



Research and Analysis on the Current Situation and Improvement of Online Reading Information Literacy of College Student

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Abstract

Information literacy (IL) refers to the ability of college students to recognize, acquire, evaluate, and utilize cultural resources in a networked environment. It is an essential competency for modern students, as their level of digital reading IL directly impacts both personal and societal development. By cultivating this literacy, students can enhance their capacity to access, assess, and leverage cultural information, thereby better adapting to the demands of an information-driven society. Consequently, fostering college students' digital cultural IL remains a long-term and critical mission for higher education institutions (HEIs). In the paper, the network IL level of college students was investigated, and some problems were revealed, it will provide support for the enhancement of comprehensive IL ability of college students.

Subject Areas

Library, Intelligence and Philology

Keywords

College Student, Online Reading, Information Literacy, Survey

1. Introduction

Networked information technology has had a significant impact on all aspects of our lives. Not only has it altered the social production process, but also it has had a considerable impact on all aspects of human civilization such as economics, culture, science, and technology. In the information age, which emphasizes lifelong learning, the core of such learning lies in cultivating the ability to address challenges encountered throughout one's life, whether in a career or daily life [1].

In the era of globalization of networked information, the electronic information resources (EIRs) require some basic skills which are referred to as IL skills [2]. Addison defines IL as the acquisition of “information age” skills [3]. IL is the ability to find, access, select, evaluate, and use information from diverse sources. IL has emerged as the central component of people’s information interaction and is an essential competency for learning and survival. Individuals require IL skills to identify accurate information that meets their needs [4]. The ability to effectively access, evaluate, and apply information is a foundational skill that is critical to academic success and lifelong learning. For contemporary college students, IL is increasingly vital, evolving into a central element and key requirement of their competencies [5]. So as to meet the demands of this new era of learning, students must continue to learn and adjust to new advances while also enhancing their IL skills. However, most students encounter great challenges to freely navigate in the information environment.

Traditional education in HEIs serves as a critical pathway to measure and cultivate the comprehensive development of college students [6]. HEIs play a central role in cultivating IL among students [7]. As the first resource of education development, HEIS must keep pace with the times, constantly improving the IL skills of both faculty and students [8]. IL, recognized as one of the most important competencies for social and personal growth, was originally conceptualized as the ability to retrieve library materials-essentially, and the capacity to master and apply knowledge. However, the meaning and application of IL have significantly deepened and elevated with the continual advancement and application of information technology as well as the growing intelligence and practicality of the information society. It comprises not just the ability to retrieve books but also the recognition, acquisition, assessment, and utilization of various information sources, for example, the use of various information technologies and applications, including electronic databases, office software, and search engines. HEIs, as the traditional gatekeepers to information resources, have undergone a significant transformation over the years, evolving from repositories of print materials to multifaceted information hubs. Central to this transformation has been their role in fostering IL, equipping students with the skills and knowledge needed to navigate the complex and ever-expanding information landscape [7].

In recent years, the research on IL education has been widely concerned. Lei Ye *et al.* concluded that the computer network technology, network autonomous learning ability and the comprehensive quality of teachers and students in colleges and universities are three important factors that affect IL [8]. The skills-based view holds that IL is a set of skills, abilities, or behaviors exhibited by individuals in their information seeking within digital environments [3]. One point is highlighted that information needed is accessed efficiently and effectively to accomplish a specific purpose [9]. With the development and application of digital technologies such as artificial intelligence, big data and 5G, the growth of EIRs in knowledge-driven societies is accelerated. Concurrently, the high demand for these

resources in higher education institutions has driven the steady evolution of students' understanding of digital literacy requirements [2]. Libraries of HEIs are academic libraries, therefore, the work environment of academic librarians is constantly and vigorously changing with knowledge creation rapidly evolving to new levels.

In the current digital era, strengthening the cultivation of IL among college students has inherent value: it is an inevitable requirement for the survival and development of the digital society, the prerequisite for improving the digital IL of the whole people [10]. The level of IL of college students directly affects the screening, selection, acquisition, utilization and evaluation of information, and strong IL is the foundation for college students to better adapt to society. The cultivation of IL among college students is a long-term and important mission that requires joint efforts from both universities and students. At present, one of the five main tasks of HEIs libraries is to "carry out IL education, cultivate readers' information awareness and ability to acquire and utilize literature and information" [11]. By elevating IL education, carrying out practical activities, establishing information sharing platforms, strengthening network security education and other measures, the enhancement of network IL can enable college students to better adapt to the development of the information society. Therefore, it is of great practical significance to understand the IL level of college students and explore ways to improve their IL.

With the rapid advancement of information technology, EIRs have emerged as a primary medium to obtain and exchange information. As an important part of information technology, digital technology plays an increasingly vital role in the management, storage, retrieval and utilization of EIRs. The importance of EIRs for academic activities has been widely acknowledged. IL has a positive impact on the development of exploratory and exploitative innovation. Notably, the impact of IL is stronger on exploration than exploitation [12].

IL is an "empowerment project" that is a fundamental ability for citizens to lifelong learning skills, enabling them to become active citizens [13]. The research findings emphasize that IL is the foundation of scholarly empowerment, and the high-level self-efficacy driven by IL can indirectly transform into the formation of a proactive information culture, thereby strengthening the position of scholars in creating information use outcomes and preparing them for digital transformation. Through IL outcomes, academic libraries can turn out to be an important transformative force in terms of digital changes at HEIs [14]. Besides, findings have shown that IL competencies, IL courses, and college students' education have become the focus of IL research field [15]. Literacy instruction is yet to be accorded its correct place within HEIs. The assessment of their IL skills remains the greatest challenge [16].

Moin Ud Din and Ghulam *et al.* found and reported that some of the barriers affecting IL instruction programs include the absence of IL instruction courses in the library and information science curriculum, shortage of trained library pro-

professional staff to provide IL instruction, lack of commitment among librarians for IL instruction, insufficient training opportunities for librarians and lack of interest from library users. These obstacles hurt IL instruction in academic libraries [17]. Research has revealed that orientation and IL has become imperative to familiarize users with the available information resources and sources in the library, and to also equip them with the skills necessary for effective, efficient and independent use of the library [18]. Because research and communication proficiency are ubiquitous in the academic and professional world, teaching students the necessary IL skills has become increasingly critical [19]. It was suggested that a course on IL might be included at all levels of education to enable all students, especially research scholars, to excel in their academic lives by applying IL skills through appropriate methods and means [20].

However, regardless of its overwhelming benefits, findings have shown that college students exhibit low use of EIRs, which affects their academic performance. This has been attributed to inadequate IL skills [21]. Multiple factors such as weak information awareness, limited access to information technology education and training, and insufficient mastery of information retrieval skills can all affect the IL of students. Therefore, this paper investigated the level and basic situation of network IL of college students, analyzed the existing problems, to provide support for improving the comprehensive IL ability of college students.

2. Data Source

Design of the questionnaire

In order to objectively investigate the IL status of college students and understand the existing IL problems, combined with the specific situation of students in our university and our previous practical research results, we conducted a detailed survey based on domestic and foreign research results [21] [22]. The study utilized a structured questionnaire comprising 39 items, distributed both online via SoJump (a Chinese survey platform) on WeChat official accounts and offline through paper-based forms. The questionnaire covered three parts. Firstly, it mainly included the filling of basic information such as gender, grade, specialty, etc. Secondly, it was to investigate the students' knowledge and awareness of navigation, portals and search engines, to examine the students' information searching ability. Lastly, it assessed IL conceptual understanding and fragmented-time learning behaviors.

Survey Subjects and Methods

Using a combination of online and offline approaches, the questionnaire survey was randomly disseminated to all undergraduates and postgraduate students in the three primary fields of science, engineering, and liberal arts. A total of 300 questionnaires were sent out, with 288 valid samples retained and 12 invalid responses discarded. The questionnaire response reached 96.00%. The survey participants' basic information was displayed in **Table 1**.

The respondents' gender distribution was more even. The majority of partici-

pants were undergraduates, with academic majors predominantly concentrated on liberal arts and engineering. In general, the questionnaire was designed to cover all aspects, so the results of the survey were more realistic and reliable.

Table 1. Basic information of survey objects.

Name	Category	Number	Percent (%)
Sex	male	139	48.26
	female	149	51.74
Grade	freshman	110	35.80
	sophomore year	55	17.90
	junior	98	31.90
	senior	30	9.80
	graduate	14	4.60
	Profession	science	56
	engineer	119	41.20
	liberal arts	114	39.40

FINDINGS AND ANALYSIS

Part I: Investigation and analysis of information knowledge

Survey and analysis of knowledge and concerns about webpage navigation

Figure 1 illustrated that 63% of students paid attention to webpage navigation when they accessed a portal, while 37% claimed not to. For a website or application, the navigation configuration is essential as clear and succinct guidance to assist users in finding the content they require more quickly, hence increasing the effectiveness of information search. According to survey data, almost one-third of students did not pay attention to navigation, indicating a lack of awareness regarding its importance in IL development. **Figure 2** demonstrated that the majority of students (64% of students) used the navigation website to browse learning websites, followed by leisure websites (60% of students), life websites (52% of students), and entertainment websites (45% of students), and all of which were closely related to the daily lives of college students.

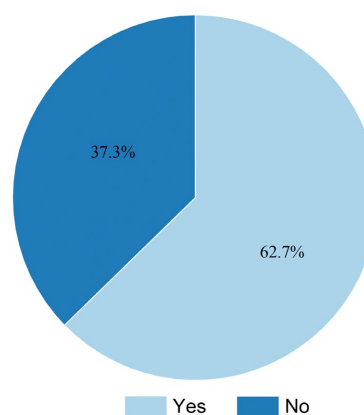


Figure 1. The choice of whether to focus on web navigation.

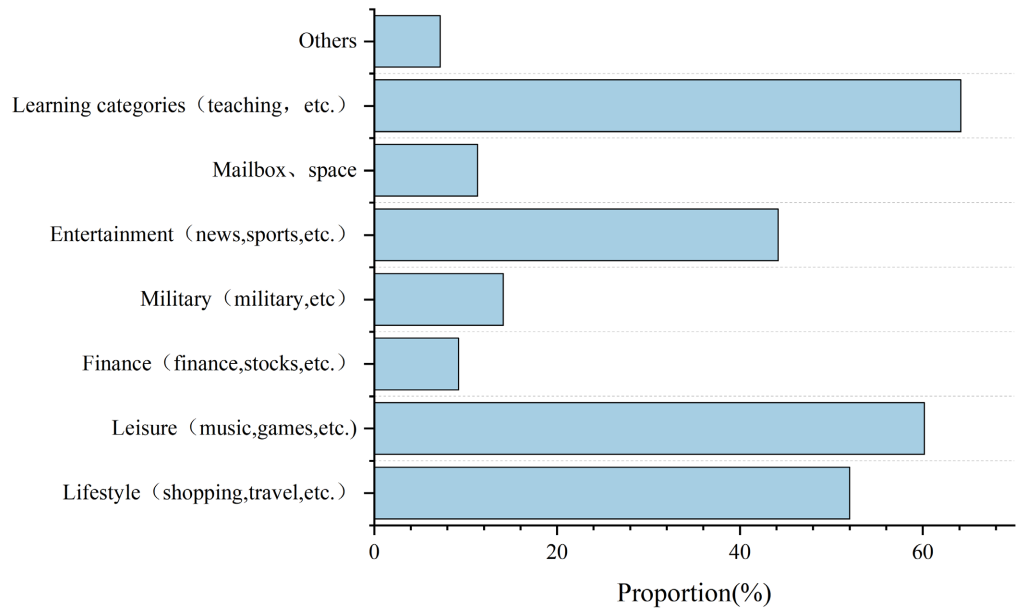


Figure 2. Percentage of students navigating to websites.

Survey and analysis of knowledge of and concern for search engines

Figure 3 demonstrated that 16% of students used the meta-search engine constantly, 30% used it frequently, 31% used it occasionally, 17% used it infrequently, and only 6% never used it. The overwhelming majority of students use meta-search engines, which can assist them in finding the information they need more thoroughly, according to the results. Generally speaking, students now prefer to use search engines to find information. As indicated in **Figure 4**, Baidu was the most preferred search engine among students, selected by 37.4% of respondents, followed by Google (28.1%), Sogou (19.9%), and Bing (8.5%), demonstrating that search engine usage was predominantly concentrated in Baidu and Google among university students.

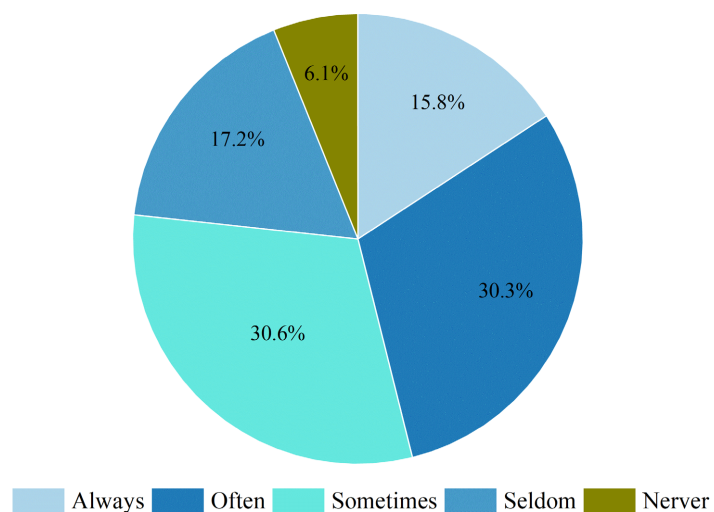


Figure 3. Meta-search engine usage habits.

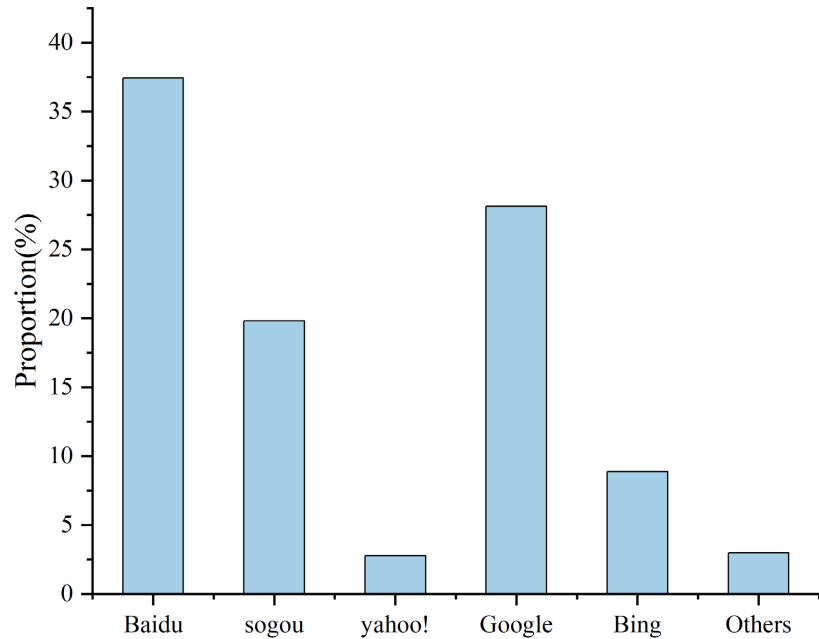


Figure 4. Frequency of use of different search engines.

Figure 5 illustrated that 25% of students used search engines more than 10 times a day on average, 37% used them 5 - 10 times a day on average, 35% used them 1 - 4 times a day on average, and only 3% hardly used them. This means that university students use search engines more frequently, which has become an important way for them to actively obtain information.

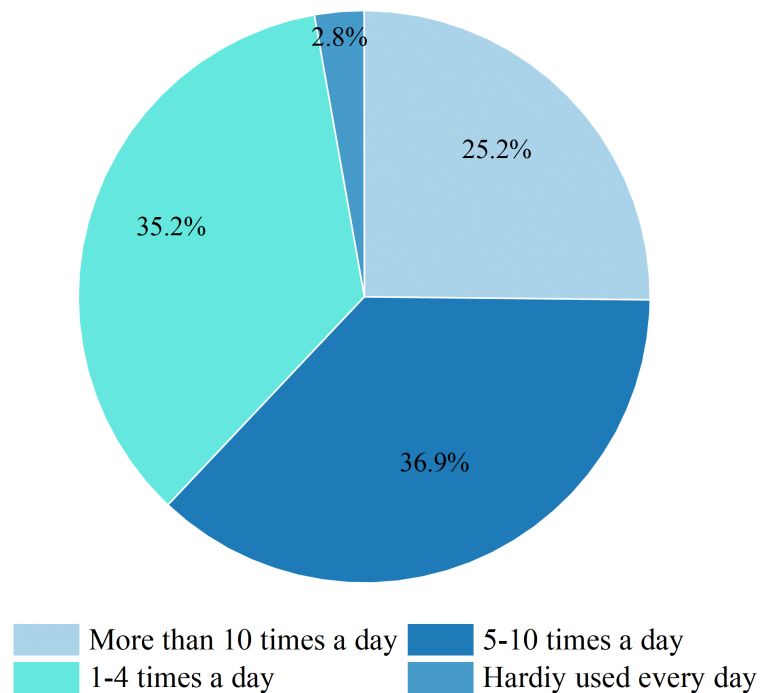


Figure 5. Daily usage of search engine.

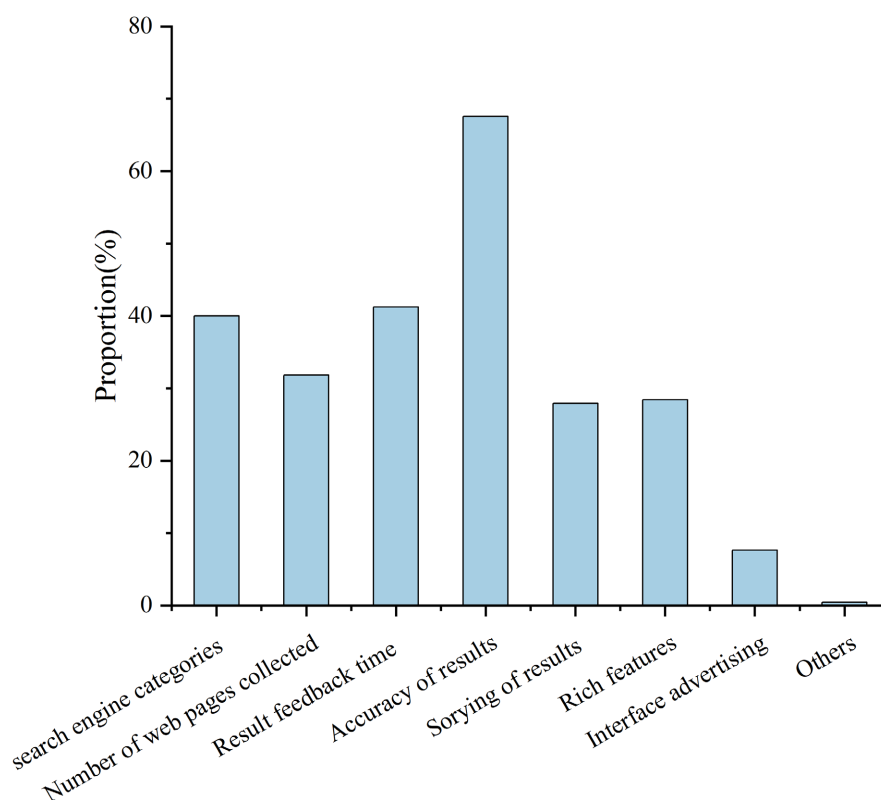


Figure 6. Search engine feature value graph.

As seen in **Figure 6**, students placed the highest value on results accuracy (66%) followed by results feedback time (42%), search engine category (40%), the quantity of web pages gathered (32%), results sorting (which is equally important to feature richness, 26%), and interface advertisement (8%), which was the least valued feature of the search engine. It suggests that students pay the greatest attention to how well the content of the webpage matches the keywords they searched, after which they concentrate on other search engine categories and switch up the search engine based on the content they find. Next, they value the quantity of web pages collected. Generally speaking, the more the quantity, the easier it is to find the information they need.

Part II: Survey and analysis of information capacity

Analysis of the ability to use search engines

As can be seen from **Figure 7**, only 15% of students always created a relevant search strategy and used keywords; 62% of students did so frequently; 20% of students did so infrequently; and 3% of students did not create a relevant search strategy and use keywords. Creating an appropriate search strategy can help to increase the effectiveness and precision of information retrieval to some degree. The results demonstrated that the majority of students (87%) were competent at creating an effective search strategy and using keywords. **Figure 8** showed this point of the students, 18% could always obtain the information they need through a search engine; 55% could do so frequently; 25% could do so occasionally; 2% could do so

infrequently; and there was only one student who was never able to find the information they need through a search engine. It might be argued that the majority of students can essentially use search engines to find the information they require.

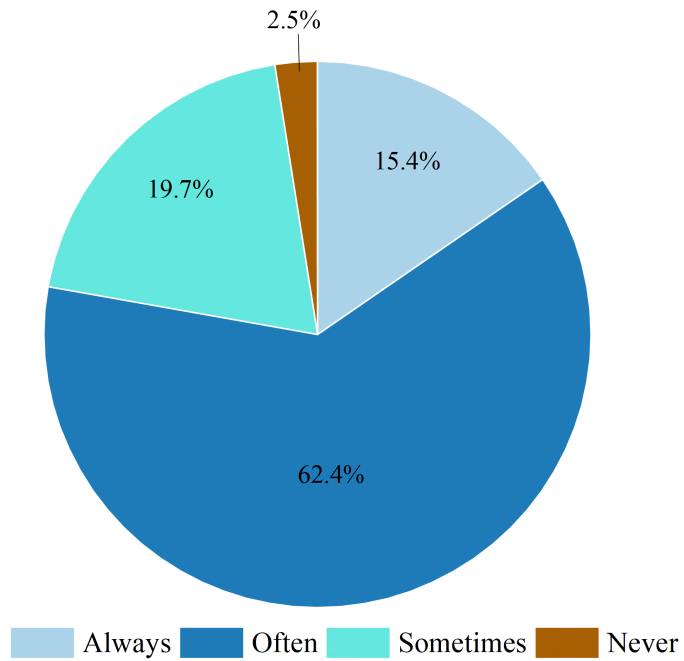


Figure 7. Search efficiency of keyword formulation.

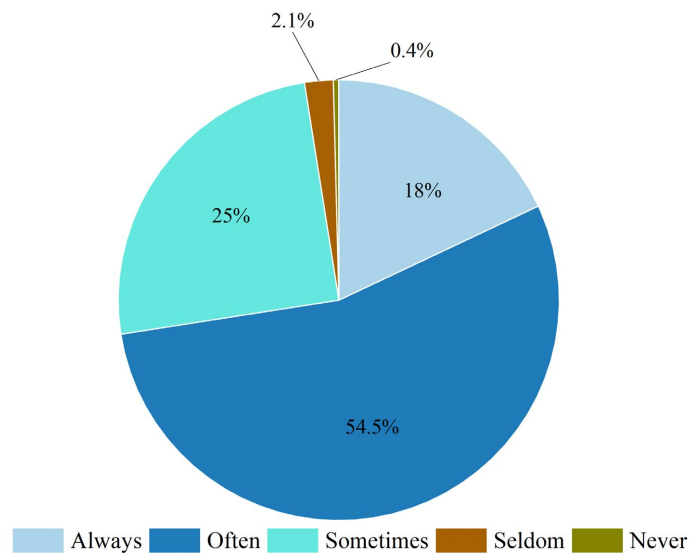


Figure 8. Get useful information through search engines.

Analysis of the ways to identify and evaluate information on the Internet

Figure 9 suggested that. Of the students surveyed, 72% said they could identify unwanted content on the Internet, such as spam, fraud, and unlawful material; 24% said they could do so generally, and 4% said they couldnot. A small number

of students even claimed not to be aware of harmful information. The results show that most students have information ability and can clearly identify bad information on the Internet, highlighting a certain gap in information abilities among students.

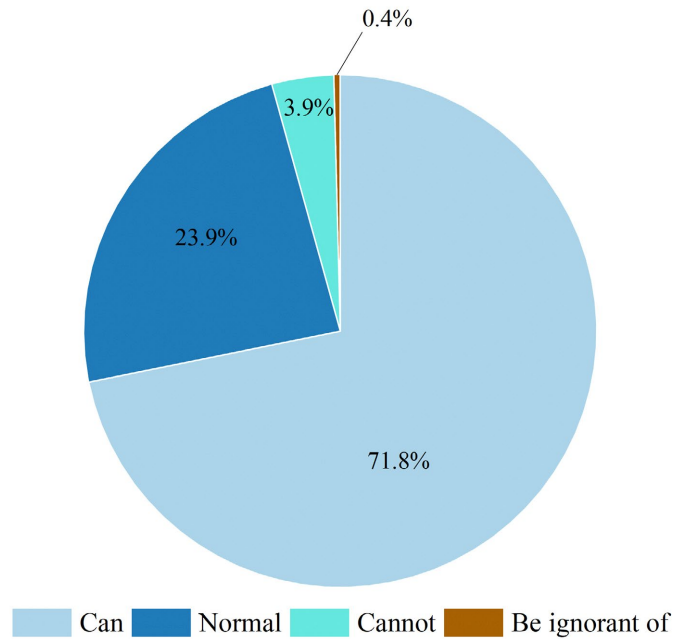


Figure 9. Internet information discrimination ability.

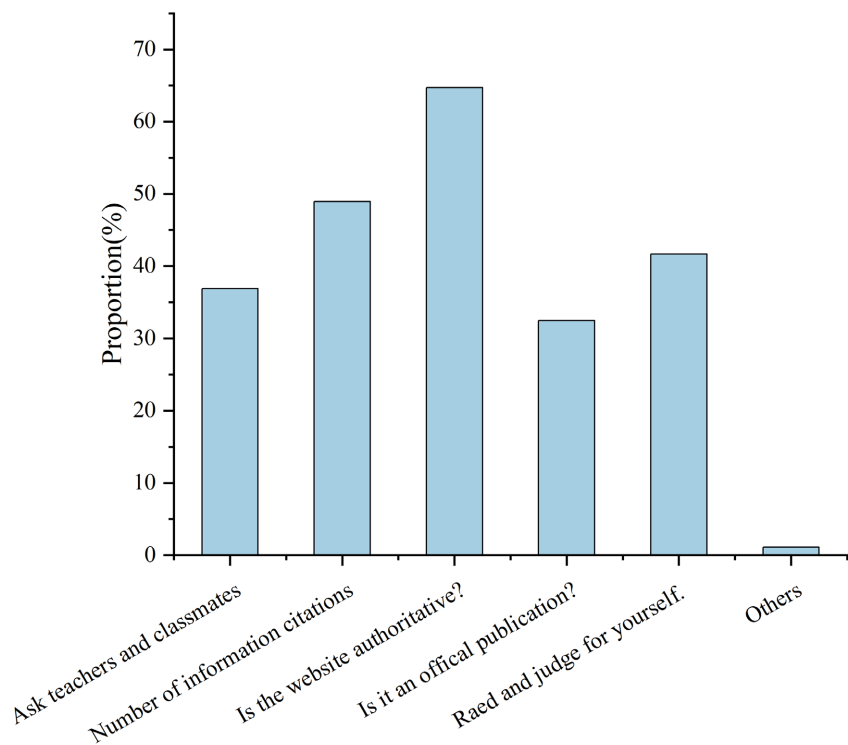


Figure 10. Information evaluation approach.

Figure 10 exhibited that for the ways of assessing the reliability, correctness, and authority of information, 36% of students chose to ask teachers and classmates, 49% of students would rely on the number of information citations, 65% of students would base on whether the website was authoritative or not, 33% would consider whether the publication was official or not, and 41% would read it by themselves, with one student indicating that he or she would read more than one article to make a comparison assessment. It can be seen that the first consideration for students is whether the website is authoritative, followed by the number of citations of information, followed by their own reading and evaluation, followed by consulting with teachers and classmates, and finally considering whether it is a formal publication.

Part III Survey and Analysis of Information Learning and Awareness
Research on students' fragmented time learning

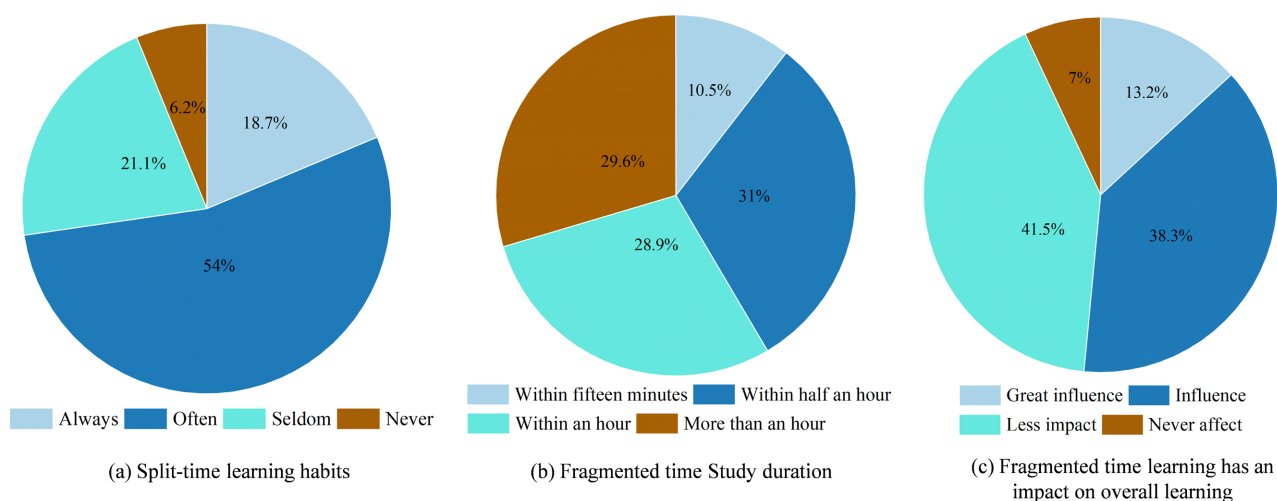


Figure 11. Students' fragmented time learning analysis diagram.

Only 19% of our students frequently used fragmented time for study, and 54% did it occasionally, as shown in Figure 11(a). It was evident that the majority of students frequently studied in little chunks of time, with only 6% never doing so. 11-b showed that 29% of students were able to study for more than 1 hour using fragmented time, and more than 60% of students were able to study for 30 to 60 minutes using fragmented time. It indicates that students still need to strengthen their utilization of fragmented time. Only 7% of students thought that studying in fragmented time would not affect the overall learning effect, while the remaining 93% thought that learning in fragmented time would affect the overall learning effect in everyday life, as shown by the statistical results of Figure 11(c). The effective utilization of fragmented time is beneficial for overall daily learning.

The degree of understanding of the connotation of intellectual property rights and information cocoons.

Figure 12 made it clear that the level of understanding of intellectual property and information cocoons among students. Of the students, 9% reported a thor-

ough comprehension of intellectual property, 30% claimed relatively understanding, 34% had general understanding, 21% possessed unfathomable understanding, and 6% claimed to understand nothing at all, reflecting a significant difference in students' IL levels.

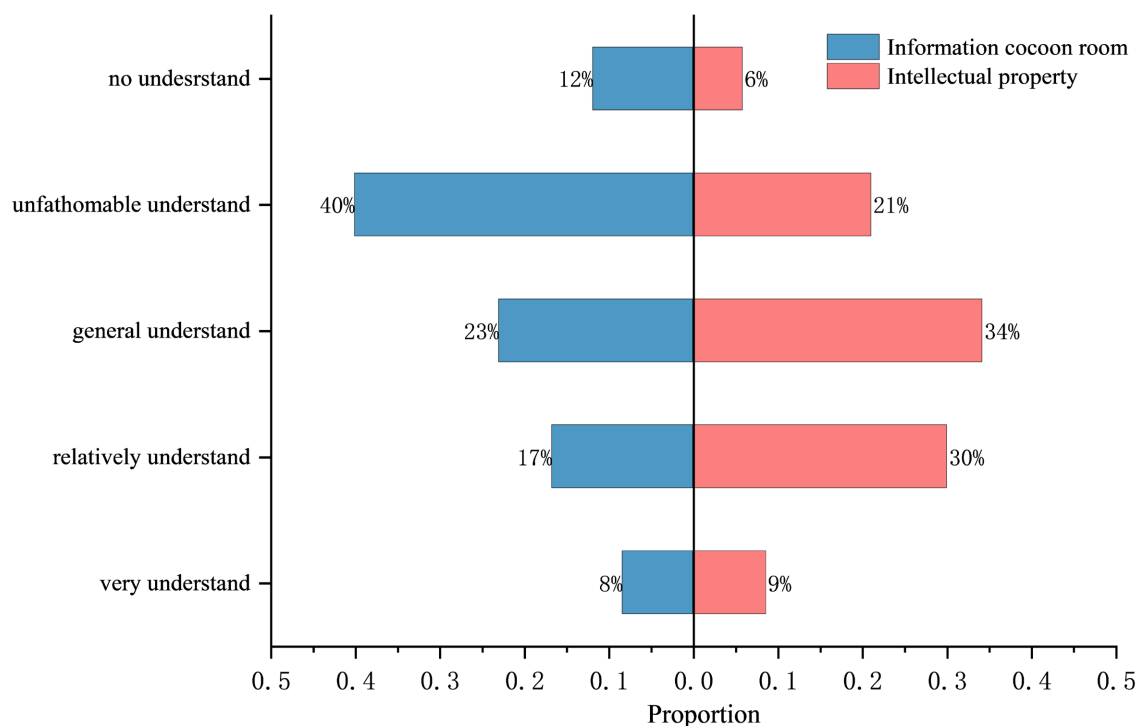


Figure 12. Students' understanding of information cocoon and intellectual property.

The term “information cocoon” describes the situation whereby people’s attention is constantly directed by their interests, resulting in a life that is confined within a “cocoon” like a silkworm cocoon [23]. As displayed in **Figure 12**, 8% of students were very knowledgeable about the concept of cocoon, 17% possessed relatively understanding of it, 23% understood it generally, 40% were not very knowledgeable about it, and 12% had no idea about it. It demonstrates that a majority of students are not familiar with the concept of an “information cocoon” and are not likely to be cautious of one.

Part IV Reliability analysis

To ensure the accuracy of the results obtained from a questionnaire survey, it is essential to run a reliability analysis. The reliability value of the analysis indicates the extent to which the results are dependable. According to the alpha coefficient method, a value greater than 0.7 means that the data obtained from the questionnaire survey is reliable and it can be used for analysis. However, if the value is less than 0.7, the data is not suitable for analysis. The closer the alpha value is to 1, the higher the confidence degree is. In this research, the questionnaire was analyzed for reliability. Researchers selected 13 questions from the questionnaire and divided them into 3 parts: information capability (IC), IL, and Information

Learning (ILG). IC consisted of five questions (IC 1, IC 2, IC 3, IC 4, IC 5), IL consisted of five questions (IL 1, IL 2, IL 3, IL 4, IL 5), and ILG consisted of three questions (ILG1, ILG2, ILG3). There were three dimensions and ensured the internal consistency of each dimension. The reliability of the entire questionnaire and each dimension were tested using SPSS 20.0, and the results were presented in **Table 2**.

Table 2. Questionnaire reliability analysis statistical.

Title	Number	Cronbach's Alpha
IC	5	0.900
IL	5	0.879
ILG	3	0.801
Questionnaire ensemble	13	0.891

Table 2 showed that the questionnaire had a high reliability value of 0.891 was much higher than 0.7, indicating the high reliability of the results. The reliability value of IC was 0.900, IL was 0.879, and ILG was 0.801, with all dimensional values greater than 0.7. Such a result signifies that the dimensions of the survey questionnaire have high consistency and reliability, and there is potential for further analysis.

Part V Validity analysis

Exploratory Factor Analysis

Table 3. Questionnaire reliability analysis statistical.

KMO	Bartlett test	
0.885	Approx. Chi-Square	1398.196
	df	78
	P value	0.000

According to the data in **Table 3**, the KMO value of the questionnaire was 0.885, which was significantly higher than 0.6. Additionally, the Bartlett sphere test value was significant at a confidence level of 5%, highlighting that the questionnaire had good validity. The results of the exploratory factor analysis fulfilled the criteria of each indicator.

Table 4. Total variance explained.

Factor	Eigen			% of Variance (Unrotated)			% of Variance (Rotated)		
	Eigen Value	% of Variance	Cumulative % of Variance	Eigen Value	% of Variance	Cumulative % of Variance	Eigen Value	% of Variance	Cumulative % of Variance
1	5.687	43.744	43.744	5.687	43.744	43.744	3.544	27.261	27.261
2	2.082	16.012	59.756	2.082	16.012	59.756	3.427	26.36	53.62
3	1.419	10.915	70.671	1.419	10.915	70.671	2.217	17.051	70.671

Continued

4	0.581	4.468	75.139
5	0.490	3.772	78.911
6	0.475	3.654	82.565
7	0.417	3.205	85.77
8	0.398	3.06	88.83
9	0.368	2.832	91.662
10	0.329	2.53	94.192
11	0.282	2.172	96.364
12	0.264	2.029	98.393
13	0.209	1.607	100

From **Table 4**, the cumulative variance contribution of the three principal components extracted in all design items was 70.671%, exceeding the threshold of 70%. This data provided strong evidence that only a small amount of information was lost in the questionnaire and that these three common factors effectively accounted for the original data. Therefore, the results of this factor analysis meet the expected criteria.

Table 5. Rotational component matrix.

	Factor		
	1	2	3
IC4	0.832		
IC2	0.824		
IC1	0.821		
IC3	0.801		
IC5	0.779		
IL1		0.820	
IL4		0.818	
IL3		0.794	
IL2		0.776	
IL5		0.759	
ILG3			0.828
ILG2			0.810
ILG1			0.773

Note: The extraction method is the main component analysis method, and the rotation method is the orthogonal rotation method with Kaiser Standardization.

As shown from the rotation component matrix in **Table 5**, IC 1, IC 2, IC 3, IC 4, and IC 5 were combined as one principal component. IL 1, IL 2, IL 3, IL 4, IL 5 as one principal component, ILG 1, ILG 2, ILG 3 as one principal component. It

appeared that the exploration grouping situation was the same as the pre-grouping. The factor load values for all questions exceeded 0.5 in the three principal components, indicating good explanatory power of each principal component, thus indicating good construct validity of this questionnaire.

Validation factor analysis

Table 6. Overall fitting coefficient.

X ² /df	RMSEA	IFI	TLI	CFI
1.618	0.056	0.972	0.964	0.972

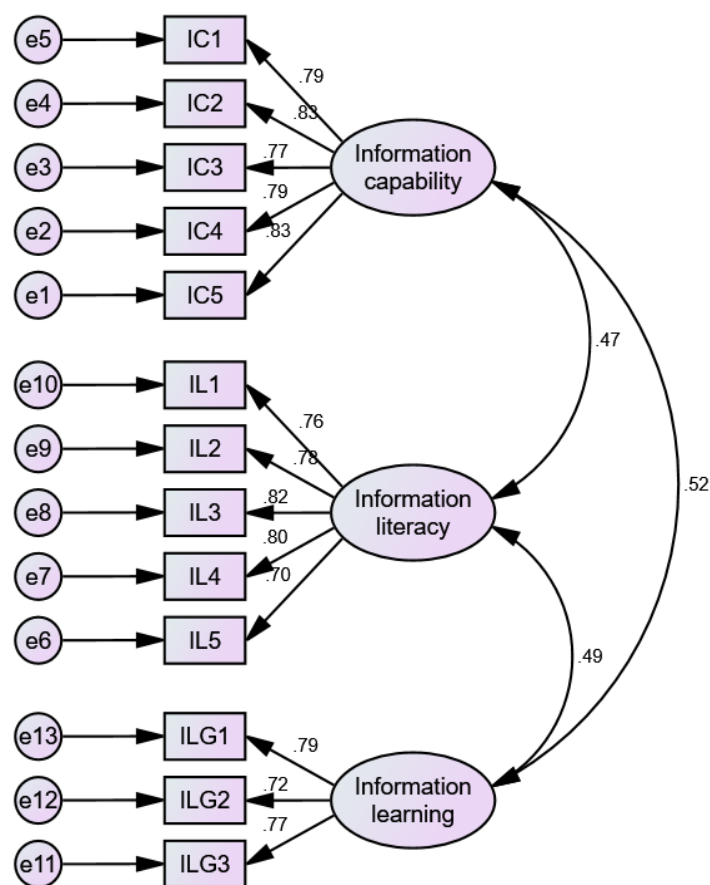


Figure 13. Confirmatory factor model.

In this study, 200 samples were randomly selected to perform a confirmatory factor analysis to determine the overall feasibility of the questionnaire. A diagram representing the confirmatory factor model could be found in **Figure 13**. According to **Table 6**, the value of X²/df was 1.618, which was less than 3, resulting in an ideal fit. Additionally, RMSEA had a value of 0.056, which was less than the standard value of 0.08, indicating a good fit. The value-added indicators including IFI, TLI, and CFI were 0.972, 0.964 and 0.972, respectively, which were higher than the standard value of 0.9, and the matching results were ideal. In general, the concepts of IC, IL, and ILG were well-aligned with each other.

Table 7. Confirmatory factor loadings.

	Path		Estimate	AVE	CR
IC5	<---	IC	0.825		
IC4	<---	IC	0.793		
IC3	<---	IC	0.767	0.642	0.899
IC2	<---	IC	0.826		
IC1	<---	IC	0.794		
IL5	<---	IL	0.696		
IL4	<---	IL	0.802		
IL3	<---	IL	0.817	0.598	0.881
IL2	<---	IL	0.782		
IL1	<---	IL	0.763		
ILG3	<---	ILG	0.769		
LIG2	<---	ILG	0.718	0.577	0.803
ILG1	<---	ILG	0.789		

Based on **Table 7**, it could be seen that the factor load for IL 5 was 0.696, which was slightly lower than the acceptable threshold of 0.7. However, it was still considered acceptable. On the other hand, the factor load for IC, IL, and ILG were all greater than 0.7, showing that each variable was well-represented in the analysis. In addition, the average variance variation AVE of each latent variable was greater than 0.5, and the reliability combination CR was greater than 0.8, indicating that the convergence validity was ideal [24].

Table 8. Discriminant validity.

	IC	IL	ILG
IC	0.642		
IL	0.247**	0.598	
ILG	0.303**	0.223**	0.577
AVE square root	0.801	0.773	0.76

The correlation analysis between IC, IL, and ILG was presented in **Table 8**. According to the results shown in **Table 8**, there was a significant correlation ($p < 0.01$) between potential variables. However, the absolute correlation coefficient was less than 0.5, and also less than the square root of the corresponding AVE, reflecting that although there was a certain degree of correlation between the variables, there were also significant differences between them, which meant that the discriminant validity of scale data was ideal.

According to a survey conducted at college students, students lack sufficient understanding of patents, intellectual property rights, and IL. They do not realize the importance of navigation to IL, and mostly browse websites related to their field of study. At the same time, there is also a gap in their knowledge of profes-

sional software, as they rely more on search engines, which they frequently use to obtain the information they need. They are generally satisfied with the results of their searches and pay more attention to the accuracy of the search engine results, the feedback time of the results, and the search engine categories. When encountering doubts, people tend to use websites to find the answers rather than developing appropriate retrieval strategies with keywords. However, there is a significant gap in the ability of students to obtain information. According to a recent survey, only 21% of students have taken courses related to IL, such as information retrieval or literature retrieval. Furthermore, there is low participation in the IL activities organized by the library, making it difficult to improve the level of IL among students. Therefore, IL has become indispensable, such as providing the courses related to information science [17] and training on skills of acquiring information resources for college students [18].

Part VI Strategies and suggestions for improving students' IL

Establish a correct concept of information

Students should establish a proper view of information, constantly enhance information awareness, cultivate IL, pay attention to the authenticity of information, respect intellectual property rights and establish an awareness of information security, and should understand the global information development trend, broaden their international vision, and improve the capacity in using information technology for learning resources [25].

Create a good information environment

Creating a good information environment is critical to cultivate and improve the IL of college students, which needs a stable and dependable infrastructure of hardware and networks. The level of computer network technology is closely related to the improvement of IL [8]. To establish a comprehensive campus network system, high schools should prioritize upgrading hardware infrastructure by establishing advanced digital libraries, data centers, and high-speed, stable network systems. It will provide a material basis for people to obtain information. At the same time, information technology education and training should be carried out to offer students more practical opportunities and improve their information technology application ability and IL level.

Carry out rich IL education activities

While some students may have mastered basic computer skills for sending electronic mails and social media use among others, they may be constrained with how to effectively search the Internet or use library electronic resources for academic purposes. Therefore, it is imperative to integrate library orientation and IL programs into higher education curricula in an effective and efficient way [18].

According to survey results, it could be seen that the participation of students in IL education activities and lectures held every year was very low. To address this issue, it is necessary to strengthen the promotion of IL activities, especially during the new student orientation. These activities should be designed with various forms and rich content to attract students to actively participate. Libraries should

make full use of this opportunity to carry out IL education and help readers develop their ability to access and utilize literature [26]. On the one hand, the library should cater to students' majors and interests by providing a vast collection of books; on the other hand, it is essential to develop a comprehensive digital network resource database that offers students abundant online information resources and establish an online IL education platform combining various training lectures, course education, library education, librarian training, student evaluation and test with its rich information resources.

3. Conclusion

IL has become an indispensable quality for modern people. For college students, strong IL proficiency not only improves learning efficiency but also equips them with critical skills for future life and work. The cultivation of IL is a long-term and systematic educational practice process. Based on the research results, it is recommended that sufficient and regular IL training is provided for students to improve their IL skills, as most of the surveyed students have intermediate IL skills. Therefore, IL skills development and library resource utilization should be embedded as core components at all academic levels. So as to, IL level may comprehensively improve, this will enable undergraduate students to fully master the necessary skills for effectively utilizing EIRs.

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Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Lee, S., Choi, J., Kim, H. and Baek, S. (2023) A Comparative Study of Information Literacy Study Trends between Korea and Other Countries Using Keyword Networks. *Libri*, **73**, 51-62. <https://doi.org/10.1515/libri-2021-0131>
- [2] Ojobor, R., Chidimma, P., Babarinde, E., *et al.* (2021) Assessing the Impact of Collaboration in Improving Students' Information Literacy Skills in the Digital Environment. *Global Review of Library and Information Science*, **17**, 1-17.
- [3] Addison, C.E. (2013) Perspectives on Information Literacy: A Framework for Conceptual Understanding. *Information Research: An International Electronic Journal*, **18**, 145-162.
- [4] Shukla, R., Kumar, A. and Verma, M.K. (2020) Information and Digital Literacy Skills among PG Students of Social Sciences of Mizoram University and Tezpur University: A Comparative Study. *International Journal of Information Dissemination and Technology*, **10**, 40-51. <https://doi.org/10.5958/2249-5576.2020.00007.2>

- [5] Fei, L. and Yan, Z. (2019) Innovative Thinking of University Libraries in the Context of Internet. Science Press.
- [6] Luan, J. (2022) The Cultivation and Improvement of Young Students' Information Communication Literacy under the Background of Financial Media. *Adult and Higher Education*, **4**, 84-89.
- [7] Diddi, K. and Tomar, M. (2023) Assessing Information Literacy Programme in Libraries of HEIS: A Comprehensive Review. *International Journal of Emerging Knowledge Studies*, **2**, 766-775.
- [8] Ye, L., Wei, Z. and Bao, Q. (2023) Research on the Influencing Factors of Information Literacy of University Teachers and Students in the Age of Digital Intelligence. *Journal of Education, Humanities and Social Sciences*, **14**, 678-687.
<https://doi.org/10.54097/ehss.v14i.8966>
- [9] Sample, A. (2020) Historical Development of Definitions of Information Literacy: A Literature Review of Selected Resources. *The Journal of Academic Librarianship*, **46**, Article ID: 102116. <https://doi.org/10.1016/j.acalib.2020.102116>
- [10] Dai, Y., Tang, X. and Liu, C. (2022) Research on the Value and Path of Cultivating College Students' Digital Literacy in the Digital Age. 2022 8th International Conference on Education and Training Technologies, Macau, 16-18 April 2022, 92-97.
<https://doi.org/10.1145/3535756.3535771>
- [11] Qin, W. (2019) Research on College Students' Information Literacy from the Perspective of Information Society Theory. China Atomic Energy Press.
- [12] Ahmad, F., Widén, G. and Huvila, I. (2020) The Impact of Workplace Information Literacy on Organizational Innovation: An Empirical Study. *International Journal of Information Management*, **51**, Article ID: 102041.
<https://doi.org/10.1016/j.ijinfomgt.2019.102041>
- [13] Zou'bi, R.A. (2021) The Impact of Media and Information Literacy on Acquiring the Critical Thinking Skill by the Educational Faculty's Students. *Thinking Skills and Creativity*, **39**, Article ID: 100782. <https://doi.org/10.1016/j.tsc.2020.100782>
- [14] Deja, M., Rak, D. and Bell, B. (2021) Digital Transformation Readiness: Perspectives on Academia and Library Outcomes in Information Literacy. *The Journal of Academic Librarianship*, **47**, Article ID: 102403.
<https://doi.org/10.1016/j.acalib.2021.102403>
- [15] Chen, K., Liu, Y. and Peng, L. (2022) Visualization Analysis of Undergraduates' Information Literacy Research Based on Knowledge Map. 3rd International Conference on Electronics and Communication, Network and Computer Technology (ECNCT 2021), Volume 12167, Article ID: 1216719. <https://doi.org/10.1117/12.2628695>
- [16] Chukwusa, J. (2021) An Assessment of the Information Literacy Skills of Students in Nigerian Universities. *Indian Journal of Information Sources and Services*, **11**, 9-15.
<https://doi.org/10.51983/ijiss-2021.11.1.2649>
- [17] Moin Ud Din, G., Mairaj, M.I. and Sheikh, A. (2022) Information Literacy Instruction in University Libraries of Islamabad, Pakistan: A Study of Librarians' Perceptions, Practices, Barriers, and Strategies. *The Electronic Library*, **40**, 698-711.
<https://doi.org/10.1108/el-10-2021-0193>
- [18] Ogungbo, W., Dapo-Asaju, S., Makinde, O., et al. (2022) Library Orientation and Information Literacy Skills as Correlate of Scholarly Research of Postgraduate Students of Federal University of Agriculture Abeokuta. *Library Philosophy and Practice*, **9**, 2094-2112.
- [19] Kalaf-Hughes, N. (2022) Promoting Information Literacy and Visual Literacy Skills

- in Undergraduate Students Using Infographics. *PS: Political Science & Politics*, **56**, 321-327. <https://doi.org/10.1017/s1049096522001214>
- [20] Satti, A.N., Khan, K. and Sahibzada, H.E. (2020) Investigation about Information Literacy Skills of Research Scholars. *sjesr*, **3**, 194-204. [https://doi.org/10.36902/sjesr-vol3-iss4-2020\(194-204\)](https://doi.org/10.36902/sjesr-vol3-iss4-2020(194-204))
- [21] Nwalo, K.I.N. and Babarinde, B.A. (2022) Information Literacy Skills as Predictor of Electronic Information Resources Use by Undergraduates of Public Universities in Southwestern Nigeria. *Journal of Library Services and Technologies*, **4**, 51-68.
- [22] Head, A.J., Fister, B. and Macmillan, M. (2020) Information Literacy in the Age of Algorithms: Student Experiences with News and Information, and the Need for Change. *Project Information Literacy*, **1**, Article ID: 3706194.
- [23] Shuai, Y. (2022) Research on Precision Service of Comprehensive Archives from the Perspective of SSER Portrait. Heilongjiang University.
- [24] Xuexei, Y. (2021) The Transformation of High School Students' Chemistry Learning Method Based on Real Problem Situation Teaching the Study. Qinghai Normal University.
- [25] Sutirman, Kusuma, C.S.D. and Ramadhan, A.N. (2022) Youth Empowerment through Digital Literacy Education. In: *Proceedings of the 9th International Conference on Education Research, and Innovation (ICERI2021)*, Atlantis Press SARL, 285-293. https://doi.org/10.2991/978-2-494069-67-1_31
- [26] Chen, Q., *et al.* (2017) Information Literacy and Information Retrieval. Tsinghua University Press.