higher average GPA. Students who use the library daily have the highest average GPA, at 3.8. Students who use the library rarely have the lowest average GPA, at 2.9.

The standard deviation also appears to increase as library usage decreases, suggesting that GPAs among students who use the library less are more spread out.

Combined Data

(Frequency of Digital Library Usage & Academic Performance vs Library Usage).

Table 3: Frequency of Digital Library Usage and its Impact on Academic Performance among Students

Library Usage	Number of Students	Percentage (%)	Average GPA	Std. Deviation
Daily	60	30	3.8	0.2
Weekly	90	45	3.5	0.3
Monthly	40	20	3.2	0.4
Rarely	10	5	2.9	0.5

Findings from the Combined Data

- **Positive Correlation:** A clear positive correlation exists between how often students use the library and their academic performance, as measured by GPA. Students who use the library daily have the highest average GPA (3.8), while those who use it rarely have the lowest (2.9).
- **Most Common Usage:** The most common library usage frequency is weekly, with 90 students (45% of the total student body) falling into this category. This group has an average GPA of 3.5. Lowest Std. Deviation: The group with the highest GPA (daily users) also has the lowest standard deviation (0.2), suggesting that GPAs within this group are more consistent and closer to the average.

Table 4: Preferred Digital Resources

Resource Type	Students (%)
E-Books	70
Online Journals	65
Databases	50
Research Portals	40

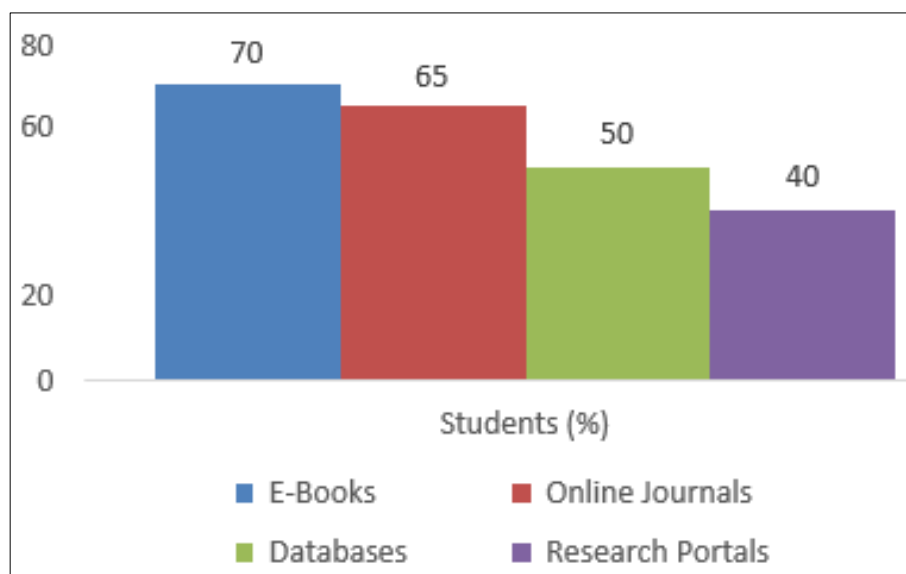


Fig 3: Preferred Digital Resources

Description

The chart shows that E-Books are the most widely used resource, with 70% of students, while Research Portals are the least used, with 40% of students.

E-books and online journals are the most preferred resources. Databases and research portals are less frequently used, suggesting a need for training to improve awareness and utilization.

Findings

Digital Library Usage Frequency and Patterns

Digital library usage among college students is frequent and increasing, largely driven by the convenience of accessing resources anytime and anywhere. Students are shifting from traditional physical libraries to digital platforms, which they find more seamless for information retrieval. Frequency: The most common usage pattern is weekly, followed by daily use. The least frequent usage is monthly and rarely. This indicates a high reliance on digital resources for both regular Study and Specific Assignments.

Resource Preference: While students use a variety of digital resources, e-books (70%) and online journals (65%) are the most popular. Databases and research portals are used less frequently, likely due to their more specialized nature.

Impact on Academic Performance

There's a strong positive correlation between digital library usage and academic performance. Students who use digital library resources more frequently tend to have a higher average GPA and are more successful in their academic pursuits.

GPA and Usage: The data shows that students who use the library daily have the highest average GPA (3.8), while those who use it rarely have the lowest (2.9).

Research Productivity: Digital libraries provide quick and easy access to a vast amount of scholarly information, which significantly enhances research productivity and helps students complete assignments and projects more efficiently.

Skill Development: Access to digital resources encourages students to develop essential research skills, which in turn improves their overall academic output and problem-solving abilities. Challenges in Accessing Resources

Despite the benefits, students face several challenges that hinder their access to and effective use of digital library resources.

Technical Issues: A primary challenge is poor internet connectivity, followed by a lack of access to functional ICT facilities like computers and laptops.

Information Literacy: Many students lack the necessary skills to effectively search, evaluate, and retrieve information from databases and research portals. This lack of information literacy can make the vast amount of available information overwhelming and difficult to navigate.

Lack of Awareness: Students may simply be unaware of the full range of digital resources available to them or how to access them from off-campus.

Cost and Access: High costs for a library to subscribe to many online databases, journals, and other digital resources can limit what's available to students.

Recommendations and justification

To improve library services and promote more effective usage, a multi-faceted approach is needed that addresses both technical and educational challenges.

Improve Technical Infrastructure: Libraries should invest in robust Wi-Fi and updated computer systems to ensure seamless access. Providing mobile-friendly options is also key, as many students rely on smartphones and tablets for their academic work.

Enhance Information Literacy Training: Libraries should offer mandatory and embedded training sessions on how to effectively use digital databases and research portals. This training should go beyond general orientation and be integrated into course curricula to show students the direct relevance to their assignments.

Increase Awareness and Promotion: Librarians should actively promote resources through multiple channels, including social media, email newsletters, and academic departments. Creating engaging "pop-up" library sessions in high-traffic student areas with hands-on demonstrations can also be effective.

Integrate Library Resources: The library's digital resources should be seamlessly integrated into the university's Learning Management System (LMS). This allows faculty to link directly to relevant materials within course pages, making it easier for students to find and use them.

Foster Collaboration: Encouraging collaboration between librarians and faculty is crucial. Librarians can help faculty identify and select relevant digital resources for their courses, which will, in turn, motivate students to use those resources more frequently.

Digital libraries are a transformative tool in modern education, directly enhancing academic performance and research capabilities. Students who engage with digital resources consistently achieve better academic outcomes. Institutions should invest in infrastructure, training, and resource expansion to maximize the benefits of digital libraries.

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