Assessment of Information Literacy Competences in Peruvian University Students: An Exploratory Study

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The objective was to evaluate the perception of the informational literacy competences of the university students of the Peruvian Amazon. The investigation was developed under a quantitative approach, the design was non-experimental and cross-sectional descriptive type. The sample was made up of 707 students to whom the Informational Literacy Competences Questionnaire was given, an instrument with an adequate level of content validity and reliability. According to the results, the level of development of the informational literacy competencies of 37.5% of students was low, 35% was medium, and 27.5% was high. Likewise, the dimensions of information retrieval, information assessment and information processing were also valued at a low level. However, the information communication dimension of information was valued at a medium level. On the other hand, it was found that the level of informational literacy competences was significantly associated with the year of study in which the students were (p<0.05). It was concluded that the level of development of the informational literacy competencies that characterized the students was low.

Keywords: informational literacy competes, information retrieval, information assessment, information processing, information communication

INTRODUCTION

At present, where information plays a fundamental role, it is crucial to develop in students' skills that allow them to access, analyze, evaluate and use information effectively (Tiscareño & Cortés, 2014). These competencies are closely related to the ability to search, evaluate, process and communicate information properly (Sánchez, 2015) and are called informational literacy competencies. They are defined as the set of knowledge, skills, provisions and behaviors that train individuals to recognize when they need information, where to locate it, how to evaluate their suitability and give it proper use according to the problem that arises (García et al., 2020; Pirela & Cortés, 2014).

Several studies have identified and grouped informational literacy competencies in several fundamental dimensions (Contreras & Campa, 2022). These dimensions help us to understand and develop more effectively the necessary skills to adapt to the current information society:

- Information retrieval. It is part of the informational literacy competencies and refers to the way in which people search and access information with the aim of identifying, locating and selecting the most relevant information (Varela & Saraiva, 2020).
- Information assessment. It consists of analyzing the sources critically and selecting the information provided by veracity and sustenance (Valenzuela et al., 2021). Therefore, ethical issues that suppose the use of information for legal purposes should be considered.
- Information processing. It is oriented to management of tools, resources and methods for the planning, organization and evaluation of information systems that include as a process of acquisition, location, organization and storage of information (Fernández, 2008).
- Information communication. This dimension is understood as a process that allows socializing information from the outcome of searches in different sources in order to elaborate presentations, essays, scientific articles, among others, with the intention of communicating, understanding, analyzing and generating new knowledge (Carvajal et al., 2013).

Nowadays, although technological advances have facilitated access to information, there is continuous concern that university students have insufficient information literacy. This means that they handle a lot of information, but they do not know what to do with it, how to evaluate it, how to use it and how to take advantage of it strategically and ethically (Pinto & Guerrero, 2017). On the other hand, they are unaware of how to address academic works and how to expose properly in public (Cedeño et al., 2021).

Few researches in the national and international context evaluated university students' informational literacy competes. In Peru, an investigation was conducted to analyze the informational skills of undergraduate and postgraduate students and concluded that the students had limitations to use the information to which they have access and to generate new knowledge, aspects that were reflected in a low capacity to communicate and exchange information (Berrocal et al., 2022). Also, in Ecuador, they reported

that the students of Information Management presented capabilities and skills in informational literacy competencies below the average. Therefore, the execution of an informational literacy program for the students of Information Management was imperative (Andrade et al., 2023). On the other hand, in Slovenia they found that the level of informational literacy competencies of university students was regular (Dolničar & Boh Podgornik, 2023).

In the university field, students must develop solid informational literacy competencies to face the challenges of higher education and prepare properly for their future insertion on the labor market. However, in the Peruvian context there is a lack of exhaustive and up-to-date studies that address the level of development of these competencies in university students. Therefore, this research has significant practical and theoretical relevance. On the one hand, it will provide valuable information for the design of teaching strategies and information development programs in the university field, aiming to strengthen these key skills in students. On the other hand, it will contribute to the existing body of knowledge in the field of digital literacy and higher education, by providing updated data on the state of informational literacy competences in this specific context.

The objective of this research was to evaluate the perception of the informational literacy competences of the university students of the Peruvian Amazon.

METHODOLOGY

The research approach was quantitative, since it focused on numerical measurement and the use of statistics to determine the behavior patterns of participants. As for the design, it was non-experimental, since the variable informational literacy competences was not deliberately manipulated, it was only observed. As for the type, it was cross-sectional descriptive one, since the analysis of the characteristics of the variable was developed and because the data collection was carried out in a single moment (Hernández & Mendoza, 2018).

The population was constituted by 4850 students from the universities that provide the educational service in the Madre de Dios region, Peru: Universidad Nacional Amazónica de Madre de Dios (UNAMAD) and the subsidiaries of the Universidad Andina del Cusco (UAC) and Universidad Nacional San Antonio Abad del Cusco (UNSAAC). On the other hand, the sample comprised 707 students, amount obtained through a stratified probabilistic sampling with a 95% confidence level and a significance level of 5%. According to Table 1, 56.7% were men and 43.3% were women. Regarding the year of study, 25.9% were in the first year, 22.8% in the second year, 20.9% in the third year, 17% in the fourth year and 13.4% in the fifth year. Concerning the university of origin, 49.4% came from UNAMAD, 39.3% of the UAC and 11.3% of UNSAAC.

TABLE 1
SOCIO-DEMOGRAPHIC AND ACADEMIC CHARACTERISTICS OF THE SAMPLE

Variables	Characteristics	n= 707	%
Gender	Male	401	56.7
	Female	306	43.3
Year of study	First	183	25.9
	Second	161	22.8
	Third	148	20.9
	Fourth	120	17.0
	Fifth	95	13.4
University of origin	UNAMAD	349	49.4
	UAC	278	39.3
	UNSAAC	80	11.3

Data collection was given by using a virtual survey structured on Google Forms, which was made up of two sections. In the first section, the participants were requested their informed consent, as well as sociodemographic and academic information (gender, year of study and university of origin).

In the second section, the Informational Literacy Competencies Questionnaire was applied (Bielba et al., 2015), which was adapted to Peruvian reality (Berrocal et al., 2022). It consists of 32 Likert type items (never, almost never, sometimes, almost always and always) and distributed in 4 dimensions: information retrieval (items from 1 to 8), information assessment (items from 9 to 16), information processing (items from 17 to 24) and information communication (items from 25 to 32). The questionnaire's psychometric properties were determined through content validity (V of Aiken= 0.920) and reliability (α= 0.890). In that sense, it was concluded that the questionnaire was valid and reliable.

Additionally, the necessary procedures were carried out in order to obtain the authorizations of the relevant university authorities to collect data. Subsequently, the WhatsApp application was used to invite students to participate in the research, providing them the survey link in which the purpose of the investigation the necessary instructions to complete the questionnaire were explained. This process had an approximate duration of 15 minutes and once the participation of the 707 students was ensured, access to the questionnaire was deactivated.

The SPSS Software version 25 was used to carry out the statistical analysis. The descriptive results were presented in five figures, while the inferential results were obtained by applying the Chi-Square non-parametric test (X^2). This statistical test allowed us to determine whether there was a statistically significant association between the level of informational literacy competencies and the proposed sociodemographic and academic variables.

In relation to ethical considerations, this investigation was carried out following the ethical principles established in Helsinki's statement and was supported by the Institutional Ethics Committee. It is relevant to point out that students were informed about the purpose and nature of the research. Therefore, they provided their informed consent, thus ensuring privacy, confidentiality, anonymity and the voluntary nature of their participation.

RESULTS

Figure 1 shows that the level of development of informational literacy competences, 37.5% of students were low, 35% was medium and 27.5% was high. That indicates that a significant proportion of students show difficulties in searching, evaluating and effectively using information. You can also see that another group of students has basic informational skills, but still needs to improve key aspects.

FIGURE 1
DESCRIPTIVE RESULTS OF THE INFORMATION LITERACY COMPETENCIES VARIABLE
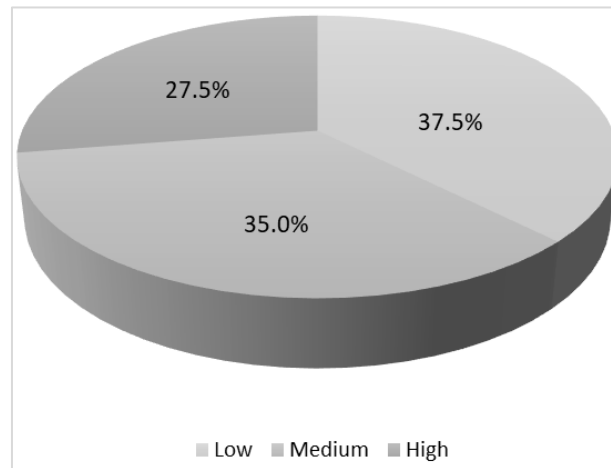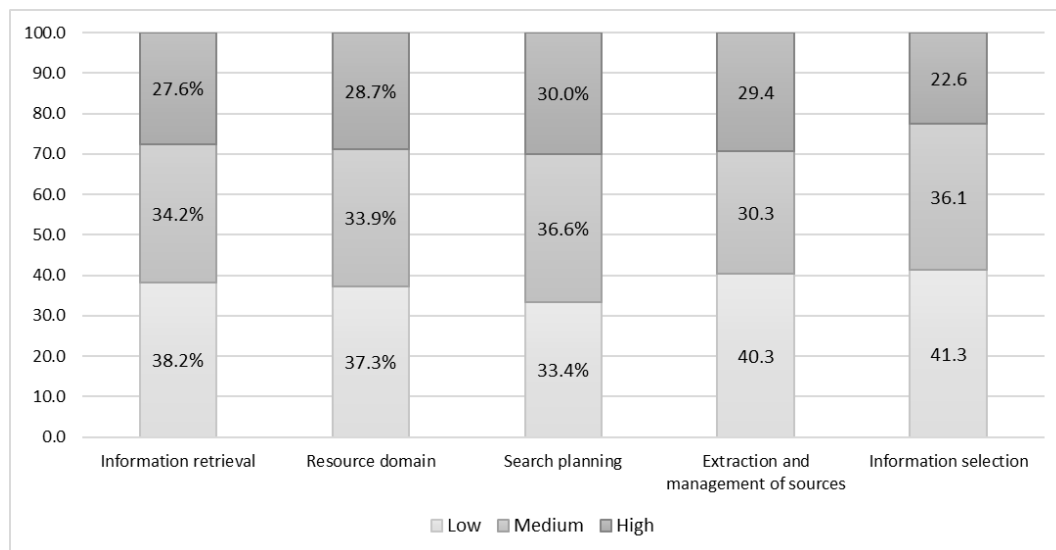

Figure 2 shows that the level of development of the information retrieval dimension of 38.2% of students was low, 34.2% was medium and 27.6% was high. Similarly, when analyzing the indicators, it was determined that domain resource, extraction and management of sources and information selection were valued at a low level. However, the search planning indicator was valued at a medium level. The exposed information means that students are characterized by having difficulties in carrying out effective searches, which can imply problems in the selection of keywords, the use of adequate search engines or the evaluation of the results' relevance.
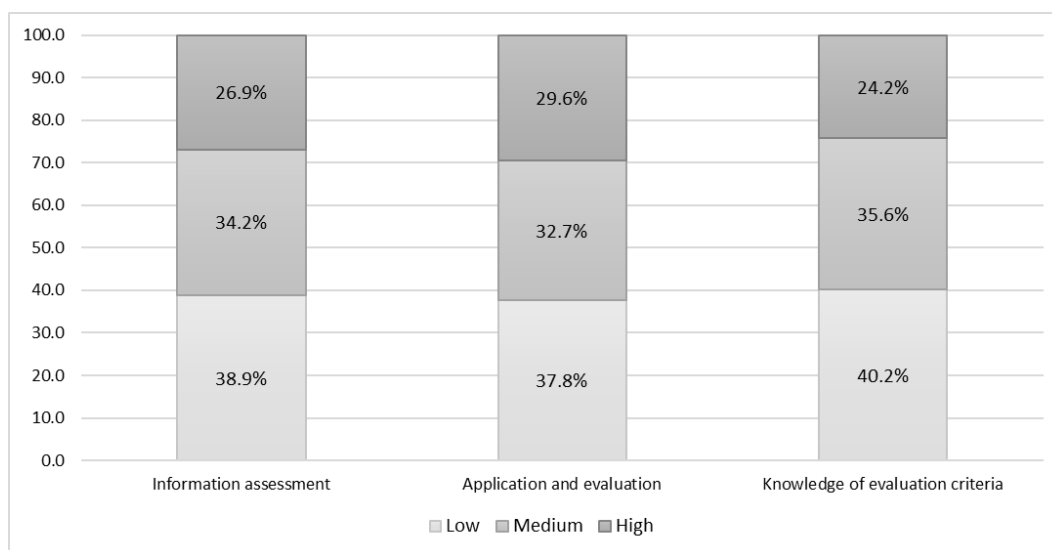
FIGURE 2
DESCRIPTIVE RESULTS OF THE INFORMATION RETRIEVAL DIMENSION AND ITS INDICATORS

In Figure 3 it can be seen that the level of development of the information assessment dimension of 38.9% of students was low, 34.2% was medium and 26.9% was high. In the same way, when analyzing the

indicators, it was determined that the low level prevailed in both (application and evaluation and knowledge of the evaluation criteria). This indicates that more than a third of the students face difficulties in evaluating the quality, reliability and relevance of the information they find. This could generate difficulties in discerning accurate information of deceptive or biased information.

FIGURE 3
DESCRIPTIVE RESULTS OF THE INFORMATION ASSESSMENT DIMENSION AND ITS INDICATORS

According to Figure 4, the level of information processing dimension, 40.7% of students was low, 35.6% was medium and 23.6% were high. Likewise, when analyzing the indicators, it was determined that the predominant level was low in all cases (review of the action processing, synthesis of ideas and creation of new concepts, comparison of new knowledge and creation of new knowledge). This indicates that a considerable percentage of students face difficulties in the effective information processing, which can imply problems to organize, analyze and synthesize the information obtained.

According to Figure 5, the level of the information communication dimension, 35.9% of students was medium, 32.2% was low and 31.8% was high. Likewise, when analyzing the indicators, it was determined that in most cases (understanding and applying ethical issues, compliance with the norms, laws and policies and knowledge and mastery of tools) the predominant level was also medium. However, in the case of the effective communication skills indicator the low level predominated. The exposed data show that students have basic skills in information communication. In that sense, they can transmit information clearly and understandably. However, they may still need to improve aspects such as the organization of ideas or the adaptation of the message to different audiences.

FIGURE 4
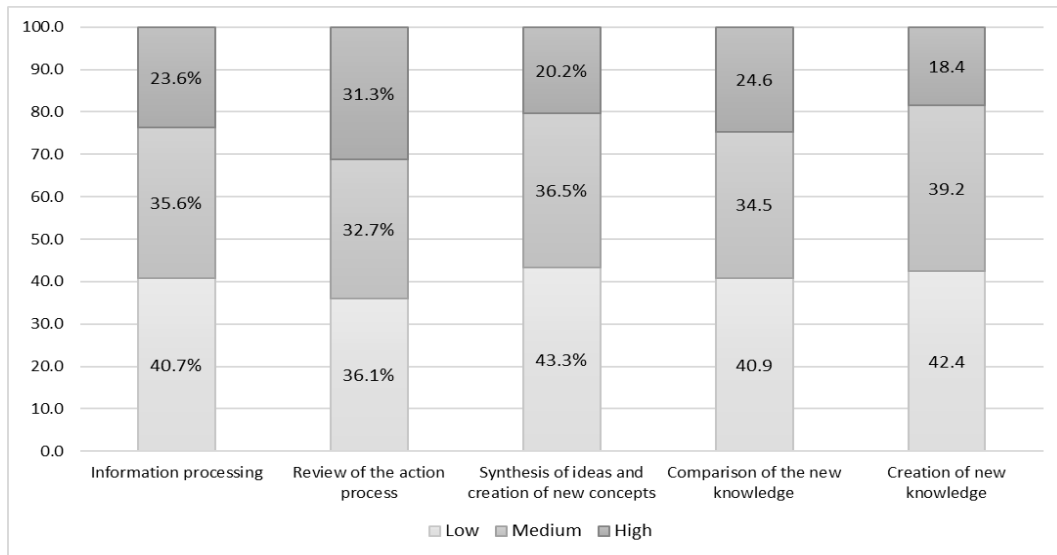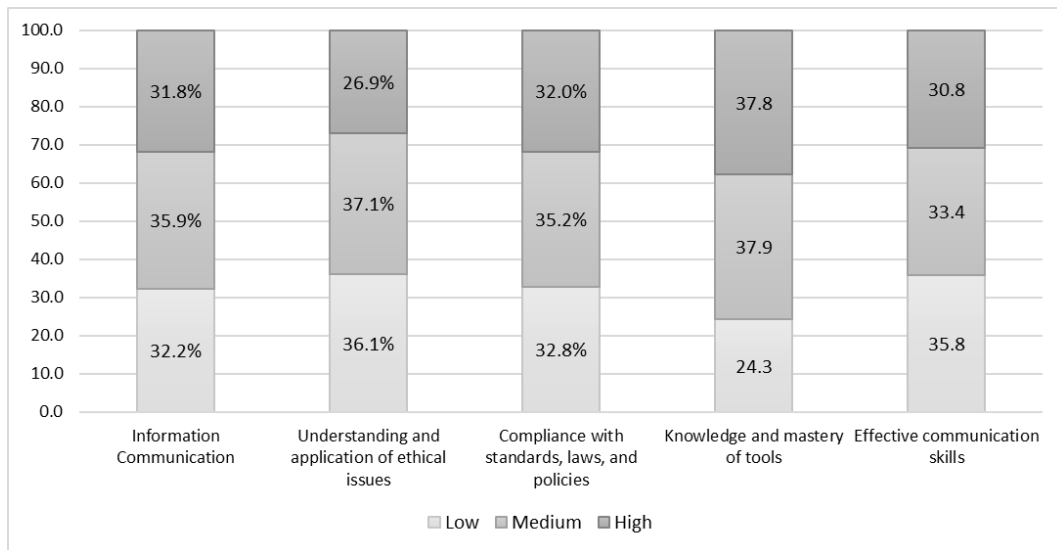**DESCRIPTIVE RESULTS OF THE INFORMATION PROCESSING DIMENSION AND ITS INDICATORS**

FIGURE 5
DESCRIPTIVE RESULTS OF THE INFORMATION COMMUNICATION DIMENSION AND ITS INDICATORS

According to Table 2, the level of informational literacy competences reported by the students was not-significantly associated with gender (p>0.05). This means that the gender of the students did not significantly impact the level of informational literacy competences they reported.

TABLE 2
ASSOCIATION BETWEEN INFORMATION LITERACY COMPETENCE
LEVELS AND GENDER

Sociodemographic variable		Informational literacy competences						p
		Low		Medium		High		
		f	%	f	%	f	%	
Gender	Male	154	38.4	136	33.9	111	27.7	0.068
	Female	111	36.3	112	36.6	83	27.1	

In Table 3, the level of informational literacy competences was significantly associated with students' year of study (p<0.05). This implies that as students advance in their years of study, it is likely that their level of informational literacy competences will increase. In that sense, they may acquire more skills and knowledge related to information management as they progress in their professional training.

TABLE 3
ASSOCIATION BETWEEN INFORMATION LITERACY COMPETENCE LEVELS AND
YEAR OF STUDY

Academic variable		Informational literacy competences						p
		Low		Medium		High		
		f	%	f	%	f	%	
Year of study	First	74	40.4	61	33.3	48	26.2	0.042*
	Second	64	39.8	49	30.4	48	29.8	
	Third	55	37.2	53	35.8	40	27.0	
	Fourth	41	34.2	47	39.2	32	26.7	
	Fifth	31	32.6	38	40.0	26	27.4	

Table 4 shows that the level of informational literacy competences was not-significantly associated with the university of students (p>0.05). This result suggests that the university from which students come did not have a significant impact on their level of informational literacy competences according to the data analyzed.

TABLE 4
ASSOCIATION BETWEEN INFORMATION LITERACY COMPETENCE LEVELS AND
UNIVERSITY OF ORIGIN

Academic variable		Informational literacy competences						p
		Low		Medium		High		
		f	%	f	%	f	%	
University of origin	UNAMAD	128	36.7	119	34.1	102	29.2	0.083
	UAC	106	38.1	101	36.3	71	25.5	
	UNSAAC	31	38.8	28	35.0	21	26.3	

DISCUSSION

In the university context, informational literacy competencies play a fundamental role in learning, research and knowledge production (Marcial et al., 2015). University students must be able to identify and use reliable sources, critically analyze information, synthesize ideas and apply knowledge in various contexts. In addition, they must be able to communicate and share information effectively, both in their

academic work and in collaborations or presentations. In that sense, the objective of the present research was to evaluate the perception of the informational literacy competencies of the university students of the Peruvian Amazon.

A first finding indicates that the level of development of informational literacy competences predominant in university students was low. This implies they have difficulty searching and using information effectively, evaluating the quality and veracity of information sources and properly using the digital tools available. This could limit learning opportunities, the ability to make informed decisions and performance in the academic and professional field.

Similar results were obtained in Peru, where they evaluated the informational skills of undergraduate and postgraduate students and concluded that the students had limitations to use the information to which they have access and to generate new knowledge, aspects that were reflected in the limited capacity for communicating and exchanging information. Therefore, there was the need to reformulate curricula and learning contents to link to academic and research activities to develop informational skills processes (Berrocal et al., 2022). On the other hand, in Ecuador they reported that the students of the Information Management presented capacities and skills in informational literacy competences below the average. Therefore, the execution of an informational literacy program in the students of Information Management was imperative (Andrade et al., 2023).

The management of information and information and communication technologies are important for good knowledge management, because it allows the student to discern and solve various problems that arise in a competitive society (Estrada et al., 2022). However, it will not be carried out, if the individual cannot create information, much less produce it, without first acquiring the skills to be information literate (Chávez & Córdova, 2021). By dominating these skills, students become information consumers, creators, and active knowledge producers. They can analyze data, synthesize information, develop projects and present ideas clearly and persuasively. This gives them a competitive advantage in their academic, professional and personal life, since they are better prepared to face the challenges and take advantage of the opportunities that arise in an increasingly digitized society (Ayala, 2020).

When evaluating the dimensions of the informational literacy competencies variables, it was found that most of them (information retrieval, information assessment and information processing) also predominated ata low level. However, information communication was valued in an average level. That suggests that, although university students presented a low level of development in informational literacy competencies, they demonstrated some ability to communicate information. It is important to note that this dimension can be crucial to sharing knowledge and collaborating with others, which could benefit your academic and professional life. However, it is important to keep in mind that, despite the average assessment in the information communication, the predominant low level in other dimensions can still have a significant impact on the general performance of students in their management of information and in its ability to face the challenges that arise in an increasingly digitized environment.

When analyzing the association between the level of informational literacy competences and the academic variables, it was found that only significantly was associated with the year of study. This indicates that as students advanced in their academic career, they are likely to experience an increase in the development of their informational literacy competences. In other words, as students advance in their professional training, they will likely acquire and improve their skills to search, evaluate and use information effectively.

The described finding converges with what was reported in an investigation carried out in Slovenia, in which it was also found that the level of informational literacy competences was associated with the year of studies. In that sense, it was found that the students of the first years had limitations regarding the development of informational literacy competences, which is due to the fact that the curricula with traditional basic courses does not contribute to their informational development, while, in recent years, students were more likely to develop informational literacy competences due to the nature of courses and active learning (Dolničar & Boh Podgornik, 2023).

To improve the training of students in informational literacy competences, it is recommended that academic institutions implement strategies and programs for the development of digital skills from the first

years of study. In addition, it is important that teachers actively integrate the development of informational literacy competencies in their teaching methodologies, promoting critical thinking, the active search for information and effective communication of ideas.

This research presents strengths when addressing a relatively unexplored and under-investigated construct in the university context. However, some limitations that must be considered were also identified. Firstly, a disproportion was observed in the sample concerning the number of students according to the university of origin. Additionally, using a self-administered data collection instrument could lead to subjective assessments by students and may limit the generalization of results. Therefore, it is recommended to increase the sample size, including a greater number of UNSAAC students for future research. Likewise, the use of additional data collection instruments is suggested to provide more objectivity to this process.

CONCLUSION

Currently, access to information has become easier and more abundant than ever. However, the ability to find, efficiently evaluate, and use this information has become a challenge for many university students. In the present investigation, it was determined that the level of development of the informational literacy competencies of 37.5% of the students was low, of 35% was medium, while 27.5% was high. Likewise, the dimensions of information retrieval, information assessment and information processing were also valued at a low level. However, information communication was valued at an average level. On the other hand, it was found that the level of informational literacy competencies was significantly associated with the year of study in which the students were ($p < 0.05$).

Therefore, the design and implementation of informational literacy programs is suggested. Universities must establish structured programs that focus on developing students' informational literacy competencies. These programs may include specific courses, workshops and educational resources that address topics such as the search and information assessment, critical and ethical thinking, and the effective use of tools and technologies. On the other hand, informational literacy competencies should be integrated into the curricula. This implies that they must be considered an integral component of all university study programs. This will help students apply and strengthen their informational skills in a practical and relevant way.

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