

Solutions to Improve Information Competency of University Students - Case Study of NHA Trang University

Huynh Phuong Duyen

Nha Trang University - NTU. Email: duyenhpn@ntu.edu.vn. Orcid: <https://orcid.org/0009-0002-9675-5258>

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ABSTRACT

Information literacy is a key factor in the learning and research process of university students. This study focuses on understanding the current situation and factors affecting the information literacy of Nha Trang University students, thereby proposing solutions to improve the effectiveness of accessing and using information in the academic environment. Data were collected from a survey of 507 students studying in their second and third years, from 14 Faculties/Institutes, Nha Trang University, then analyzed using SPSS software to determine the impact level of each factor. The results show that students' information literacy is at an average level and is affected by many objective and subjective factors. On that basis, the study proposes specific measures to integrate information literacy into the training program, increase support from the library and apply technology to improve the ability to access and use information. The research results can contribute to improving the quality of university training in the current context of digital transformation.

Keywords: Information competency; Students; Higher education; Nha Trang University.

INTRODUCTION

The advancement of information and communication technology has opened up a potential revolution in all fields. This revolution is characterized by an explosion of information, leading to great challenges in selecting appropriate information to serve learning, research and practical purposes. Information now exists in many different forms, therefore, information users need to be equipped with knowledge and skills to search, evaluate and use information effectively.

The term "Information Literacy" was first mentioned by Paul Zukowski in 1974 in a proposal to the US National Commission on Library and Information Science (Zurkowski, 1974a). In 2008, UNESCO updated the concept, emphasizing that information literacy is the ability to access, manage, evaluate, combine, communicate and create information through digital technology, to support simple to complex tasks (UNESCO, 2008). Information literacy is a combination of computer literacy, information technology literacy and communication literacy.

During their studies and scientific research, students need to be able to locate, analyze and interpret information related to their field of expertise. These skills not only support them in their studies but also form the basis for their future career development.

Nha Trang University has proactively implemented strategies to adapt to digital transformation, including Resolution No. 19/NQ-DHNT dated April 15, 2022 of the University Council on Development Strategy for the period 2021 - 2025 (Nha Trang University, 2022). However, there are still some limitations such as: digital transformation activities in the University units are still slow and uneven; the management software system is not complete; the digitization, construction, updating of digital learning materials, construction of electronic lectures and exploitation of learning materials sources have not become systematic and are difficult to control quality. Therefore, this study aims to assess the current situation and factors affecting the information literacy of Nha Trang University students, thereby proposing solutions to help improve the ability to access and use information effectively.

2. LITERATURE REVIEW

2.1. Concept of information capacity and research situation

Information literacy is a concept that has been studied and developed over many decades. The term was first mentioned by Paul Zukowski in 1974 in a proposal to the National Committee on Library and Information Science (Zurkowski, 1974b). The first formal definition of information literacy appeared in 1989 in a report by the American Library Association (ALA), emphasizing the ability to recognize information needs, locate, evaluate, and use information effectively (American Library Association Presidential Committee on Information Literacy, 1989).

Subsequent studies have further expanded the concept of information literacy. (Johnston & Webber, 2003) define information literacy as the application of appropriate information behavior to obtain needed information, while

recognizing the importance of using information ethically. (Webber & Johnston, 2006) It is further added that an information literate person must be able to adapt his or her information behavior to specific needs.

In addition, many scholars analyze information literacy from the perspective of a comprehensive skill. (Langford, 1998) asserts that information literacy is not only library skills or computer skills but a combination of both, along with the ability to solve information problems. (Anunobi & Udem, 2014) classify information literacy into three groups: technical literacy (using technology), intellectual literacy (reading and analyzing information), and communication literacy (interacting and sharing information).

In 2004, CILIP defined information literacy as the ability to identify when and why information is needed, where to find it, and how to use, evaluate and communicate information ethically (Cilip, 2024). At the same time, a number of information literacy standards models for higher education have been developed, notably the 7-pillar model of (Sconul, 1999, updated 2011, 2015) and the Australian and New Zealand Information Literacy Institute (Anzil, 2004) information literacy competency framework.

In 2008, UNESCO provided one of the most comprehensive definitions of information literacy: “Information literacy is the ability to identify information needs, search for, evaluate, organize, exploit, store, retrieve and use information effectively, ethically and in compliance with copyright” (UNESCO, 2008). Along with that, UNESCO's “Towards Information Literacy Indicators” report introduced a model that integrates information literacy with Information and Communication Technology (ICT) skills, while emphasizing the role of information literacy in education, information equality and cultural diversity.

Thus, since the term information literacy was first used in 1970, there have been many different definitions. Among those definitions, the author agrees with the definition of UNESCO (2008) and uses it as the basis for the analysis in this study. Thus, within the scope of this study, information literacy is understood as the ability to identify information needs; search for and evaluate the quality of information sources; and use information effectively and ethically (respecting copyright and complying with legal regulations).

2.2. Popular models of information capacity

Information literacy is a concept that has evolved and adapted over many periods, reflecting changes in the way information is accessed and used in modern educational and social contexts. Many organizations and scholars have developed information literacy models to guide how learners are equipped with and assessed for information skills. Each model has its own characteristics, emphasizing different aspects such as searching, evaluating, managing and using information ethically and effectively.

Among the widely recognized models are the SCONUL 7 Pillars Model, the ACRL Competency Framework, the Big6 Model, the UNESCO Information Competency Framework, and several others proposed by educational and research organizations. These models not only help students develop information processing skills in their studies, but also lay the foundation for lifelong learning and participation in an increasingly complex digital environment.

The table below provides an overview of typical renewable energy models, helping to compare the similarities and differences in the approaches of each model.

Table 1. Summary of information competency standard frameworks

Year	Author/ Educational Institution	Competency framework name	Source
1990	Eisenberg, Michael B.; Berkowitz, Robert E.	Information Skills Problem Solving Model (Big6)	(Eisenberg & Berkowitz, 1992)
1997	Bruce	Seven standards of information literacy at university level	(Bruce, 1997)
2000	ACRL	Framework for Information Competency Standards at University Level	(Association (ALA) & Libraries (ACRL), 2000)
2004	Bundy/ANZIL	Australia and New Zealand Information Capability Framework	(Bundy, 2004)
2008	Catts & Lau/UNESCO	Six information literacy skills	(Catts & Lau, 2008)
2011	SCONUL	Seven pillars of information skills	(SCONUL, 2021)
2012	Do Van Hung, Le Thi Nga and Nguyen Bich Thuy	Information competency framework for Vietnamese university students	(Hung et al., 2018)
2014	Ministry of Information and Communications, Vietnam	Information technology skills standards	(Ministry of Information and Communications, 2014)

2016	ACRL	Information Competency Framework for Higher Education	(DMUELLER, 2015)
2018	UNESCO	UNESCO Digital Competency Framework	(UNESCO, 2018)

(Source: Author's synthesis, 2024)

Based on international standards and the latest research on information literacy in higher education in the world and in Vietnam, this study proposes an information literacy framework consisting of four main elements. First, the ability to recognize information needs (helping students recognize and clearly identify the information needed to solve problems). Second, information searching skills (helping students to be able to use rich and diverse information sources). Third, the ability to evaluate and use information (helping students to analyze, evaluate the reliability and apply information effectively). Finally, understanding of ethical and legal issues related to the use of information (helping to ensure that students are aware and responsible for their academic activities in a proper and recognized manner). This proposal can be applied as a basis for assessing information literacy of students at Nha Trang University (Table 2).

Table 2. Contents of learners' information competency components

STT	Content	Mission
1	Ability to identify information needs	Identify and clearly articulate information needs Identify different types and forms of potential information sources Consider the costs and benefits of collecting the necessary information Reassess the nature and extent of information needs.
2	Ability to access information effectively	Select the most appropriate investigation methods or information retrieval systems to access the required information Build and execute effectively designed search strategies Search for information online or in person using a variety of methods
3	Ability to evaluate and use information	Express information clearly and use criteria to evaluate information Compare new knowledge with existing knowledge to identify added value, inconsistencies, or other characteristics of the information Extract, record and manage information and its sources Communicate product or performance effectively to others
4	Understanding ethical and legal issues	Collect, store and share information legally Comply with laws, regulations, organizational policies and protocols regarding access and use of information resources.

Source: Author's synthesis (2024)

3. RESEARCH METHODS

3.1. Research sample

The survey subjects of the study were undergraduate students of the 63rd and 64th courses at Nha Trang University belonging to 14 Faculties/Institutes. The research sample size was determined based on the stratified random sampling method to ensure the representativeness of the data. A total of 507 survey forms were distributed, each of which included 59 survey indicators on different aspects of information literacy.

3.2. Document analysis

The study uses the method of analyzing available documents related to the research problem: approaching the studies of previous authors and researchers to provide an overview and evaluation, stating the researcher's point of view on the collected documents. Generalizing domestic and foreign research works published in books, newspapers, and magazines on issues related to information literacy of university students.

3.3. Quantitative method

Survey data were collected through a structured questionnaire, which included quantitative questions measuring aspects of information literacy, such as the ability to search for, evaluate, and use information.

The questionnaire also collected demographic information (gender, course, hometown, Faculty/Institute currently attending) to analyze the relationship between these factors and information literacy.

3.4. Data analysis method

The collected data were processed using SPSS 25.0 software, using quantitative data analysis techniques to ensure the accuracy and objectivity of the research results, while providing a scientific basis for recommendations to improve the intellectual capacity of university students.

4. RESEARCH RESULTS

4.1. Sample descriptive statistics

The author conducted a survey with 507 questionnaires (59 items/survey) with the subjects being students of the 63rd and 64th courses from 14 Faculties/Institutes at Nha Trang University. The topic used SPSS 25.0 software to process and analyze quantitative information. Demographic information such as gender, course, hometown, Faculty/Institute currently studying were collected to serve as a basis for analyzing the current situation and correlation between relationships.

** About gender*

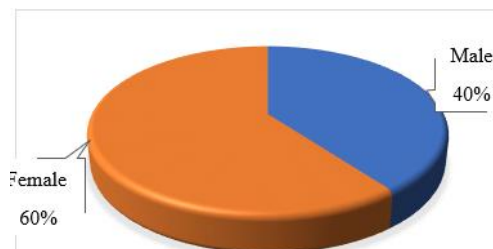


Figure 1. Survey sample by gender

(Source: Data processing results, 2024)

** About the student's hometown*

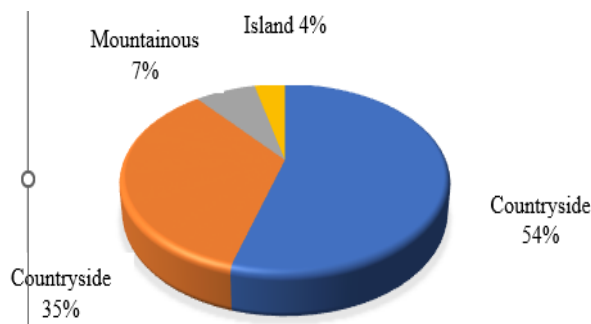


Figure 2. Student's hometown

(Source: Data processing results, 2024)

4.2. Assessment of information literacy of students at Nha Trang University

4.2.1. Students' understanding of the concept of information literacy

Through a survey of 507 students, a total of 49% of students (including 14% who understood very well and 35% who understood well) were considered to have a good understanding of the concept of "information literacy". There is 21% of students understood a little and 22% had no opinion, indicating that half of the surveyed students needed more information and clear explanations about the concept of "information literacy".

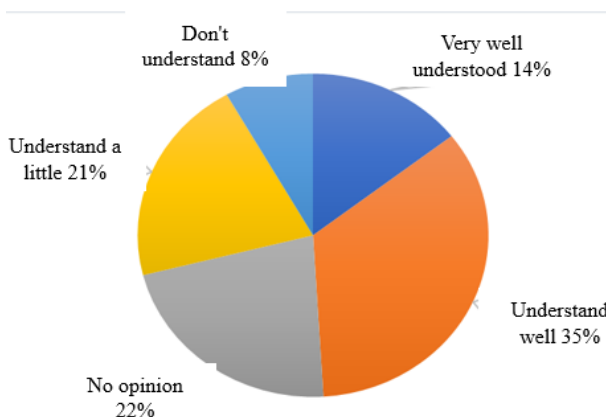


Figure 3. Percentage of understanding of the concept of information literacy

(Source: Data processing results, 2024)

The fact that the percentage of students who understand this concept is not high (49%) can be understood as follows: first, students may not be fully aware of the importance of information literacy in learning as well as in daily life; second, during the learning process, schools have not focused on developing information literacy for students; third, because information literacy is a broad concept, students may have experienced activities related to searching for information, evaluating and using information but there has not been any course on information literacy.

4.2.2. Ability to recognize information needs

Clearly identifying one's own information needs means that students need to build (present) a clear description of their own purpose. In reality, many students have difficulty knowing how to start their personal research. Therefore, an important technique in this is that students can start by creating questions related to the topic they are researching. The survey results show (chart 2.5), students also have a certain understanding at this step, 43.2% of students answered that they often ask questions about the topic assigned by the lecturer. The percentage of students who answered rarely and never is quite small (9.5%). However, even when students have clear questions, they still need to reposition their needs, that is, understand the task clearly. Because just misunderstanding the task will lead to incorrect information sources or inappropriate conclusions.

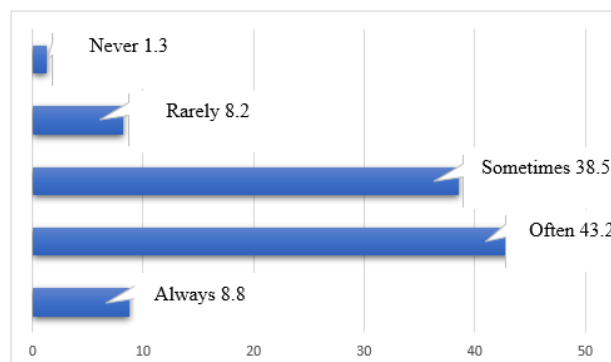


Figure 4. Self-assessment of questioning skills when searching for information

(Source: Data processing results, 2024)

4.2.3. Information search ability

Once students have clearly identified their information needs, they begin their information search strategy by identifying keywords. Keywords, also known as search terms, are words or phrases selected to be entered into a database search box. Keywords represent key concepts about a topic or subject. Without appropriate keywords, users may have difficulty finding the data they need.

Information search ability

TT	Comments	Always	Frequent	Sometimes	Seldom	Never	Total
1	Understand keywords and search strategies	15.3	34.2	36.6	11.5	2.4	100
2	Use the advanced search function when searching for documents on information retrieval systems.	16.3	38.2	28.5	14.7	2.3	100

(Source: Data processing results, 2024)

Table 3 shows that, out of 243/507 students, 49.5% (always and often) of the students answered “Understand keywords and search strategies”. This shows that students are aware of identifying keywords to search for documents, but the results are still not high.

4.2.4. Students' ability to evaluate and exploit information

Information evaluation plays a very important role in information retrieval. In learning, teaching and research environments, this becomes extremely important, especially for the accuracy and scientific nature of information.

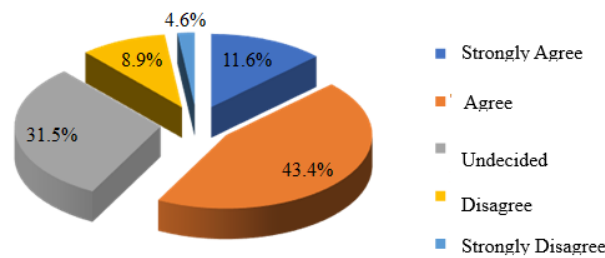


Figure 5. Percentage of people knowing the criteria for evaluating information sources

(Source: Data processing results, 2024)

Based on the survey results in Figure 5, it shows that about half of the students have grasped the method of evaluating the information sources they seek (accounting for 55%) of students, the remaining half of the respondents disagreed and were not interested in this.

After finding the appropriate information, students need to understand the scientific writing style and be able to organize their writing accurately. The skill of paraphrasing, that is, presenting the opinions of others using one's own writing style while maintaining the meaning, was highly appreciated by many students (40.6%). Similarly, the skill of summarizing and synthesizing the content of documents was also highly appreciated by many students (49.4%).

4.2.4. Ethical and legal use of information

Copyright is a term used in the Anglo-American legal system to refer to the exclusive rights over intellectual works. In Vietnam, it is also known as authorship. This right is recognized and protected under law, including the Civil Code and the Intellectual Property Law. Copyright ensures that an author's work cannot be copied or used without permission. This applies to many types of works, including literature, music, images, and more.

Through the survey in Figure 6, students of Nha Trang University have limited understanding of intellectual property rights and copyright.

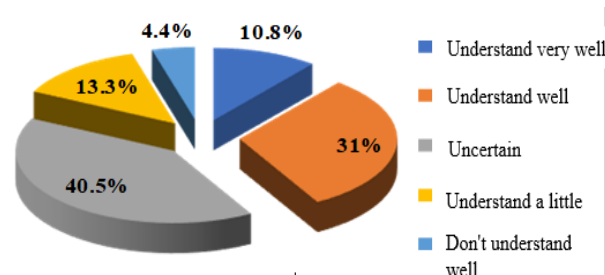


Figure 6. Level of understanding of intellectual property law

(Source: Data processing results, 2024)

Based on the question “Do you understand copyright and intellectual property law?”, the data shows that the majority of students at the school still do not have a deep understanding of the concept of copyright in the field of intellectual property. Only 10.8% of students said they understood very well about copyright in the field of intellectual property, while 40.5% had no opinion/no interest, 17.7% of students did not know anything and understood a little about copyright in intellectual property law. This fact is worrying, because the survey subjects of the topic are second and third year students, who have spent a certain amount of time in the learning process but have very limited understanding of intellectual property. This can lead to a number of serious problems such as infringement of intellectual property rights, lack of research and creative skills, and reduction in the value of their own academic products.

5. POLICY IMPLICATIONS

5.1. Using information competency standards as criteria for evaluating student output standards

In Vietnam, the inclusion of information competency standards as criteria for assessing student output standards may be quite new, however, if not considered, universities will find it difficult to complete the criteria for assessing the quality of higher education. The Ministry of Education and Training has recently issued a number of new documents on standards for assessing the quality of higher education. Circular No. 01/2024/TT-BGDDT, effective from March 22, 2024, stipulates standards and performance indicators for higher education institutions, including 6 standards and 20 criteria. Standard 5 on enrollment and training refers to the rate of student satisfaction with the

learning process and experience, the rate of employment of students after graduation, and requirements for research and innovation.

Thus, including information competence in the output assessment criteria will help Vietnamese universities in general and Nha Trang University in particular improve training quality and competitiveness. In the context of globalization, universities not only focus on meeting domestic quality accreditation standards but also ensure that students have sufficient capacity and skills to work in an international environment in the future.

5.2. Improve the capacity of lecturers and library staff

To enhance students' information literacy, one of the important strategies is to improve the information literacy of lecturers and librarians. Lecturers play a key role and have a great impact on the learning process of students. As knowledge transmitters, lecturers need to understand the importance of information literacy and make efforts to improve this competency throughout the teaching process. The possession of proficient information literacy by lecturers not only supports the effectiveness in the classroom but also directly affects the development of students' information literacy.

For librarians, improving the capacity of librarians means improving the quality of library services. Competent librarians will guide students to access information quickly and accurately. This also contributes to creating a professional and trustworthy learning environment. Students will feel more secure knowing that they can seek timely support and guidance from experienced information professionals.

5.3. Deploy and implement a model for developing information capacity for students at Nha Trang University

To develop students' information capacity, the University orients strategies and policies; provides necessary resources to maintain and develop training and scientific research activities; monitors and evaluates the effectiveness of information capacity development programs to make timely adjustments. Whether students' information capacity is developed or not depends on the awareness and recognition of the University's leaders about the role of information capacity as an important part of students' learning process.

Teaching and guiding students on information literacy: lecturers need to integrate information literacy into their courses; design learning activities that help students practice the skills of searching, evaluating and using information effectively. In addition, lecturers should also provide specific instructions on how to use scholarly database search tools, as well as how to cite sources properly to avoid plagiarism.

Develop training programs and integrate information skills: from the direction and guidance of the School's leaders, specialized Faculties/Institutes require lecturers to integrate information skills into the curriculum. Design specialized courses on information skills to suit the training majors of their Faculty/Institutes. Organize and encourage students to participate in conferences, scientific seminars, and participate in academic communities to expand information networks and learn from experts and researchers in the field and training majors.

Based on the practical research on information competency of students at Nha Trang University and the information competency content proposed by universities and international organizations, the research team proposed the basic content for the information competency program for students at Nha Trang University, including seven modules as follows :

Module 1. Information Overview

Understand the concept of information and the nature of information (understanding how information is created and processed) .

Identify common characteristics of various types of information sources that distinguish scholarly publications from other publications .

How to read academic papers .

Module 2. Recognizing information needs

Explain the task

Select search topic

Recognize technical and specialized terms

Identify available information sources related to the topic

Module 3. Information Search

Select database

Describe the main search strategies

Build search strategies using phrases, Boolean operators (apply AND, OR, NOT, asterisks and quotation marks)

Implement a search strategy using basic or advanced keywords to find documents related to the topic.

Refine search results

Module 4. Information Evaluation

Evaluate resources using various criteria to determine whether they meet your information needs.
Consider your own findings and the responses of others to access reputable, useful, and trustworthy information .

Module 5. Using information

Determine the purpose of selecting and accessing information .
Describes how to retrieve documents listed in the database .
Extract information from reading material .
Analyze search results list .
Paraphrase, quote and summarize .
Information synthesis .

Module 6. Internet Searching

Identify URLs as well as Internet to overcome search obstacles
Distinguish between search engines and databases based on certain criteria
Building a search strategy in Google and Google Scholar

Module 7: Using Information Ethically and Legally

Learn about academic integrity
Understanding Plagiarism and Copyright
Learn citation styles and how to create a reference list

Based on the proposal to develop an information competency training program , the school should also consider integrating information competency into the training program. Many studies have shown that integrating information competency into the training program is the core of any information competency development program at universities. However, each subject should have a part of the content related to how to find and use specific information in that field, helping students apply this skill to their professional practice. This means that if information competency is not integrated into the training program framework, subjects, and courses, it will be difficult to ensure good output standards for students upon graduation.

6. CONCLUSION

The research team conducted a literature review and a field survey at Nha Trang University, focusing on second- and third-year students. Using the Sociological Data Statistics software (SPSS 25.0), the research team analyzed the data and presented the collected data to illustrate the current status of students' information literacy and the factors affecting the improvement of students' information literacy at Nha Trang University.

Through analysis and processing of collected information, the results show that the current information capacity of students at Nha Trang University is still limited, with an overall assessment at an average level (through assessment of the components: need to identify information, search and evaluate information, use information ethically and legally).

The causes of this situation can be considered based on the influencing factors. The research results show that there is a correlation between the development of information competence for lecturers and librarians and the development of information competence of students. The learning methods and awareness of students during the learning process are also factors that significantly affect the information competence of students. Students need to improve their information competence to achieve effectiveness in the learning process and in their future professional activities.

The study also confirmed that developing information literacy for students is not the main task of the library but the responsibility belongs to the stakeholders (School, lecturers, library, students).

Based on theoretical and practical research on the development of information competence of students at Nha Trang University, we propose a series of solutions to improve this situation. Including: model for developing information competence for students, framework for assessing information competence, curriculum for information competence and solutions to realize models and frameworks.

To develop information capacity for students, the research team also places expectations on the School's Leadership through recognizing the role of information capacity for learners in the context of digital transformation; issuing policies to develop information capacity with the participation of stakeholders; at the same time, considering supporting and creating a favorable environment to realize solutions such as issuing a framework of information capacity assessment standards and information capacity programs for learners, integrating information capacity in teaching, and improving information capacity for lecturers and librarians.

The research team also recommends close cooperation between stakeholders to share knowledge and experience, and focus on developing information literacy for students. At the same time, the University, especially the Faculties/Institutes, should consider the decisive role of information literacy in achieving output goals for students, considering information literacy as a standard for assessing input and output standards for students.

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Conflict of Interest Statement

The research team commits and declares that there is no conflict of interest with any individual or organization in this study.

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