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Relationship of information literacy programs with use of e-resources: A survey of postgraduate students

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Abstract

The core aim of this study was to investigate the status of the effectiveness of information literacy program in the utilization of electronic information resources by postgraduate students of public sector universities. The objectives of the study were: to examine and evaluate the information literacy program, determine the utilization of electronic information sources; explore the relationship between information literacy programs and utilization of electronic resources, and identify the ways to improve the use of electronic information sources in the libraries of public sector universities.

Quantitative research approach was used and a questionnaire was adopted for data collection. The target population of the study was postgraduate (PG) students of public sector universities in Gujranwala division. A purposive sampling technique was used, and data was collected from the MPhil and PhD students of public sector universities. The data was collected from 217 PG students.

The study discovered that students' level of Information Literacy had an impact on their ability to use electronic resources. Despite high skills in online searching and intermediate understanding of electronic resources, low proficiency is discovered in using the right searching tools and getting information from the OPAC. HEC databases, CD ROM databases, and computer catalogs are used by the majority of PG students. University libraries should encourage user feedback, offer training sessions, and develop collaborative platforms for student involvement and insight sharing to increase the use of electronic resources.

The findings of study provide insights into the positive correlation between information literacy and the utilization of e-resources. Significant correlation was not found between information literacy programs and the information literacy skills of students.

Keywords: Information Literacy Programs; Electronic resources; Utilization; Postgraduate students**,**

1. Introduction

The concept of information literacy has roots in the broader field of literacy education. The term "information literacy" gained prominence in the 1970s and 1980s as libraries and educators recognized the need to equip individuals with skills to navigate an increasingly complex information environment (Doyle, 1992). The rapid development of digital technologies and the internet has transformed the ways information is accessed and shared. This shift highlighted the importance of not only finding information but also critically evaluating its credibility and relevance (Bruce, 1997). As education systems began focusing on critical thinking and problem-solving skills, information literacy gained recognition as a fundamental competency for lifelong learning. Information literacy skills were seen as essential for academic success, professional development, and civic participation (American Library Association, 1989).

Academic libraries played a significant role in advancing information literacy. Librarians recognize their responsibility to educate users about information access, evaluation, and ethical use. This led to the integration of information literacy instruction into academic curricula(Jackman & Weiner, 2017). With the proliferation of fake news, misinformation, and information overload on the internet, information literacy gained renewed importance as a means to foster digital citizenship. Individuals need skills to navigate the complexities of online information and distinguish credible sources from unreliable ones (Hobbs, 2010).

In today's digital age, information literacy and the effective use of electronic resources are essential skills for students. Discover the connection between Information Literacy Programs (ILP) and the use of electronic resources. The understanding about the status and value of the ILP program in promoting the development of information literacy skills and the usage of electronic resources is necessary for empowering students with required skills. It is required to understand how ILP programs enlighten Postgraduate students at public sector universities in the Gujranwala division. It is now difficult for educators to sufficiently prepare children for the future without teaching them how to handle information effectively due to the exponential expansion of information over the past thirty to forty years. Heider (2009) emphasizes the significance of teaching information literacy in early childhood education for effective use of e-resources.

A lot of literature has examined the relationship of information literacy programs with use of e-resources, Therefore, this study seeks to fill this gap by investigating how information literacy programs, influenced the utilization of electronic resources. By exploring these factors, we hope to gain a deeper understanding of the relationship between, information literacy, and the utilization of electronic resources. This research will contribute to the existing body of knowledge and provide valuable insights for educators, policymakers, and researchers in the field of information literacy.

2. Research Questions

This study investigates on information literacy, and e-resource utilization among students. It seeks to understand how these factors influence students' engagement with e-resources, identifying potential disparities and patterns, and contributing to a better understanding of digital literacy in universities. The study's conclusions can help educators, librarians, and legislators create focused interventions and support systems that will improve students' digital literacy abilities and maximize their use of e-resources in a variety of learning environments. Additionally, the study will shed light on the importance of electronic

resources in academic libraries and offer guidance to university librarians. The purpose of the research was to address the following inquiries.

1. What are the frequency, level and effectiveness of information literacy programs in university libraries?
2. How much use of electronic resources was prevalent among students?
3. What opportunities are available to increase the usage of electronic resources in libraries of Gujranwala's public universities?
4. What relationship does exist between information literacy programs and the utilization of electronic resources?

3. Review of literature

The review of literature section focuses on the nature of information literacy programs and its impact on the use of electronic sources. The literature related to factors affecting the relationship of information literacy programs with the use of electronic sources is also described.

3.1 Information literacy programs: Definition, practices, factors

There are bunch of definitions for information literacy written by various authors, theorist, writer, and researchers. Information literacy is defined as "knowing when and why one needs information, where to find it, and how to evaluate, use, and communicate it in an ethical manner" (Bruce, 1997). According to Hall (2010), information literacy is the ability of individuals to recognize, search, retrieve, evaluate, and effectively use information to identify and solve a problem or conduct research when necessary. Information Literacy is at the heart of lifelong learning and applies to all academic levels, learning settings, and subjects. "Information literacy is defined as "the ability to recognize when information is needed and to locate, evaluate, and effectively use the needed information" (American Library Association, 2020).

Iqal and Idrees (2022) used a quantitative method to examine information literacy practices in university libraries in Pakistan. SPSS software was used for data analysis after structured questionnaires were used to gather data. The findings indicate that 63% of libraries provide information literacy instruction, mostly to new students, with in-person instruction being the most common approach.

By developing IL skills, students become better equipped to make informed decisions, whether in academic research, professional endeavors, or personal life (Sun, Liu, Razmerita, Xu, & Qi, 2022).

Madge, Robu, and Libraries (2020) observed that Academic libraries in Romania do not provide standard information literacy training to medical students. Although librarians teach sessions at the start of the academic year, libraries have no participation in the curriculum. A nationwide initiative aspires to deploy librarian-taught modules in other major medical schools. The study examined the situation in Romania and suggested modules for medical students at all levels.

In IL programs, students learn how to determine the credibility and reliability of sources, discern between peer-reviewed articles and biased content, and properly cite their sources to avoid plagiarism (Johnson, 2020).

Information literacy programs often incorporate hands-on activities, workshops, and interactive sessions that encourage active learning and engagement (Brown & Williams, 2019)

Muhia (2015) investigated the underuse of electronic assets in the Kenyatta University library. This study sought to determine how well the (IL) program enhanced the information literacy abilities of postgraduate learners. According to the report, the information literacy program at Kenyatta University Library was not sufficient because of its brief introduction, busy schedule, and short training sessions. This study suggested concentration on user instructions, computer information literacy, online databases, and information searches, as well as incorporating a successful program into the educational curricula.

Batool and Webber (2014) conducted a pilot study on information literacy instruction in Pakistan's Lahore primary schools. Multiple sequential case studies, exploratory methods, pilot teacher interviews, and student focus groups make up the study design. The results demonstrate a lack of information literacy practice and a subpar role for libraries in its implementation. For effective information literacy teaching, the research suggests using libraries appropriately and hiring professional librarians.

Ullah and Ameen (2014) looked at how Pakistani medical libraries were taught information literacy (IL). A survey of chief librarians revealed that 74% of respondents provided IL teaching in their organizations. New students, first-time users, or on-demand students are generally provided IL education. The majority of responders created IL education programs independently of faculty input. Medical librarians must establish educational alliances with professors in order to include IL instruction into the core curriculum, as IL instruction activities are still in their infancy.

Baro (2011) Talk about how information literacy (IL) is taught at African library schools. Specifically, to gauge the library schools' readiness to take the initiative by including IL courses into their academic curriculum. A survey was carried out to find and evaluate the IL programs that library schools in Africa provide. According to the survey, few institutions offer Information Literacy (IL) as an independent course, and many of them have deficiencies in technology infrastructure and trained personnel. A total of 60 libraries were looked into, and 20 of them had programs in IL or closely related fields.

3.2 Use of e-resources: Frequency, databases, barriers

Adenariwo (2022) investigated the availability and usage of e-resources in university libraries for effective studies output by using Social research students in South-East Nigeria. Students used e-library assets however lack of ICT competencies created problems. Steps to enhance e-aid utilization can alleviate challenges and result in extra effective studies output. This study proposed that academic institutions should attention on training teachers a way to use e-assets efficiently.

Okunlola and Research (2021) inquired postgraduate students how they used electronic information sources available through libraries. The result showed that 76.43% of respondents often used electronic books, journals, magazines, and theses and that they preferred online material to that found in electronic databases including Science Direct, EBSCOhos, OARE, OPAC, JSTOR, BIOONE, and HINARI.

According to Ruzegea and Msonde (2021)study that looks into what makes using e-resources in higher education more effective, students use more of them than postgraduates. Effective utilization is influenced by a number of variables, including experience level, information literacy proficiency, and education. Students' competency could be increased by improving IL training.

Alagarsamy, Thirunavukkarasu, and Practice (2020) observed information literacy skills of researchers at Alagappa University in Karaikudi's. For project work, 32.58% utilized e-

resources, 24.71% used E-journals, 40.44% used them every day, 33.70% used basic keys, and 43.82% used search engines. The study recommends department should launch an information literacy program immediately.

Dupuis (2019) opined that rapid technological advancements have resulted in a wide range of computer skills and attitudes among college students. Some people are reluctant to use modern technology, while others use electronic tools for homework. Libraries must adapt to these developments since students may be unfamiliar with electronic material. The University of Texas at Austin's Digital Information Literacy program serves as a model for incorporating information literacy skills into traditional services and partnerships.

Akuffo and Budu (2019) found that digital resources are highly utilized for academic purposes. However, the main constraints to electronic resource utilization are access issues, search and retrieval difficulties, and staff-related problems.

Mani, Thirumagal, Vijayalakshmi, Priyadharshini, and Practice (2019) investigated the use of electronic resources among University students in Tirunelveli, Tamil Nadu. The response rate for the descriptive survey method was 89%. The findings revealed that 78.3% of respondents are aware of and utilize e-resources, with 63% doing so two to three times each week. 53% of researcher’s access e-resources, 59% use them, and 17.3% increase professional competence. Lack of training was noted as a major barrier to the efficient use of electronic resources. The library is essential in facilitating and offering training for the efficient use of electronic resources.

Hussaini, Vashistha, Jimah, and Science (2018) observed how well patrons at the NIMS Central Library in Jaipur, India, were aware of and using the library's resources. Sixty people were chosen at random to participate in a descriptive survey. According to the findings, women patrons of the library preferred it more than men under 30. According to the majority of respondents (65. 3%) of library resources were inaccessible. Academic institutions should update their library materials, give library literacy training, and expand board display services to include all resources to increase library utilization The results of Ankrah and Atuase (2018) indicated that the e-resources were not being fully utilized due to several factors, including limited awareness, inadequate training, access restrictions, and issues with internet connectivity.

According to Bruce et al. (2017), college students encountered challenges along with a loss of computer abilities, terrible networks, and irregular net get admission to, energy outages, and beside the point data assets. Appropriate budget allocation for online databases, more relevant open access databases, awareness creation, inverter and battery system installation, and user education for better electronic resource utilization are among the proposals.

Edem and Egbe (2016) compared the availability and use of electronic resources among postgraduate students. The study used a descriptive survey with a sample of 400 users. The results showed that even though electronic resources were available, online databases were not being utilized to their full potential. The most commonly used electronic resource was found to be e-journals.

3.3 Relationship of IL Programs with Utilization of E-resources

Nwalo, Babarinde, and Technologies (2022) looked at information literacy abilities as a predictor of undergraduates' use of Electronic Information Resources (EIRs) in public universities in southwest Nigeria. According to the findings, undergraduate students in Southwestern Nigeria have fair information literacy abilities and frequently utilize EIRs.

To help undergraduate students develop their information literacy skills, it was advised that proper and regular training be given in the subject.

Popoola and Olajide (2022) examined how undergraduates in private universities in South-West Nigeria dealt with computer literacy and library anxiety. The results indicated inadequate internet access and significant levels of library anxiety. Additionally, the study discovered a strong correlation and a considerable joint influence between these skills and library use.

Ugwulebo and Okuonghae (2021) investigated data literacy abilities and the utilization of digital information resources among postgraduate college students in Nigeria. The findings from the look at discovered that a large dating exists amongst postgraduate college students' expertise of electronic assets, search capabilities, get entry to facts, records assessment capability, and their usage of electronic records sources., consequently, they concluded that information literacy applications should be included in curriculum of college students throughout all tiers as this assist enhance their basic academic success.

According to Ruzegea and Msonde (2021) looked into what makes using e-resources in higher education more effective, students use more of them than postgraduates. Effective utilization is influenced by a number of variables, including experience level, information literacy proficiency, and education. Students' competency could be increased by improving IL training.

Usman et al. (2020) examined information literacy abilities and use of online resources among business administration undergraduates in Southwest Nigeria's. There were 900 respondents in the sample, and 800 questionnaires were collected. Excessive stages of data literacy have been found, and CD-ROM databases have been the most regularly accessed online gear. Terrible electricity delivery, expertise of electronic sources, and internet connectivity are most of the problems encountered. Statistics literacy and the use of e-library resources are notably correlated. To ensure that students have access to and are motivated to use e-library materials, the report advises school administrators to automate their libraries.

Bashorun, Aboderin, and Lawal (2020) investigated the relationship between information literacy abilities and user education programs among undergraduate Nigerian students at three different universities. A total of 371 replies were obtained from the questionnaire, representing a 93.45% response rate. The findings demonstrated a strong correlation between library literacy abilities and user education initiatives. The researchers advise university administration to set up the necessary infrastructure and incorporate short films and audiovisual aids into user education delivery strategies.

The Al-Hikmah UniversityAmuda, Abdul, Kehinde, and Onanuga (2020) study discovered a strong correlation between undergraduate students' user education, computer literacy, and internet searching abilities. The primary obstacles to students' usage of e-resources, according to the survey, include inadequate ICT infrastructure, a lack of support, sluggish internet connectivity, expensive database access fees, power outages, and restricted access to e-resources. Those who facilitate user education should make sure that students have received the necessary training and have the necessary computer literacy and online search skills. To get rid of these elements, the administration of the university and library should address the difficulties undergraduates have when using e-resources.

Njoroge (2019) discovered a significant relationship between information literacy (IL) and the use of online resources among 370 University of Nairobi freshmen. It suggested enhancing information literacy (IL), information requirement recognition, searching, assessing, and collaborative information literacy initiatives. To encourage teaching candidates to use e-resources, the university should include a provision emphasizing cooperative institutional-wide information literacy. To compare the impact of information literacy on the use of electronic resources across various colleges, more studies are required.

Adeleke and Emeahara (2016) explored the utilization of electronic resources and information literacy among students at University of Ibadan in Nigeria's postgraduate program's. The study discovered a strong correlation between students' use of technological resources and their information literacy. The report notes that as many students do not know how to conduct effective searches, it is recommended that all postgraduate programs include an ICT course that emphasizes e-information literacy.

Lloyd (2017) investigated influences of information literacy programs on students' learning experiences and perceptions. The study found that students who participated in information literacy programs showed improved abilities in evaluating sources for credibility, using proper citation practices, and integrating information effectively into their work.

Ukachi (2015) looked at the link between UG students' information literacy abilities and usage of electronic resources (ERs) in Nigerian university libraries. A descriptive and correlational design, as well as a purposeful sample strategy, was utilized. The survey included 36,116 undergraduate students and 1,806 ER librarians. The results show that electronic sources are underutilized and that students lack the information literacy abilities required for effective use.

3.4 Factors affecting relationships of information literacy and e-resource use

Age has effects on the relationship of information literacy and use of e-resources. Issa, Ajibola, Nuhu, Saliu, and Oguntayo (2023) looked into the factors affecting use of e-resources among undergraduate students in Kwara State, Nigeria. The findings indicated that online databases and the internet were the most often used e-resources. ICT proficiency was a crucial predictor of e-resource usage, with younger students being more active users of e-resources than older ones. To increase undergraduates' use of e-resources, the study suggests teaching them ICT skills and raising their awareness of the materials that are available online.

Ramzan (2021) looked at the connection between the information literacy abilities of students and the resources that are available in Azad Jammu & Kashmir university libraries. Surveys of postgraduate students were conducted using a convenience sample method. The findings demonstrated that although there were a lot of resources available, their improper utilization was caused by a lack of information literacy. Additionally, a strong association between gender, age, and the accessibility of digital information resources was discovered by the study. Information literacy abilities and degree level, however, did not connect.

Adeeko (2021)study focuses into the individual elements that affect undergraduate library use in universities in Nigeria. It focuses on information literacy abilities, prior library knowledge, awareness of the resources and services available at libraries, and library anxiety. The findings demonstrate that prior library knowledge, resource awareness, and information literacy all have a big impact on how often people utilize libraries. According

to the report, directors of university libraries should run ongoing awareness campaigns to raise public understanding of the value of libraries.

3 Research Approach

Research approach, as defined by researchers, has fundamental role in shaping the methodology, data collection, and analysis processes of a study. Researchers emphasize that the choice of research approach significantly influences the quality, depth, and validity of research outcomes. According to (Banerdt et al. (2020)), the research approach "provides a structured plan that aligns research questions with appropriate methods, facilitating the systematic collection and analysis of data" (p. 72). Researchers recognize that the research approach serves as a roadmap, ensuring that the study is conducted coherently and consistently. According to Creswell (2014), the research approach is crucial because it "provides a blueprint for conducting a study, maximizing the chance of obtaining valid and reliable results" (p. 18). However, this study was used a quantitative survey approach. A research method refers to a systematic approach or strategy used to conduct investigations, gather data, and answer research questions or hypotheses. Research methods provide a structured framework for collecting, analyzing, and interpreting information in a way that ensures the validity, reliability, and generalizability of the findings. Different research methods are chosen based on the nature of the research objectives. The current study used the survey research based on printed questionnaire to collect data from population.

3.1 Population and sampling

According to researcher John Smith (2023), "population in research signifies the complete aggregation of individuals, entities, or elements under investigation. It embodies the comprehensive spectrum from which insights, trends, and interpretations are sought" (p. 45). The target population of the present study is postgraduate students of public sector universities of Gujranwala division whose are enrolled in postgraduate programs in main campuses of public sector universities of Gujranwala division. Purposive sampling technique was utilizing in present study, in every participant has equal chance to became the part of systematic investigation

3.2 Research Instrument validity and reliability

A questionnaire was adapted from Muhia (2015) with some changes to collect the data from the respondents. The questionnaire has four sections. The first section is about demographic information. The second section covered the evaluation, types and method of information literacy program and step efforts to enhance the use of E- resources. The third related to IL programs increase student’s skills and fourth cover utilization of electronic information resource. Pilot testing was done on 05 respondents of the study. The purpose of pilot testing was to get more clarity, to check the understanding of the respondents, and to observe the time taken to fill the questionnaire. After the pilot study, some sentences in the questionnaire were rewrite and more questions added in the questionnaire. The value of Cronbach Alpha reliability test ranges from .715 to .861.

3.4 Data Collection and analysis

After the final editing, the researchers prepared questionnaire and physically visit universities randomly distribute questionnaire to targeted population on the spot Clare

queries of participant's related questionnaire. According to sample size 217 questionnaire distributed with 90% response rate 197 received by participants and 14 were incomplete. The researcher assigned each questionnaire a number when the data gathering phase was finished. The Statistical Package for the Social Sciences (SPSS) was used to enter and analyses the data. The errors made during the date entry into SPSS were fixed. Using SPSS software, descriptive statistics, frequency and percentage counts, means, standard deviations, and variance were used to analyze the data. The hypotheses were put to the test using Pearson correlation test.

4. Results

4.1 Demographic Information of the Respondents

The demographic information of the respondents in the research study includes program of study, semester of study and gender of students. Table 4.1 indicate that (82.5%) of total respondents was students of MPhil degree and (17.5%) was the students of PhD programs. The table 4.3 shows that out of 183 respondents 66 (36.1 %) were male and 116(63.4%) were females. Its shows that majority of the respondents were female.

Table 1: Demographic information

Level of education	**Frequency**	**Percent**
MPhil	151	82.5
PhD	32	17.5
Gender of respondents		
Male	66	36.1
Female	116	63.4
Total	**183**	**100**

4.2 Relevance of information literacy programs for students

The table 4.4 presents descriptive statistics for six different aspects related to Information Literacy (IL) programs, based on responses from 183 participants. According to the findings, most respondents think information literacy (IL) programs are beneficial and would suggest them to others. The statements "You recommend the IL Program to other students" (3.35) and "IL programs are helpful" (3.37) have the highest mean scores, suggesting a higher degree of agreement. On the other hand, the statement "Participate in IL programs" (2.89) has the lowest mean score, indicating a lesser degree of individual engagement or participation. This indicates that respondents' perceptions of their degree of involvement in IL programs varied.

The data indicates a generally positive perception of IL programs among respondents, as evidenced by high mean scores for statements related to the programs' helpfulness and recommendations to others. However, the lower mean score for personal participation suggests a potential gap between perceived program benefits and individual engagement. The standard deviations offer additional context, indicating the level of agreement or variability in responses for each statement suggesting a potential area for improvement in encouraging greater participation and attendance.

Table 2: ***Relevance of information literacy programs (N=183)***

Sr. No	Statements	Means	Std. Deviation
1	IL programs are helpful	3.37	1.01
2	You recommend the IL Program to other students	3.35	1.09
3	IL Programs is relevant	3.32	1.13
4	IL program time duration is effective	3.32	1.07
5	The university/library organized an information literacy program	3.15	1.06
6	Participate in IL programs	2.89	1.05

Scale: (Strongly disagree=1, disagree=2, neutral=3, agree=4, strongly agree=5)

4.3 Frequency of IL programs offered

The most successful information literacy (IL) programs, according to respondents' opinions, are seminars and conferences, as shown in Table 4. Academic development (3.16) and seminars and conferences (3.40) have the greatest mean ratings, indicating a range of answers. Programs for academic improvement are seen more consistently. In comparison to other IL programs, one-on-one consultations have the lowest mean score (2.89), indicating a less effective perception. This statement's standard deviation suggests a more consistent view.

the data highlights that respondents perceive seminars and conferences as the most effective type of IL program, closely followed by academic development initiatives. One-on-one consultations, however, are perceived with a slightly lower mean score, indicating a comparatively lower level of effectiveness. The standard deviations provide additional context, indicating the degree of variability in respondents' perceptions for each type of IL program

Table 3: Frequency of IL program offered to students

Sr. No	Types of IL programs	Means	Std. Deviation
1	Seminars and conference	3.40	2.35
2	Academic development	3.16	1.14
3	Educational campaign	3.09	1.18
4	Workshops and training sessions	3.04	1.16
5	Curriculum integration	2.95	1.15
6	online modules	2.95	1.19
7	Library programs	2.95	1.25
8	Online tutorial	2.92	1.24
9	One on one consultation	2.89	1.13

Scale: (never, rarely, sometimes, often, always)

4.4 Efficacy of information literacy programs

The information literacy (IL) program evaluation metrics are shown in the table together with the mean scores and standard deviations for each program. The statements "IL programs provide awareness about library information resources" (3.33) and "IL programs include instruction about the usage of online electronic resources" (3.50) have the highest mean scores, indicating that respondents generally view IL programs as effective in raising awareness about library information resources and offering instruction about online electronic resources. The statement "Resource persons are experts in skills that they provide in IL program" (3.01) has the lowest mean score, indicating that respondents believe their competence in IL programs to be marginally less successful. Additional context is given by the standard deviations, which show how variable respondents' perceptions were for each evaluated criterion.

Table 4: Efficacy of IL programs

Sr. No	IL programs Evaluation	Means	Std. Deviation
1	IL programs include instruction about the usage of online electronic resources	3.50	1.04
2	IL programs provide awareness about library information resources	3.33	1.10
3	IL programs content is effective	3.31	1.07
4	IL programs include referencing and citation	3.21	1.11
5	IL programs include teaching advanced IL skills such as	3.21	1.17
6	IL programs include only basic-level literacy skills	3.06	1.20
7	IL programs provide awareness about the use of library electronic information resources	3.02	1.05
8	Resource persons are experts in skills that they provide in IL program	3.01	1.15

Scale: strongly disagree, disagree, neutral, agree, strongly agree

4.5 Methods used by students for learning

The result table (4.13) reveals that students at Gujranwala universities employ a variety of methods for acquiring information and enhancing their learning experiences The mean scores and standard deviations for the different approaches utilized in information literacy (IL) programs are displayed in the table. The two approaches that get the greatest mean ratings for learning about e-resources are watching video lessons (3.16) and using interactive online courses (3.21). But taking part in virtual sessions or webinars online receives the lowest mean score (2.82). Given that the mean score was somewhat lower, it can be inferred that the respondents thought these techniques were less effective. The respondents' varying perspectives of each learning method are contextualized by the standard deviations. In general, the most efficient ways for learning e-resources in IL programs, according to respondents, are interactive online modules and video tutorials.

Table 5: Methods used by students for learning

Sr. No	IL programs Method	Means	Std. Deviation
1	Use interactive online modules	3.21	1.11
2	Watching video tutorials	3.16	1.16
3	Attending in-person workshops or sessions	3.15	1.28
4	Reading printed handouts or guides	3.08	1.10
5	Get assistance from the librarian	3.08	1.26
6	Engage with social media content	3.08	1.19
7	Participate in online webinars or virtual session	2.82	1.05

Scale: never=1, rarely=2, sometimes=3, often=4, always=5

4.6 Level of Information literacy skills

The result (table 6) revealed that valuable insights into the link between information literacy programs and the utilization of electronic skills by students. On the positive side, the mean scores indicate that students generally exhibit a commendable level of proficiency in certain information literacy skills. For instance, their relatively high level of proficiency in using Boolean search techniques (Mean: 3.21) suggests that they are well-equipped to conduct complex searches, a crucial skill in today's information-rich environment. Furthermore, students demonstrate a good understanding of selecting appropriate search tools (Mean: 3.15), indicating that they possess effective information-seeking skills. This skill is vital in ensuring that they access relevant and credible information for their academic pursuits.

However, there are areas that warrant attention and improvement. While students exhibit moderate online searching skills (Mean: 3.06), there is room for enhancement, especially in the context of leveraging online resources effectively. Similarly, their moderate level of knowledge about electronic resources (Mean: 3.04) signifies reasonable familiarity with these tools but leaves scope for further exploration and utilization.

Means score suggests that students, on average, have a reasonably good grasp of information literacy skills, by IL programs including Boolean search techniques and the selection of appropriate search tools. However, there is room for improvement in their online searching skills, knowledge about electronic resources, and utilization of these resources. The lower mean score for searching information using OPAC indicates a potential area where students may need more support or training. Institutions can use these insights to tailor their information literacy programs to enhance students' skills and effectively promote the use of electronic resources in their academic pursuits.

Table 6: Level of Information literacy skills of students (N=183)

Sr. No	IL skills student	Means	Std. Deviation
1	Using Boolean Search Techniques	3.21	1.18
2	Appropriate search tools use when searching for information	3.14	1.08
3	Online searching skills	3.06	1.17
4	Knowledge about E-resources	3.04	1.15

5	Use of E-resources	3.02	1.11
6	Search information using OPAC	2.90	1.00

Scale: very high, high, moderate, low, very low

4.7 Opportunities and efforts for enhancing the use of e-resources

The survey results reveal that among the aspects related to enhancing the use of electronic resources in the universities, collaborative platforms and the promotion of benefits are perceived most positively by respondents, each earning a mean score of 3.26. These aspects highlight the importance of fostering collaboration among students and emphasizing the advantages of electronic resources for academic research. Additionally, the presence of a dedicated helpdesk or support team is well-received, with a mean score of 3.22, indicating the importance of readily available assistance for users. Encouraging user feedback (mean: 3.21) demonstrates a commitment to improving resource functionality and content based on user input. Off-campus access (mean: 3.13) is generally seen in a positive light, indicating its significance for remote learning. While the variety of electronic information sources (mean: 3.08) and user-friendly access (mean: 3.08) are generally meeting academic needs, they fall slightly behind the top-rated aspects. Training sessions (mean: 3.10) are considered somewhat effective but have room for improvement. Regular updates and upgrades (mean: 3.03) receive the lowest rating, suggesting a need to enhance the university's efforts in this area to keep pace with advancements in electronic resources. Overall, these insights provide valuable guidance for the universities to refine and prioritize its strategies for further enhancing the use of electronic resources on campus.

Table 7: Opportunities and efforts to enhance the use of E-resources

Sr. No	Opportunities and efforts to enhance the use of E-resources	Means	Std. Deviation
1	Collaborative platforms are available for students.	3.26	1.14
2	The university promotes awareness	3.25	1.12
3	There is a dedicated helpdesk	3.21	1.13
4	The university encourages feedback from users	3.20	1.15
5	The university provides off-campus access	3.13	1.16
6	Training sessions are provided to familiarize users	3.09	1.18
7	The university offers user-friendly electronic information sources	3.07	1.10
8	The variety of electronic information sources available	3.07	1.14
9	The university regularly updates and upgrades its electronic information sources	3.02	1.19

Scale: strongly disagree, disagree, neutral, agree, strongly agree

4.8. Utilization of different types of electronic resources

Table (4.19) result show mean scores and standard deviations for the utilization of various types of E-resources. The means indicate the average levels of usage, while standard

deviations reflect the degree of variability in responses. Among the types of E-resources, the three highest mean scores are associated with E-Dissertation/Theses (3.10), Case Studies (3.09), and Computer Catalog (3.07). These findings suggest that respondents, on average, tend to utilize these resources more frequently compared to others, indicating a relatively higher level of preference or reliance on E-Dissertation/Theses, Case Studies, and Computer Catalog.

On the other hand, the two lowest mean scores are associated with E-Journals (2.85) and Digital Archive (2.75). These lower mean scores suggest that respondents, on average, utilize E-Journals and Digital Archives less frequently compared to other types of E-resources, indicating a relatively lower level of preference or reliance on these particular resources.

It's important to consider the standard deviations alongside the mean scores. A smaller standard deviation implies less variability in responses, suggesting greater agreement among respondents regarding the usage of a particular type of E-resource. Conversely, a larger standard deviation suggests more diverse responses and potentially differing levels of preference or utilization.

the data indicates that E-Dissertation/Theses, Case Studies, and Computer Catalog are among the most frequently utilized E-resources, while E-Journals and Digital Archive are comparatively less utilized by the respondents in this context. The standard deviations provide additional insights into the consistency of responses for each type of E-resource.

In assessing the utilization and perceptions of electronic information resources among postgraduate students at Gujranwala universities, several key findings emerge. Electronic access to dissertations and theses is highly appreciated, underlining their paramount importance for academic research and scholarly work. Case studies closely follow, underscoring their significant role in in-depth analysis and practical learning. However, there are areas where improvement is needed; the moderately rated electronic catalog and HEC databases suggest potential enhancements in terms of content and accessibility. Similarly, CD ROM databases and research workstations, while utilized, may benefit from refinements. Resources such as annual reports, institutional repositories, e-books, and electronic newspapers are considered moderately valuable, indicating their utility for various academic purposes. Subject directories assist in research source discovery, albeit with room for improvement. Electronic reference stations require attention to meet postgraduate students' specific needs effectively. E-journals, critical for research, should address concerns about availability, accessibility, and content. Finally, digital archives are in need of significant improvements to better serve postgraduate students. These insights offer valuable guidance for universities to enhance their electronic resource offerings and better support postgraduate research and academic pursuits effectively.

Table 8: Utilization of different types of E-resources among students (N=183)

Sr. No	Types of E-resources	Means	Std. Deviation
1	E-Dissertation/Theses	3.10	1.17
2	Case Studies	3.09	1.17

3	Computer catalog	3.07	1.19
4	HEC databases	3.06	1.23
5	CD ROM Databases	3.06	1.17
6	Research work station	3.05	1.11
7	Annual Reports	3.04	1.11
8	Local institutional repository	3.03	1.16
9	E-Books	3.03	1.09
10	Electronic Newspapers	3.03	1.23
11	Subject directories	3.00	1.16
12	Electronic reference stations	2.90	1.04
13	E-Journals	2.85	1.12
14	Digital Archive	2.75	1.14

Scale: never=1, rarely=2, sometimes=3, often=4, always=5

5. Discussion

5.1 How much information literacy programs are effective?

The result shows that respondents strongly agree that information literacy programs are helpful and relevant to them, and would recommend them to others. They also express agreement with the effectiveness of the time duration and organization of these programs. However, there is a noticeable drop in mean scores for participation in these programs, suggesting room for improvement in encouraging active involvement. Overall, the data suggests a positive perception of information literacy programs. The study shows that most of participants agree that such types of IL Program seminars and conferences are considered effective and beneficial in interpersonal communication (IL) programs. Academic development programs, educational campaigns, and workshops are offers by universities as a IL Program. However, curriculum integration, online modules, library programs, and online tutorials are considered neutral, and one-on-one consultations have the lowest mean score, suggesting mixed opinions among respondents. The study reveals that participants strongly agree that Information Literacy (IL) programs should include instruction on online electronic resources, which is considered essential. They also agree that programs that provide awareness about library information resources and their content are beneficial and valuable. IL programs that teach advanced skills, referencing, and citation also receive positive scores. However, the mean score for basic-level literacy skills is slightly lower, indicating mixed opinions. The awareness about library electronic information resources and the expertise of resource persons is also neutral, suggesting room for improvement in these areas.

5.2 What kinds of efforts are being used to increase the usage of electronic resources in libraries of public universities of Gujranwala?

The findings revealed that most of the participants agree that if universities encourage feedback from users to enhance the functionality and content of electronic information sources and training sessions are provided to familiarize users with the effective utilization of electronic information sources also Collaborative platforms arrange for students to interact and share insights using electronic information sources such ways can be helpful to increase the utilization of electronic resources in public sector universities of Gujranwala division . Independent Sample t-test was also utilized to the check the

difference of opinions between male & female participants. The research did not identify any notable disparity in the viewpoints male & female participants regarding step efforts to enhance the use of electronic resources.

5.3 How much use of electronic resources is prevalent among students?

The study reveals that E-resources are used always, then others, with E-Dissertations/Theses, Case Studies, and Computer catalogs being the always used. HEC databases, CD ROM Databases, and Research workstations also score above 3, suggesting they are used occasionally. Electronic Journals and Digital Archives are used less frequently, falling into the "rarely" or "never" categories among postgraduate students of public sector universities of Gujranwala. The standard deviation values show relatively stable utilization patterns, with scores clustered around the means. The study found no significant difference in electronic resource utilization between MPhil and PhD students, with similar average grades. However, male and female PG students had found difference in usage of HEC databases, subject directories, and local institutional repositories, except that, the average scores for both groups showed the same usage of electronic resources.

5.4 What relationship do exist between information literacy programs and the utilization of electronic resources?

The results show significant positive correlations between utilization and other variables, suggesting that higher utilization leads to more positive outcomes. Types of ILP and Evaluation also show positive correlations with utilization, but efficacy does not show a significant correlation. The study found that MPhil and PhD students had similar mean scores and competence levels, but significantly different online search skills. There were no discernible differences in aptitude levels between male and female PG students, but a significant difference in E-resource use between male and female library users.

6. Implications

These results suggest that the utilization of E-resources by students is influenced by various factors, including the methods they employ in their learning, the types of information literacy Programs available, the extent to which they evaluate their information literacy programs and its efficacy. These findings have important implications for educators and institutions seeking to optimize the use of E-resources in educational settings and effectiveness of information literacy programs.

7. Conclusions

The study finds that there are gender-specific differences in the intricate interaction between factors and the use of technological resources. Learning strategies and perceived program efficacy are significantly correlated with male participants, although skills and e-resource utilization show only a slight positive link. In order to enhance resource use, the study highlights the necessity of information literacy programs that are effective. It also implies that there is no meaningful connection between the use of e-resources and education level.

The goal of the study was to assess how well postgraduate students at public sector universities used electronic resources after completing information literacy classes. It was discovered that students' proficiency with IL programs had an impact on their

capacity to access digital resources. Despite having strong online searching capabilities and intermediate knowledge, there was low proficiency in using the proper search tools and retrieving information from the OPAC. HEC databases, CD ROM databases, and computer catalogs are used by the majority of PG students in the Gujranwala division. Universities may promote user input, provide training sessions, and create collaborative platforms for student participation and knowledge sharing. The study also highlights majority of respondents i.e. "suggest take feedback form user and collaboration platform provide to student for effective IL skills and literacy students response that IL programs not enhance proper searching skills. However, study evaluate IL programs and its most useable method and type which organized by universities. Study revealed some underutilize electronic resources also. The study indicates that students' use of E-resources is influenced by learning methods, available information literacy programs, evaluations, and efficacy. These findings are crucial for educators and institutions to optimize E-resource use and program effectiveness in educational settings.

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