

## Procedural Strength, Ethical Weakness: A Component-Based Analysis of EFL Students' Information Literacy

Ratna Dewanti<sup>1,\*</sup>, Yordan Yasin<sup>2</sup>, Deni Sapta Nugraha<sup>3</sup>, Ikhsanudin<sup>4</sup>, & Ivonne Frietche Panjaitan<sup>5</sup>

<sup>1</sup>English Language Education, Universitas Negeri Jakarta, Indonesia

<sup>2</sup>Faculty of Computer Science, Universitas Indonesia, Indonesia

<sup>3</sup>Curug Indonesian Aviation Polytechnic, Indonesia

<sup>4</sup>English Language Education, Universitas Tanjungpura, Indonesia

<sup>5</sup>English Department, Prince of Songkla University, Thailand

\*Corresponding email: [rdewanti@unj.ac.id](mailto:rdewanti@unj.ac.id)

Received: 27 November 2025

Accepted: 07 February 2026

Published: 27 February 2026

**Abstract:** This study examines the information literacy (IL) competencies of EFL students at Indonesian higher education institutions. The study aims to (1) identify overall levels of information literacy competency, (2) examine strengths and weaknesses across five core IL components, (3) describe the distribution of competencies across undergraduate, master's, and doctoral levels, and (4) determine instructional priorities to inform embedded information literacy development within English education curricula. A descriptive survey design was employed involving 227 undergraduate, master's, and doctoral students from three Indonesian universities. Data were collected using the 40-item Information Literacy Test (ILT), which assesses competencies in recognizing information needs, locating information, evaluating information, using information, and applying information ethically. Descriptive statistics, non-parametric group comparisons, and correlational analyses were conducted to examine performance patterns across educational levels and IL components. The results indicate that students demonstrated a moderate level of overall information literacy competency, with substantial overlap in score distributions across educational levels. Although postgraduate students achieved slightly higher mean scores than undergraduates, these differences were modest and not statistically significant. Students performed strongest in using information for academic tasks, while lower performance was observed in evaluating information and applying information ethically. The findings suggest that progression through higher levels of formal education does not automatically lead to systematic development of information literacy competencies among EFL students. Persistent weaknesses in evaluative judgment and ethical use of information across educational stages highlight the need for intentional, curriculum-embedded information literacy instruction within English education programs. This study provides an empirically grounded, component-level profile of information literacy competencies to support more coherent and pedagogically aligned instructional practices in Indonesian higher education.

**Keywords:** information literacy, higher education, EFL, information literacy test.

Article's DOI: <https://doi.org/10.23960/jpp.v16i1.pp384-404>

### ■ INTRODUCTION

In this emerging information age, information literacy, the ability to access, evaluate, and use information from a variety of sources, is indispensable. The importance of information literacy to students' success is substantial because,

as noted by Sanches et al. (2022) It enables students to develop the capacity for independent critical analysis, a hallmark of a university education. Islam & Tsuji (2010) and Al-Qallaf (2020) further emphasized that information literacy is a graduate attribute; therefore, it is

expected to be developed during higher education. With its five components (recognizing information needs, locating information, evaluating information, using information, and applying information ethically), information literacy represents a lifelong learning process that fosters autonomous and independent learners. Thus, information literacy should be both strengthened and evaluated. (Ishimura & Fitzgibbons, 2022; Kurbanoglu et al., 2006; Trixa & Kaspar, 2024).

Research on undergraduates has also drawn attention. Parmini et al. (2023) concluded that literacy skills remain low among Indonesian undergraduates, while Ozor & Toner (2022) examined Ghanaian undergraduates and found varied levels of practice and comprehension. Chukwusa (2021) focused on Library and Information Science students in Nigeria, reporting relatively strong skills but recommending compulsory courses and embedded assignments for improvement.

Beyond assessment, studies have emphasized instruction and students' perceptions. In Malaysia, Edzan (2008) described systemic integration of information literacy through resource-based learning aligned with the Smart School Concept. Similarly, Bashorun et al. (2020), Yanto et al. (2020), and Masunaga et al. (2023) stressed the importance of structured programs, training, and broader recognition of information literacy across both library science and non-library disciplines. Evidence indicates that instructional interventions, such as workshops, problem-based learning, and online modules, improve students' skills. (Bashorun et al., 2020; Deepmala & Upadhyay, 2021; Yanto et al., 2020). Masunaga et al. (2023) further argued that information literacy should be more prominently discussed within higher education, not only in library and information science fields, but across disciplines.

In contrast to many other academic disciplines, such as engineering, medicine, or the

natural sciences, students in these fields typically rely on well-established disciplinary databases, standardized research conventions, and clearly defined methodological frameworks. In science- and technology-oriented disciplines, information literacy skills are often implicitly embedded through laboratory work, engagement with technical manuals, and adherence to tightly regulated research protocols. (Grimm & Vostral, 2019; Lindsay & Morgan, 2021). As a result, students' information-seeking, evaluation, and use practices are continually reinforced through structured academic tasks, thereby contributing to the more systematic development of information literacy competencies.

By comparison, students in English as a Foreign Language (EFL) engage with a broad and heterogeneous body of English-language scholarly texts encompassing linguistics, literature, pedagogy, discourse studies, and educational research (Hair & Alamer, 2022; Qin & Uccelli, 2020). These sources differ substantially in theoretical orientation, methodological rigor, and rhetorical conventions, requiring higher levels of critical judgment and evaluative reasoning. However, EFL curricula often prioritize language proficiency. At the same time, explicit instruction in information literacy, such as advanced search strategies, critical source evaluation, synthesis of research findings, and ethical information use, remains limited or assumed (Yue, 2025). This condition may result in insufficient training of information literacy competencies among EFL students, despite their intensive exposure to academic texts.

Furthermore, EFL students, especially in the English Education Program, occupy a dual academic role that distinguishes them from learners in many other disciplines. They are not only consumers of academic information but also future educators and mediators of knowledge, especially in language learning. (Cheng, 2014). They are expected to model critical reading

practices, source evaluation, idea synthesis, and ethical use of information for their future students. Consequently, deficiencies in information literacy at the tertiary level carry broader pedagogical implications, as inadequate IL competencies risk being reproduced in classroom instruction and academic guidance (Delmond et al., 2024). In this sense, information literacy in EFL extends beyond an individual academic skill and constitutes a foundational competence with long-term educational consequences.

In addition, the contemporary academic information environment has become increasingly shaped by digital platforms, algorithmic search systems, and AI-assisted tools, which introduce new challenges for developing information literacy, particularly in evaluative and ethical domains. EFL students routinely engage with online scholarly databases, open-access repositories, and AI-supported writing and search tools, which can blur distinctions between credible and non-credible sources, as well as between acceptable and problematic information use (Owais & Taym, 2025). While these technologies offer efficiency and accessibility, they also demand higher levels of critical judgment, ethical awareness, and reflective decision-making. Without explicit instructional support, students may develop functional information use skills without a corresponding understanding of source credibility, intellectual property, and responsible academic practice (Calles, 2025). This context further underscores the importance of examining information literacy competencies among EFL students.

However, despite increasing global attention to information literacy, research in Indonesia remains limited and fragmented, particularly outside the field of library and information science. Very few studies have examined the information literacy competencies of EFL students, who rely heavily on English-language scholarly sources and are expected to

engage critically with academic information. Moreover, no existing study has comprehensively assessed information literacy competencies across undergraduate, master's, and doctoral levels within EFL programs using a standardized instrument such as the Information Literacy Test (ILT). This gap limits empirical understanding of whether information literacy develops progressively through academic advancement or remains incidental and uneven across educational stages.

Therefore, the present study aims to assess the information literacy competencies of students in EFL programs at three Indonesian universities using the ILT, map their strengths and weaknesses across the five core information literacy components, and examine patterns across undergraduate, master's, and doctoral levels. The findings are expected to provide valuable insights for curriculum development, particularly in designing more systematic, explicit, and contextualized information literacy instruction within English education programs. To clarify the focus of the study, the following research questions are addressed:

- RQ1. What is the overall level of information literacy competency among EFL students in some Indonesian higher education institutions?
- RQ2. What strengths and weaknesses are evident across the five core components of information literacy among the EFL students?
- RQ3. How are information literacy competencies distributed descriptively across the undergraduate, master's, and doctoral levels?
- RQ4. Which information literacy components indicate the greatest need for instructional support to inform the development of an embedded information literacy framework within English education curricula?

## ■ METHOD

### Participants

The participants in this study were undergraduate, master's, and doctoral students enrolled in EFL programs at three higher education institutions in Indonesia. A total of 227 students voluntarily participated in the study, consisting of 140 undergraduate students, 65 master's students, and 22 doctoral students. Participants were recruited using convenience sampling based on accessibility and willingness to participate.

The distribution of participants across educational levels was uneven, with a smaller proportion of doctoral students relative to undergraduate and master's students. Accordingly, analyses involving educational level were conducted and interpreted with attention to distributional overlap and descriptive patterns rather than definitive group comparisons.

### Research Design & Procedures

This study employed a descriptive survey design to examine EFL students' IL competencies. The design was selected to enable the systematic collection of quantitative data to profile competency levels, identify patterns, and map areas of strength and weakness, rather than to test inferential differences among groups. The research was conducted throughout 2023 at three higher education institutions in Indonesia.

Data were collected online via a Google Form that included all test items. Prior to distribution, institutional permission was obtained, and participants were informed that participation was voluntary. The test link was disseminated through academic communication channels to eligible undergraduate, master's, and doctoral students. Responses were automatically recorded, and the dataset was exported to Microsoft Excel for data preparation, including checks for completeness, removal of duplicate

entries, and verification of submission integrity. Only complete responses were retained, resulting in 227 valid cases for analysis. Subsequent descriptive, non-parametric inferential, and correlational analyses were conducted using JASP version 0.95.4.

The test was administered without a time limit, a deliberate choice aligned with the study's diagnostic purpose and the conceptualization of information literacy as a higher-order cognitive construct. Prior research in educational measurement indicates that time-limited testing may introduce construct-irrelevant variance related to response speed and test anxiety, thereby weakening validity when assessing reasoning- and literacy-based competencies (Gernsbacher et al., 2020). An untimed format was therefore intended to allow participants to engage more fully with tasks involving information searching, evaluation, synthesis, and ethical judgment, which are central to information literacy and commonly performed in authentic academic contexts without strict time constraints.

Administering the test online and without time restrictions also establishes important interpretive boundaries. The findings are therefore treated as indicators of students' applied information literacy practices in open learning environments rather than as measures of controlled individual test performance. In line with this design choice, the study restricts its claims to descriptive profiling and descriptive comparative patterns and avoids causal or high-stakes interpretations of score differences.

### Instruments

Information literacy competencies were measured using the ILT developed by Boh Podgornik et al. (2016). The ILT is a standardized objective test instrument grounded in the ACRL/ALA Information Literacy Competency Standards (American Library Association, 2000; Iannuzzi, 2000). The

instrument was adopted for this study and not developed by the authors.

The ILT consists of 40 multiple-choice items, each with four response options, and assesses five core components of information literacy: recognizing information needs, locating information, evaluating information, using information, and applying information ethically. Each correct response is worth 1 point, yielding a total possible score of 0 to 40, with higher scores indicating greater information literacy competence.

According to Boh Podgornik et al. (2016), the ILT was designed to follow the ACRL/ALA standards in a balanced manner and to incorporate up-to-date, context-neutral examples. The instrument is intended for use across higher education disciplines and fields, with a broader scope than earlier questionnaires that were often narrowly focused on library-specific issues. Importantly, the ILT was developed to be internationally applicable by avoiding national, cultural, or institution-specific references, thereby supporting its use in diverse educational contexts.

Furthermore, the ILT accommodates both lower- and higher-order cognitive skills in accordance with Bloom's taxonomy. The instrument is designed for flexible administration in both paper-based and online environments, is suitable for small and large student groups, and allows for efficient assessment of information literacy competencies. As an open-access instrument, the ILT is freely available without licensing or usage fees, thereby supporting its adoption across diverse institutional settings. To

illustrate the scope and nature of the instrument, Table 1 presents representative sample items and indicators for each information literacy component. The examples are provided in excerpted or paraphrased form to demonstrate the types of cognitive processes assessed, without reproducing the full test content.

The original ILT demonstrated acceptable levels of content validity, construct validity, and internal consistency reliability, as reported by Boh Podgornik et al. (2016). In the present study, the ILT was employed as a diagnostic and descriptive instrument to profile students' information literacy competencies rather than to test latent constructs or causal relationships. Accordingly, the validity and reliability evidence referenced in this study is derived from original validation of the instrument.

Although the ILT has not undergone formal psychometric validation within the Indonesian higher education context, several measures were taken to ensure its relevance and comprehensibility. The test was administered in English, in line with the academic requirements of EFL-oriented English programs. Prior to full administration, the instrument was reviewed by English Education lecturers to ensure linguistic clarity and contextual appropriateness for Indonesian students. No formal pilot testing or statistical revalidation was conducted locally; therefore, the findings should be interpreted as students' performance on an established international instrument rather than as results based on locally normed measures. The absence of local psychometric validation is acknowledged as a limitation of the study.

**Table 1.** Information literacy components, indicators, and sample items in the ILT

IL Component	Indicator Description	Sample Item (Excerpt)	Question Numbers
Recognizing Information Needs	Assesses students' ability to identify when information is required and to determine the scope and nature of information needed for an academic task	<i>Question number 1: The most reliable, verified, concise, and comprehensive A description of an unknown specialized concept can be found in</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 33

Locating Information	Measures students' ability to employ effective search strategies, select appropriate databases, and use keywords and Boolean operators.	<i>Question number 15: I want to find information on the medicinal plant oregano, which is also known as wild marjoram in traditional herbal medicine. Its scientific name is Oreganum vulgare. What is the most appropriate search query in a database?</i>	15, 16, 17, 18, 19, 20, 21, 22, 23, 24
Evaluating Information	assessing credibility, relevance, accuracy, and bias of information sources, including distinguishing scholarly from non-scholarly materials	<i>Question number 25: I need to check the content of a large number of articles in a short time. Which element of an article can I examine quickly?</i>	25, 26, 27, 31, 32
Using Information	examines students' ability to synthesize information from multiple sources to support an academic purpose	<i>Question number 29: What is the correct sequence of the elements in a research article?</i>	29, 34, 35
Applying Information Ethically	evaluates understanding of ethical and legal issues related to information use, such as plagiarism and citation practices	<i>Question number 36: I bought some old documents in a second-hand bookshop. Which of the documents can I scan and publish on my Webpage without authorisation?</i>	28, 30, 36, 37, 38, 39, 40

### Data Analysis

Data analysis combined descriptive, exploratory, inferential, and correlational approaches to provide a comprehensive profile of students' IL competencies. Descriptive statistics were used to summarize overall performance and response patterns across undergraduate, master's, and doctoral levels.

Exploratory inferential analyses were conducted to examine distributional tendencies across educational levels. Prior to group comparisons, distributional characteristics and homogeneity of variance were assessed. Given unequal group sizes and evidence of heterogeneity in variance, nonparametric procedures were employed. Specifically, Kruskal–Wallis tests were used to explore differences in total IL scores and component-level scores across educational levels. Effect sizes were reported to support

practical interpretation of observed patterns, rather than to establish definitive group differences.

Component-level analyses were performed by calculating mean scores for each of the five IL components within each educational level. This approach enabled a more fine-grained examination of strengths and weaknesses across study levels, consistent with the study's diagnostic objectives. In addition, Spearman's rho was used to examine relationships among the five IL components, providing insight into the internal coherence and interdependence of information literacy competencies.

Given the use of convenience sampling and the relatively small doctoral subsample, inferential findings are interpreted cautiously. The analyses are intended to identify patterns, overlaps, and relational tendencies, rather than to support

strong claims of group superiority or causal inference.

## ■ RESULT AND DISCUSSION

### Overall Information Literacy Competency

The analysis of ILT scores indicates that students' overall information literacy competencies were moderate. Across all participants (N = 227), the mean total score indicates that students achieved slightly more than two-thirds of the maximum possible score, reflecting partial rather than comprehensive mastery of information literacy skills. As shown in Table 2, measures of central tendency across undergraduate, master's, and doctoral students were closely aligned, with relatively small differences in mean and median scores among educational levels.

The similarity in central tendencies, overlapping score distributions, and comparable dispersion indices indicates the absence of a clear stratification of information literacy competency by educational level. While minor variations were observed, these differences were not substantial enough to suggest distinct competency profiles across undergraduate, master's, and doctoral groups. No missing data were recorded, and all valid responses were retained for analysis, ensuring the dataset's completeness. Overall, these findings suggest that progression through higher levels of formal education does not automatically correspond to markedly higher overall information literacy performance, underscoring the need to examine competency patterns at a finer, component-based level.

**Table 2.** Descriptive statistics of ILT scores

No.	Total Score			
	Doctoral	Master	Undergraduate	Overall
Valid	22	65	140	227
Missing	0	0	0	0
Median	27.50	27.00	25.00	27.00
Mean	26.91	27.17	24.73	25.64
Std. Error of Mean	1.265	0.618	0.645	0.458
Std. Deviation	5.935	4.983	7.637	6.894
Minimum	11.00	15.00	8.000	8.000

### Inferential Comparison of Total IL Scores by Educational Level

To examine whether overall information literacy performance differed across educational levels, a nonparametric Kruskal–Wallis test was conducted because of unequal group sizes and violations of the normality and homogeneity assumptions. The analysis revealed no statistically significant difference in total IL scores among undergraduate, master's, and doctoral students (see Table 3). This finding indicates that, at the aggregate level, information literacy competencies were broadly comparable across educational levels within the sample.

**Table 3.** Kruskal-Wallis test

Factor	Statistic	df	p
Educational Level	4.424	2	.109

### Component-Level Information Literacy Competency

An examination of information literacy performance at the component level reveals more differentiated patterns across educational levels than those observed in total scores. As illustrated in Figure 1, students across all levels performed strongest in the Using Information component, indicating relatively high proficiency in applying information for academic purposes. This pattern

suggests that procedural and task-oriented information use is well established among students across educational levels.

In contrast, lower and more uneven performance was observed in the Recognizing Information Needs and, in particular, the Applying Information Ethically components. These components exhibited the smallest margins between undergraduate, master’s, and doctoral students, suggesting that higher educational attainment does not necessarily translate into substantially stronger competencies in defining information needs or in ethical information use. This finding points to a structural rather than developmental gap in information literacy instruction.

More noticeable differentiation emerged in the Evaluating Information component. Master’s and doctoral students demonstrated higher

average performance than undergraduates, indicating greater capacity for critical judgment regarding the credibility, relevance, and authority of information. However, the overlap in performance across groups suggests that these evaluative skills are not uniformly developed even at advanced levels of study.

Overall, the component-level analysis highlights a clear imbalance in students’ information literacy profiles: operational skills related to information use are relatively strong. At the same time, higher-order competencies, particularly ethical application and evaluative judgment, remain comparatively underdeveloped. These findings underscore the importance of examining information literacy beyond aggregate scores, as total performance masks meaningful differences in how specific competencies are acquired and applied across educational levels.

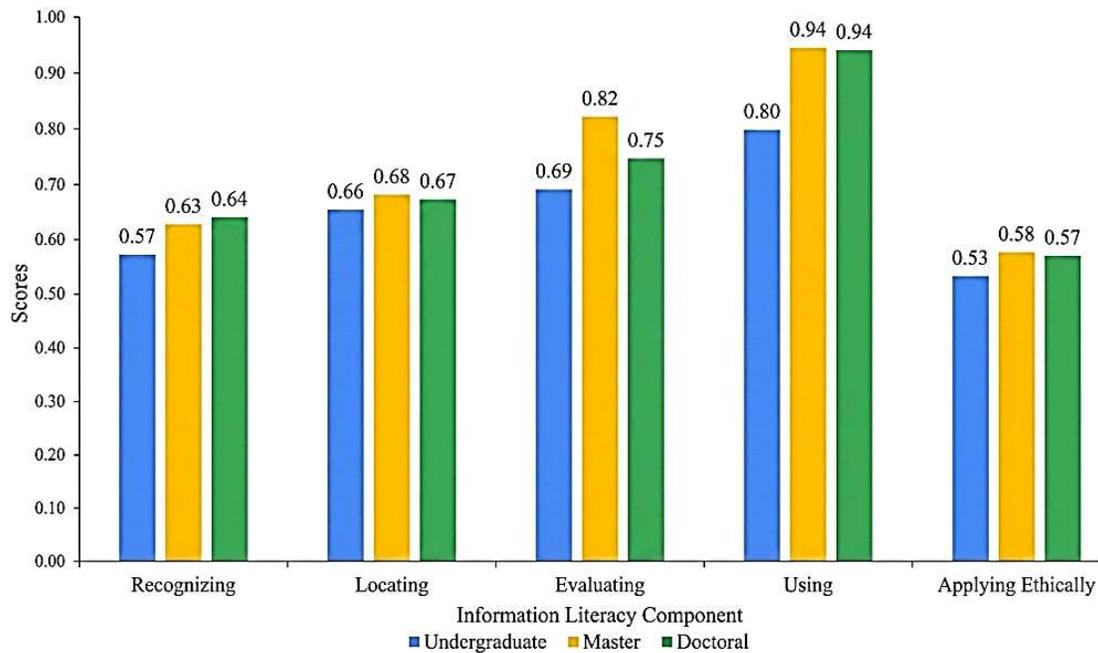


Figure 1. Average information literacy scores by educational level

**Strengths And Weaknesses Across the Five Core Components of IL Among EFL Students**

Item-level analysis was conducted to examine students’ performance across the five core information literacy components assessed

by the ILT. The analysis revealed clear variation in performance across components, indicating differentiated strengths and weaknesses in students’ information literacy competencies rather than a uniform skill profile.

As illustrated in Figure 2, students performed strongest in the Using Information component, with the highest proportion of correct responses (85.3%). This finding suggests that most students were proficient at applying information in conventional academic tasks, such as incorporating sources into written assignments and completing task-oriented requirements. This pattern reflects strong procedural familiarity with academic conventions.

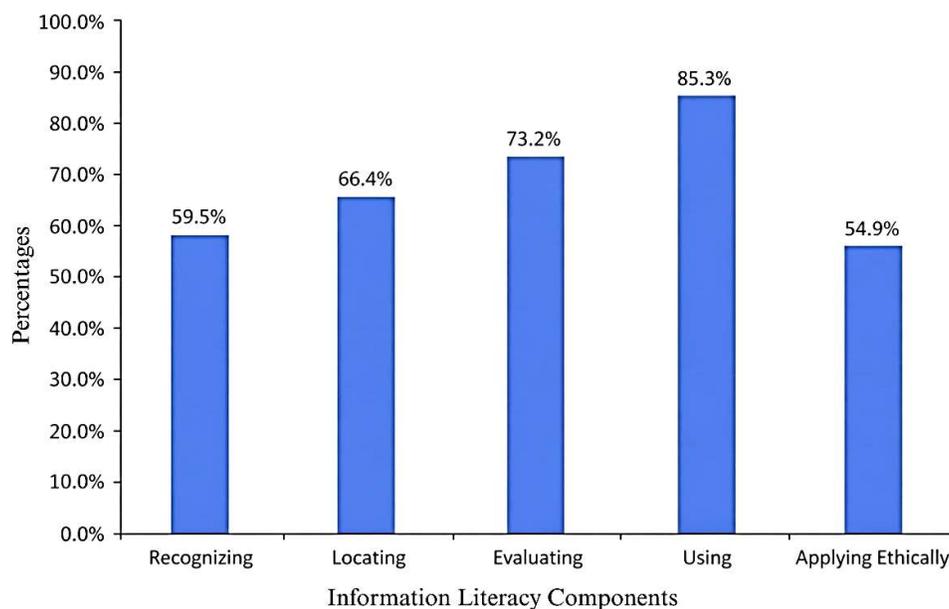
Performance in the Evaluating Information component was relatively high (73.2%), indicating a moderate capacity to assess the credibility, relevance, and authority of information sources. However, despite this comparatively stronger performance, the results still suggest that evaluative judgment is not uniformly mastered among students, indicating partial rather than fully developed critical evaluation skills.

The Locating Information component showed a moderate level of accuracy (66.4%). Items in this component required students to formulate search queries, select appropriate databases, and apply basic retrieval strategies. The observed performance indicates uneven proficiency in information-seeking strategies, with some students demonstrating effective search

skills while others struggled with systematic information retrieval.

In contrast, lower performance was observed in Recognizing Information Needs (59.5%) and Applying Information Ethically (54.9%). These components represent the weakest areas of students' information literacy profiles. Difficulties in recognizing information needs suggest challenges in articulating research problems and defining the scope of required information. Meanwhile, consistently low performance in applying information ethically highlights persistent gaps in students' understanding of citation practices, copyright, and responsible use of information.

Overall, the component-level findings reveal a clear imbalance in students' information literacy development. Procedural competencies related to information use are relatively well established, whereas higher-order competencies, particularly ethical application and problem formulation, remain underdeveloped. These results underscore the importance of examining information literacy beyond aggregate scores, as total performance may obscure critical weaknesses in specific components essential to advanced academic and professional engagement.



**Figure 2.** Percentage of correct responses per IL component

### Correlational Analysis among Information Literacy Components

Correlation analysis was conducted to examine the relationships among the five IL components using Spearman's rho, given the non-normal distribution of scores. As presented in Table 4, all IL components were positively and statistically significantly correlated with one another ( $p < .001$ ), indicating that higher proficiency in one component was associated with higher proficiency in others.

The strongest association was observed between Recognizing Information Needs and Locating Information ( $\tilde{r} = .659$ ), representing a strong positive correlation. This finding suggests that students who are better at identifying information needs also tend to demonstrate stronger information-seeking and search-strategy skills.

Moderate positive correlations were found between Evaluating Information and both Recognizing Information Needs ( $\tilde{r} = .527$ ) and

Locating Information ( $\tilde{r} = .541$ ), reflecting the close conceptual linkage between defining information needs, retrieving relevant sources, and critically assessing their credibility and relevance.

In contrast, correlations involving Using Information and Applying Information Ethically were comparatively weaker, though still statistically significant ( $\tilde{r}$  ranging from .383 to .454). These weaker associations suggest that competencies related to ethical application and responsible information use may be less tightly coupled with other IL components and may represent more distinct areas of difficulty for students.

Overall, the correlational patterns support the multidimensional structure of information literacy, indicating that while IL components are interrelated, their development is not uniform across domains. Some competencies appear more strongly interconnected, whereas others, particularly ethical application, may require more explicit and targeted instructional support.

**Table 4.** Spearman's correlations

Variable		Recognizing Information Needs	Locating Information	Evaluating Information	Using Information	Applying Information Ethically
1. Recognizing Information Needs	Spearman's rho	—				
	p-value	—				
2. Locating Information	Spearman's rho	0.659***	—			
	p-value	< .001	—			
3. Evaluating Information	Spearman's rho	0.527***	0.541***	—		
	p-value	< .001	< .001	—		
4. Using Information	Spearman's rho	0.454***	0.431***	0.438***	—	
	p-value	< .001	< .001	< .001	—	
5. Applying Information Ethically	Spearman's rho	0.454***	0.512***	0.420***	0.383***	—
	p-value	< .001	< .001	< .001	< .001	—

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

### Overall Information Literacy Competency among EFL Students (RQ1)

The findings of this study indicate that the overall level of IL competence among EFL

students in Indonesian universities is moderate. The mean total IL score suggests that, on average, students demonstrate partial mastery of information literacy skills but have not yet

achieved comprehensive proficiency. This pattern reflects a functional level of information literacy sufficient to complete routine academic tasks, yet insufficient to consistently engage in higher-order information practices that require advanced evaluative judgment and ethical reasoning.

This result is broadly consistent with prior empirical studies reporting moderate or intermediate levels of information literacy among university-level EFL and non-native English learners across diverse higher education contexts. For example, Khan & Sohail (2025) reported that graduate students in the United Arab Emirates demonstrated only moderate ability in identifying reliable information sources despite extensive exposure to academic coursework in English. Similarly, a recent study conducted in a private university in Dubai found that EFL graduate students exhibited a moderate overall level of information literacy, with uneven development across components related to information access and evaluation (Sohail et al., 2024). Comparable patterns have also been observed in studies conducted in South Asian and Southeast Asian higher education contexts, where EFL students' overall information literacy competence was classified as intermediate despite sustained academic engagement (Irfan et al., 2024; Martzoukou et al., 2025).

Importantly, the moderate overall performance observed in this study aligns with longitudinal evidence suggesting that information literacy development does not automatically culminate in full mastery through academic progression alone, particularly in EFL contexts. A three-year mixed-methods study of undergraduate students' information literacy development demonstrated gradual improvement in knowledge and skills over time; however, students continued to experience persistent challenges in integrating evaluative and ethical dimensions of information use, even in later stages of study (Nierenberg et al., 2024). These findings

indicate that exposure to academic reading and writing in English does not necessarily translate into holistic information literacy competence.

Within EFL programs, the present findings are particularly salient. Despite sustained engagement in academic reading, writing, and research conducted in a foreign language, students' overall information literacy competencies remained moderate. This suggests that information literacy is often implicitly assumed rather than explicitly scaffolded within EFL curricula. Thus, the moderate overall level identified in this study underscores the importance of examining information literacy beyond aggregate scores and highlights the need for more systematic integration of instruction within EFL higher education contexts.

### **Component-Level Strengths and Weaknesses in Information Literacy (RQ2)**

An examination of information literacy performance at the component level reveals distinct patterns of strengths and weaknesses across the five core components. As illustrated in Figures 1 and 2, students across educational levels performed strongest in the Using Information component, indicating relatively high proficiency in applying information for academic purposes. This pattern suggests that procedural and task-oriented information use—such as integrating sources into written assignments and following conventional academic structures—is relatively well established among EFL students. Similar findings have been reported in prior studies, which show that routine academic practices tend to reinforce functional information use more effectively than higher-order competencies (Khan & Sohail, 2025; Sohail et al., 2024).

In contrast, lower and more uneven performance was observed in the Recognizing Information Needs and Applying Information Ethically components. These components

exhibited the smallest performance margins across undergraduate, master's, and doctoral levels, suggesting that higher educational attainment does not necessarily translate into substantially stronger competencies in defining information needs or applying information ethically. This pattern aligns with research on foreign and EFL students, which consistently reports difficulties in articulating information needs and understanding ethical dimensions of information use, including citation practices and copyright awareness (Parhamnia, 2026; Parmini et al., 2023).

More noticeable differentiation emerged in the Evaluating Information component. Master's and doctoral students demonstrated higher average performance than undergraduates, indicating greater capacity for judging the credibility, relevance, and authority of information sources. However, the substantial overlap in performance across educational levels suggests that evaluative competencies are not uniformly developed even at advanced stages of study. These findings echo previous research highlighting variability in critical evaluation skills and the need for structured instructional support to move students beyond surface-level source assessment (Khan & Sohail, 2025; Sohail et al., 2024).

The relatively weak performance observed in Applying Information Ethically represents a particularly critical concern. Items in this component focused on the ethical and legal aspects of information use, including citation practices, plagiarism, and permission requirements. Persistent challenges in this area have been widely documented across disciplines and educational contexts, including nursing, teacher education, and international student populations (Martzoukou et al., 2025; Parmini et al., 2023; Trixa & Kaspar, 2024; Yanto et al., 2020). In the contemporary academic environment, these challenges are further

compounded by the increasing availability of AI-generated content, which complicates students' ability to distinguish original work, assess source credibility, and apply ethical judgment consistently (Bricker & Justice, 2025).

Overall, the component-level analysis highlights a clear imbalance in EFL students' information literacy profiles: operational skills related to information use are relatively strong, while higher-order competencies, particularly ethical application and evaluative judgment, remain comparatively underdeveloped. This pattern aligns with international evidence suggesting that information literacy development tends to privilege procedural competence, whereas the critical and ethical dimensions require more explicit, sustained instructional attention. These findings underscore the importance of examining information literacy beyond aggregate scores, as total performance may obscure meaningful differences in how specific competencies are acquired and applied.

### **Distribution of Information Literacy Competencies across Educational Levels (RQ3)**

The distributional pattern observed in this study, characterized by largely similar IL profiles across undergraduate, master's, and doctoral EFL students, is consistent with a growing body of international research indicating that educational advancement does not automatically translate into proportionally higher IL competence. Studies conducted in diverse higher education contexts similarly report minimal or non-significant variation in overall information literacy competencies across academic levels. For instance, research in the United Arab Emirates found no significant differences in IL competencies between undergraduate and postgraduate students, including within EFL populations, despite differences in academic exposure and instructional intensity (Khan & Sohail, 2025).

These findings reinforce the interpretation that IL development is not inherently cumulative across degree levels.

Comparable patterns have also been reported in institutional studies examining IL skills among students at American University campuses in the Middle East. Sohail et al. (2024) demonstrated that undergraduates and postgraduates exhibited broadly similar abilities in evaluating information sources, with no statistically significant differences attributable to educational level. Instead, variation was more strongly associated with disciplinary specialization, language proficiency, and gender. This aligns with the present findings, where overlap in score distributions suggests that academic seniority alone does not guarantee stronger evaluative or ethical information practices among EFL learners.

Evidence from perception-based and competency-based studies further supports this horizontal rather than vertical distribution of IL skills. Parmini et al. (2023) and its Parhamnia (2026) found no significant differences across educational levels in recognizing information needs, while modest differences emerged only in selected components such as information evaluation, retrieval, or storage. Notably, even where such differences were observed, overall literacy levels remained unfavorable for a substantial proportion of students, suggesting that higher academic status does not consistently remediate foundational IL gaps. This resonates with the present study's observation that postgraduate students demonstrated only marginal advantages in Evaluating Information, with persistent weaknesses in ethical application across all levels.

From a curricular perspective, curriculum-mapping research provides a structural explanation for these distributional patterns. Cooke (2025) demonstrates that IL competencies are often introduced at early stages

of study but are not systematically revisited or deepened at advanced levels. As a result, students at different educational stages may encounter similar IL expectations without differentiated instructional scaffolding. This helps explain why doctoral students in the present study did not consistently outperform undergraduates in components such as Recognizing Information Needs or Applying Information Ethically, despite their greater research responsibilities.

Finally, comparative evidence from discipline-specific contexts suggests that variability in IL distribution is more sensitive to disciplinary and infrastructural factors than to academic level alone. Studies in Pakistan and nursing education contexts report intermediate or slightly above-average IL competencies overall, with differences emerging along disciplinary lines, access to digital resources, or exposure to instructional support, rather than year of study (Irfan et al., 2024; Martzoukou et al., 2025). Taken together, these findings corroborate the conclusion that information literacy development among EFL students is structurally patterned and context-dependent, rather than hierarchically stratified by educational level.

Overall, the convergence between the present findings and international literature strengthens the argument that IL competencies in EFL higher education contexts are distributed horizontally across educational stages. This pattern underscores the limitations of assuming a linear progression in information literacy development and highlights the need for curriculum-embedded, level-spanning instructional strategies to ensure equitable and sustained IL growth across undergraduate, master's, and doctoral education.

#### **Instructional Priorities for Embedded Information Literacy Development (RQ4)**

The findings of this study identify clear instructional priorities for strengthening IL within

EFL-oriented English Program curricula by revealing components that remain consistently underdeveloped across educational levels. While students demonstrated relatively strong procedural competence in Using Information, the results indicate that evaluative and ethical dimensions of information literacy constitute the greatest need for instructional support, a pattern widely echoed in recent international scholarship.

Across all educational levels, Applying Information Ethically emerged as the weakest component, as reflected in the lowest proportion of correct responses. This persistent weakness aligns with prior research showing that ethical reasoning, citation practices, and responsible information use are among the most challenging IL competencies for university students, particularly in multilingual and EFL contexts (Parhamnia, 2026; Parmini et al., 2023). Studies across diverse settings similarly report that students' actual ethical and evaluative performance often falls below theoretical or self-perceived competence, underscoring the need for explicit instructional intervention rather than implicit (Nierenberg et al., 2024).

The instructional vulnerability of ethical information use becomes increasingly salient in contemporary information environments shaped by algorithmic mediation and generative AI. Recent literature emphasizes that students require targeted guidance to understand bias in information systems, evaluate AI-generated content, and navigate ethical decision-making in digitally mediated research practices (Carpenter, 2025; Ndungu, 2024). Without such support, students may demonstrate surface-level compliance with citation norms while lacking deeper ethical reasoning about authorship, authority, and responsibility—an imbalance also evident in the present findings.

Similarly, evaluating information is a critical instructional priority. Although average performance in this component was moderate,

substantial variability across educational levels suggests uneven development of evaluative judgment. This pattern mirrors findings from multiple international studies indicating that information evaluation—particularly judging credibility, relevance, and authority—consistently requires more instructional support than retrieval or procedural use (Baharuddin et al., 2025; Parmini et al., 2023). Research further suggests that increased exposure to AI-generated and multimodal content amplifies the difficulty of evaluative judgment, heightening the need for structured pedagogical scaffolding (Bricker & Justice, 2025).

In contrast, the consistently high performance observed in Using Information reflects students' familiarity with task-oriented academic practices, such as integrating sources into written assignments. However, prior studies caution that procedural proficiency does not necessarily translate into ethical or critical engagement with (LaFlamme, 2025). The comparatively weaker associations between Using Information and Applying Information Ethically in this study reinforce this concern, indicating that students may learn how to use information instrumentally without developing reflective awareness of power, bias, or ethical implications embedded in information practices.

Taken together, these findings position ethical application and critical evaluation of information as the most urgent instructional priorities for embedded IL development in the English Education course for EFL. This conclusion is consistent with curriculum-mapping studies that identify critical assessment, managing information responsibly, and reflective communication as competencies most in need of sustained instructional attention across disciplines (Cooke, 2025). Moreover, research highlighting structural inequities in information access and authority further underscores the importance of integrating ethical and critical perspectives into IL instruction,

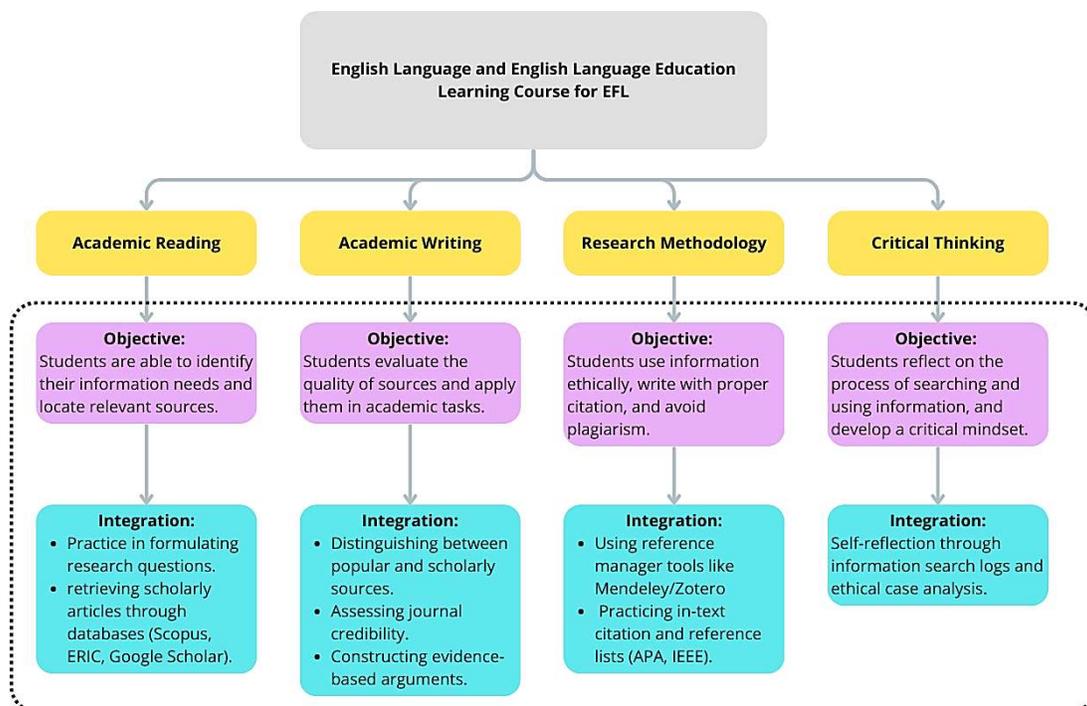
particularly for linguistically and culturally diverse (LaFlamme, 2025; Patra & Gaitanou, 2025)

To translate these instructional priorities into pedagogical practice, this study proposes an embedded information literacy model integrated into the core English Education course for EFL. Figure 3 presents the conceptual structure of this model, illustrating how key information literacy components are infused across Academic Reading, Academic Writing, Research Methodology, and Critical Thinking courses. To operationalize the framework, Table 5 details concrete learning activities and assessment tasks aligned with empirically identified IL weaknesses, particularly in evaluative judgment and ethical use of information.

For EFL programs, these findings suggest that instructional support should move beyond reinforcing procedural skills and instead prioritize learning activities that explicitly target evaluative judgment and ethical reasoning. In particular, instructional practices should encourage students to justify source selection, articulate transparent evaluative criteria, interrogate bias and authority in academic texts, and reflect on ethical dilemmas

in information use. Situating these activities within core disciplinary courses, such as Academic Reading, Academic Writing, Research Methodology, and Critical Thinking, allows information literacy competencies to be addressed contextually and repeatedly, in direct response to empirically identified weaknesses revealed by the ILT results.

Overall, the findings for RQ4 indicate that the evaluative and ethical components of information literacy are the most critical areas requiring instructional attention. Rather than proposing a prescriptive instructional model, this study offers evidence-based curricular directions by mapping specific information literacy components onto existing EFL coursework. By aligning instructional priorities with observed competency gaps and contemporary challenges, including AI-mediated information environments, EFL English Education programs can move toward a more intentional, coherent, and pedagogically grounded integration of information literacy without assuming that such competencies develop automatically through academic progression alone.



**Figure 3.** Infused information literacy competency

**Table 5.** Course-Based mapping of information literacy components, learning activities, and assessment tasks in EFL programs

Core Course	IL Component Focus	Examples of Learning Activities	Examples of Assessment Tasks	IL Competency Indicators
<b>Academic Reading</b>	Recognizing Information Needs & Locating Information	- Identifying research gaps from journal articles - Exercises on formulating research questions based on academic texts - Guided practice in searching scholarly articles using Google Scholar and Scopus	- Assignment on identifying <i>research gaps</i> from three journal articles - Written reflection on literature search strategies	- Ability to formulate specific information needs - Ability to select relevant academic sources
<b>Academic Writing</b>	Evaluating Information, Using Information, and Applying Information Ethically	- Discussion of journal credibility (indexed vs. predatory journals) - Analysis of argument quality and supporting evidence in articles - Workshops on citation and paraphrasing	- Writing a literature review with justification of source selection - Argument synthesis task based on $\geq 5$ reputable journals - Assessment of citation ethics (APA style) &	- Ability to evaluate source credibility - Ability to synthesize information academically- Ability to apply principles of ethical information use
<b>Research Methodology</b>	Locating Information, Using Information, and Applying Information Ethically	- Practice using advanced academic database features (Boolean operators, filters) - Training in reference management tools (Mendeley/Zotero) - Case studies on plagiarism and research ethics violations	- Mini research proposal with systematically managed references- Citation and reference list audit - Analysis of research ethics cases	- Ability to apply advanced search strategies - Ability to manage references ethically and systematically
<b>Critical Thinking</b>	Evaluating Information & Applying Information Ethically	- Analysis of author bias, ideology, and authority - Discussion of controversial articles or AI-generated content - Critical reflection on information searching processes	- Source critique essay based on explicit evaluation criteria - Written reflection on bias, authority, and information ethics	- Ability to evaluate information reflectively - Ability to identify bias and ethical implications

### Limitations and Directions for Future Research

Several limitations should be considered when interpreting the findings of this study. First, the Information Literacy Test was administered online and without a time limit, which introduces

the possibility that participants accessed external resources, collaborated with others, or used digital tools during test completion. As a result, the findings should be interpreted as indicators of students' applied information literacy practices in open learning environments, rather than as

measures of individual competence under fully controlled testing conditions. Although this approach aligns with the study's diagnostic purpose, it limits the extent to which scores can be interpreted reflecting standardized performance.

Second, the study employed convenience sampling, resulting in a substantially imbalanced distribution across educational levels, particularly a relatively small cohort of doctoral students. This imbalance limits the generalizability of the findings and reduces the statistical power of inferential comparisons across educational stages. While non-parametric analyses were used to address distributional concerns, differences across educational levels should be understood as descriptive patterns rather than definitive group effects.

Third, the study relied exclusively on quantitative test data, which capture observable performance but provide limited insight into the underlying cognitive, metacognitive, and contextual factors shaping students' information literacy practices. In particular, the absence of qualitative data limits a deeper understanding of why evaluative and ethical components of information literacy remain underdeveloped across educational levels.

Future research may address these limitations in several directions. First, studies employing controlled or time-bounded test administrations, either in supervised settings or through secure online platforms, could enhance measurement rigor and clarify the relationship between test performance and individual information literacy competence. Second, more balanced and representative sampling across educational levels, especially at the doctoral stage, would enable stronger inferential analyses and support longitudinal examinations of information literacy development.

Third, mixed-methods approaches that incorporate semi-structured interviews, focus group discussions, or think-aloud protocols would provide richer insights into students' evaluative

reasoning, ethical decision-making, and information-seeking strategies. Such designs could help explain the structural weaknesses identified in this study and inform the development of more targeted instructional interventions.

Finally, future research should examine the design, implementation, and evaluation of embedded information literacy instruction within EFL-oriented English education curricula. Longitudinal or intervention-based studies investigating how explicit integration of evaluative and ethical information literacy components influences student learning over time would contribute critical empirical evidence and support the refinement of discipline-specific information literacy frameworks.

## ■ CONCLUSION

This study examined IL competencies among EFL students in Indonesian higher education institutions, with particular attention to overall competency levels, component-level strengths and weaknesses, distribution across educational stages, and instructional priorities for curriculum development. The findings indicate that students' overall information literacy competency remains moderate and is broadly similar across undergraduate, master's, and doctoral programs, suggesting that academic progression alone does not ensure the systematic development of information literacy competencies.

Component-level analysis revealed a clear imbalance between procedural and higher-order information literacy skills. While students demonstrated relatively strong performance in using information for academic tasks, persistent weaknesses were identified in evaluating information and applying information ethically. These weaknesses were evident across educational levels and were supported by both item-level patterns and correlational analyses, indicating uneven and fragile development of critical evaluative judgment and ethical information practices.

The distribution of information literacy competencies across educational stages showed substantial overlap, reinforcing the conclusion that information literacy development within EFL-oriented English education programs is not hierarchically structured by degree level. Rather than reflecting a cumulative developmental trajectory, IL competencies appear to be shaped by exposure to specific learning experiences, highlighting the limitations of assuming that advanced information literacy skills will emerge naturally through continued engagement with academic reading and writing.

Taken together, the findings point to the most pressing instructional need: strengthening evaluative judgment, ethical reasoning, and reflective use of information within English education curricula. Addressing these gaps requires moving beyond procedural reinforcement toward intentionally embedding information literacy instruction within disciplinary coursework, with explicit attention to critical evaluation and ethical decision-making. By grounding instructional priorities in empirically identified weaknesses, this study offers a contextually informed contribution to the understanding of information literacy development in EFL higher education. It provides a foundation for designing more coherent and pedagogically meaningful approaches to embedded IL instruction.

Overall, this research advances understanding of how information literacy is currently enacted within English education programs and underscores the importance of aligning curricular practices with the cognitive and ethical demands of contemporary academic information environments.

#### ■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

During the writing of this manuscript, the author(s) employed ChatGPT (OpenAI) to assist

with language refinement, structural organization, and clarity of academic expression. The tool was used to support the drafting, revision, and refinement of manuscript sections, including improvements in coherence and academic tone. All content generated with the assistance of this tool has been carefully reviewed, edited, and validated by the author(s). The author(s) take full responsibility for the accuracy, originality, and integrity of the content of the published article.

#### ■ REFERENCES

- Al-Qallaf, C. L. (2020). Information literacy skills of graduate students: A case of the master's of information studies program in Kuwait. *Journal of Information and Knowledge Management, 19*(2). <https://doi.org/10.1142/S0219649220500112>
- American Library Association. (2000). ACRL STANDARDS: Information literacy competency standards for higher education. *College & Research Libraries News, 6*(3), 207–215. <https://doi.org/10.5860/crln.61.3.207>
- Baharuddin, M. F., Jalil, A., Amin, Z. M., Rahmad, F., & Shuhidan, S. M. (2025). Digital literacy and cybersecurity in higher education: the unseen power of academic librarians. *International Journal of Evaluation and Research in Education, 14*(6), 4404–4417. <https://doi.org/10.11591/ijere.v14i6.34916>
- Bashorun, M. T., Aboderin, O. A., & Lawal, W. O. (2020). User education programmes as correlate of information literacy skills among undergraduates in universities in Osun State, Nigeria. *Journal of Library Services and Technologies, 2*(1), 1–16. <https://doi.org/10.47524/jlst.v2i1.1>
- Boh Podgornik, B., Dolničar, D., Šorgo, A., & Bartol, T. (2016). Development, testing, and validation of an information literacy test (ILT) for higher education. *Journal of the*

- Association for Information Science and Technology*, 67(10), 2420–2436. <https://doi.org/10.1002/asi.23586>
- Bricker, B., & Justice, J. (2025). Human intelligence: justifying debate in the Age of AI. *Argumentation and Advocacy*, 61(1), 6–24. <https://doi.org/10.1080/10511431.2024.2386801>
- Calles, A. B. (2025). Harnessing AI for content and strategies in instructional purposes: Limitations and red flags. *Environment and Social Psychology*. <https://doi.org/10.59429/esp.v10i5.3235>
- Carpenter, B. (2025). The bias is inside us: Supporting AI literacy and fighting algorithmic bias. *Library Trends*, 73(4), 476–492. <https://doi.org/10.1353/lib.2025.a968492>
- Cheng, X. (2014). A review of role shifts among China's secondary school EFL teachers from a social-constructivist perspective. *Journal of Language Teaching and Research*, 5(4), 801–809. <https://doi.org/10.4304/jltr.5.4.801-809>
- Chukwusa, J. (2021). An assessment of the information literacy skills of students in Nigerian universities. *Indian Journal of Information Sources and Services*, 11(1), 9–15. <https://doi.org/10.51983/ijiss-2021.11.1.2649>
- Cooke, P. (2025). Curriculum mapping for identifying and assessing information literacy teaching in humanities and social sciences libraries. *Journal of Information Literacy*, 19(2), 139–149. <https://doi.org/10.11645/19.2.785>
- Deepmala, S., & Upadhyay, A. K. (2021). Information literacy: an overview. *Elementary Education Online*, 20(1), 4227–4234. <https://doi.org/10.17051/ilkonline.2021.01.465>
- Delmond, A. R., Weber, E. M., & Busch, H. S. (2024). An interdisciplinary assessment of information literacy instruction. *Journal of Academic Librarianship*, 50(5), 102944. <https://doi.org/10.1016/j.acalib.2024.102944>
- Edzan, N. N. (2008). Information literacy development in Malaysia: A review. In *Libri* (Vol. 58, Number 4, pp. 265–280). <https://doi.org/10.1515/libr.2008.027>
- Gernsbacher, M. A., Soicher, R. N., & Becker-Blease, K. A. (2020). Four empirically based reasons not to administer time-limited tests. *Translational Issues in Psychological Science*, 6(2), 175–190. <https://doi.org/10.1037/tps0000232>
- Grimm, T. B., & Vostral, S. (2019). Archive as laboratory: Engaging STEM students & STEM collections. *Engineering Studies*, 11(2), 135–152. <https://doi.org/10.1080/19378629.2019.1651731>
- Hair, J., & Alamer, A. (2022). Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- Iannuzzi, P. (2000). Information literacy competency standards for higher education. *Community & Junior College Libraries*, 9(4), 63–67. [https://doi.org/10.1300/J107v09n04\\_09](https://doi.org/10.1300/J107v09n04_09)
- Irfan, N., Rafiq, M., & Arif, M. (2024). Information competency assessment of undergraduates: A Pakistani perspective. *IFLA Journal*, 50(2), 354–364. <https://doi.org/10.1177/03400352231222040>
- Ishimura, Y., & Fitzgibbons, M. (2022). How does web-based collaborative learning impact information literacy development? *The Journal of Academic Librarianship*, 49, 102614. <https://doi.org/10.1016/j.acalib.2022.102614>
- Islam, M. A., & Tsuji, K. (2010). Assessing

- information literacy competency of Information Science and Library Management graduate students of Dhaka University. *IFLA Journal*, 36(4), 300–316. <https://doi.org/10.1177/0340035210388243>
- Khan, Z. I., & Sohail, M. (2025). Information literacy instructions in higher education institutions: Enhancing academic success and research competencies among university students in the United Arab Emirates. *DESIDOC Journal of Library and Information Technology*, 45(5), 477–487. <https://doi.org/10.14429/djlit.20794>
- Kurbanoglu, S. S., Akkoyunlu, B., & Umay, A. (2006). Developing the information literacy self-efficacy scale. *Journal of Documentation*, 62(6), 730–743. <https://doi.org/10.1108/00220410610714949>
- LaFlamme, K. A. (2025). Information literacy as resistance: Confronting inequity through critical pedagogy. *Reference Librarian*, 66(3–4), 160–181. <https://doi.org/10.1080/02763877.2025.2553234>
- Lindsay, E. D., & Morgan, J. R. (2021). The CSU engineering model: educating student engineers through PBL, WPL and an online, on demand curriculum. *European Journal of Engineering Education*, 46(5), 637–661. <https://doi.org/10.1080/03043797.2021.1922360>
- Martzoukou, K., Luders, E. S., Work, F., Kostagiolas, P. A., & Johnson, N. (2025). Digital divides in nursing students: an exploration of the relationship between self-perceived digital competencies and digital barriers. *Journal of Documentation*, 81(2), 330–350. <https://doi.org/10.1108/JD-09-2024-0209>
- Masunaga, J., Peng, L., Ford-Baxter, T., & Faulkner, K. (2023). Information literacy in English-language higher education teaching journals: A review. *Communications in Information Literacy*, 17(2), 353–377. <https://doi.org/10.15760/comminfolit.2023.17.2.3>
- Ndungu, M. W. (2024). Integrating basic artificial intelligence literacy into media and information literacy programs in higher education: A framework for librarians and educators. *Journal of Information Literacy*, 18(2), 122–139. <https://doi.org/10.11645/18.2.641>
- Nierenberg, E., Solberg, M., Låg, T., & Dahl, T. I. (2024). A three-year mixed methods study of undergraduates' information literacy development: Knowing, doing, and feeling. *College & Research Libraries*, 85(6), 804. <https://doi.org/10.5860/crl.85.6.804>
- Owais, A., & Taym, A. (2025). Exploring teacher perspectives on the effectiveness of AI tools in enhancing students' engagement in English language learning. *The International Journal of Humanities Education*, 23, 1–16. <https://doi.org/10.18848/2327-0063/CGP/v23i02/1-16>
- Ozor, A., & Toner, J. (2022). Information literacy behavior and practice: An assessment of undergraduate students at Ada College of Education, Ghana. *Journal of Library Administration*, 62(1), 132–151. <https://doi.org/10.1080/01930826.2021.2006992>
- Parhamnia, F. (2026). Investigating foreign students' perceptions of their information literacy competencies. *Information Development*, 42(1), 267–286. <https://doi.org/10.1177/02666669231213641>
- Parmini, N. P., Ida Bagus Rai Putra, Mukhamdanah, Ida Ayu Putu Aridawati, & I Wayan Sudiarta. (2023). 21st century skills and information literacy in Indonesian language and literature education study program. *Mimbar Ilmu*, 28(1), 83–95.

- <https://doi.org/10.23887/mi.v28i1.59441>  
Patra, N. K., & Gaitanou, P. (2025). Information literacy without walls: Comparative insights from India's implementation and Greece's emerging approaches. *Journal of Information Literacy*, 19(2), 123–138. <https://doi.org/10.11645/19.2.788>
- Qin, W., & Uccelli, P. (2020). Beyond linguistic complexity: Assessing register flexibility in EFL writing across contexts. *Assessing Writing*, 45. <https://doi.org/10.1016/j.asw.2020.100465>
- Sanches, T., Lopes, C., & Antunes, M. L. (2022). Critical thinking in information literacy pedagogical strategies: New dynamics for higher education throughout librarians vision. *Proceedings of the 8th International Conference on Higher Education Advances (HEAd'22), 2022-June*, 489–496. <https://doi.org/10.4995/HEAd22.2022.14476>
- Sohail, M., Khan, Z. I., & Hanafy, A. (2024). Navigating the scholarly landscape: An analysis of information literacy skills among students at American University in the Emirates, Dubai. *International Journal of Media and Information Literacy*, 9(2), 479–490. <https://doi.org/10.13187/ijmil.2024.2.479>
- Trixa, J., & Kaspar, K. (2024). Information literacy in the digital age: information sources, evaluation strategies, and perceived teaching competences of pre-service teachers. *Frontiers in Psychology*, 15, 1336436. <https://doi.org/10.3389/fpsyg.2024.1336436>
- Yanto, A., Rusmana, A., Rachmawati, T. S., Sinaga, D., & Anwar, R. K. (2020). Information literacy competence of elementary school teacher-librarians. *Library Philosophy and Practice*. <https://digitalcommons.unl.edu/libphilprac/3576>
- Yue, Y. (2025). Reforming English as a second language into English information literacy curriculum (Case of China Universities). *Theory of Training and Educational Techniques Integration of Education*, 29(1), 171–185. <https://doi.org/https://doi.org/10.15507/1991-9468.029.202501.171-185>