

## Information Literacy Self-Efficacy of Open, Digital and Distance Education of New Learners

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### Abstract

*The study examines the information literacy self-efficacy of new learners in open, distance, and digital education environments. It focuses on their perceived ability to perform key information literacy skills by evaluating seven categories of information literacy based on the Information Literacy Self-Efficacy Scale. Assessing information literacy self-efficacy is crucial to understand learner's persistence, resilience, and effort in defining information needs, developing and implementing search strategies, evaluating resources, interpreting and synthesising information, and communicating information, particularly when facing challenges. The study explores the level of perceived information literacy skills among open, distance, and digital education of new learners. Based on the research, the two (2) least information literacy competencies possessed by the new learners are: a) communicating the information, and b) locating and accessing the resources. It also identifies the differences of information literacy self-efficacy levels between new undergraduate and graduate learners. The research also highlights the critical role of perceived information and communication technology skills in determining the level of information literacy self-efficacy among open, distance, and digital education of new learners. Based on the findings, the study recommends increased efforts in teaching and guiding undergraduate and graduate learners in essential information skills, such as writing research papers, providing citations and references, and using effective information resource search techniques. The results show that new graduate learners demonstrate higher perceived information literacy skills than their undergraduate peers. The study also found that information literacy teachings and trainings should not be gender-specific, as both male and female new learners exhibit equivalent levels of information literacy self-efficacy.*

**Keywords:** information and communication technology proficiency, information literacy assessment, information literacy self-efficacy, information literacy, open, distance and digital education, self-directed learning

### 1. Introduction

In the information age, where data and information are abundant and exponentially grown in volume, it is crucial for individuals, particularly open, distance and digital education (ODDE) learners, to possess skills and competencies in accessing, evaluating, utilising, and communicating; presenting information effectively. Owning those skills will enable them to be effectively involved in self-directed learning processes, critical thinking and problem solving, as well as engaging and collaborating with peers.

Information experts define information literacy as a comprehensive set of skills that involves actively in seeking and evaluating information, understanding the processes by which information is generated and assessed, and effectively using the information to generate new knowledge and engage in ethical learning communities (Association of College and Research Libraries [ACRL], 2015).

Open University Malaysia (OUM) has been recognised as a pioneer in open, distance, and digital education (ODDE) environment, leveraging digital technology to facilitate teaching and learning. Digital technology enhances access to educational resources, promotes interactive learning environments, and empowers learners to be more autonomous in learning (Dabbagh & Kitsantas, 2012). New learners, particularly in ODDE contexts, are often required to engage with digital platforms for information retrieval, which equip them with essential information literacy (IL) skills. These skills are crucial for completing academic tasks such as assignments and research, as they involve locating, evaluating, and using information effectively (ACRL, 2000).

However, despite the widespread availability of digital tools, not all new learners have adequate IL skills. Many students struggle to navigate the overwhelming amount of online information, lacking the necessary skills to critically assess the quality and relevance of sources (Julien & Barker, 2009). This lack of proficiency in IL can become a significant barrier to academic success, particularly in ODDE, where learners are expected to access and utilise digital resources independently (Bruce, 2004).

Without proper IL skills, these students face challenges in completing academic tasks, such as finding credible sources for assignments, managing citations, or conducting thorough literature reviews (Koltay, 2011). This information deficit could create frustration and feelings of inadequacy, potentially leading to disengagement from academic activities. In such cases, learners may become demotivated and feel excluded from the digital learning environment which relies heavily on online information searching and critical thinking skills.

If this situation persists, the consequences for new learners can be severe. Students who continuously struggle with accessing and processing information may feel isolated or overwhelmed by academic demands, leading to a decline in academic performance. Research shows that students who feel unsupported in their academic development, particularly in online and distance learning environments, are more likely to withdraw from their studies (Tinto, 1975). Studies have indicated that lacking IL skills contributes to digital-education dropout rates (Rowlands et al., 2008). Consequently, without interventions to enhance IL skills, these new learners may ultimately give up on their academic pursuits, resulting in higher dropout rates.

Despite several research examining the effect of information literacy (IL) on students' academic performance (Avcı & Ergün, 2022; Mughari et al., 2023; Ngozi, 2024), there is a paucity of literature that addresses the demographic and academic aspects that affect IL self-efficacy of ODDE learners. Research by Atikuzzaman and Ahmed (2023) found that age and computer proficiency were substantially correlated with students' self-efficacy attitudes regarding information literacy. Mahmood et al. (2021) meanwhile agreed that academic factors such as level of education significantly influenced the information literacy skills. These studies, however, are solely based on traditional students. There is a lack of information to ascertain the impact of demographics and academic characteristics on the information literacy self-efficacy of ODDE learners.

The research aims to assess the perceived IL self-efficacy of new learners at Open University Malaysia. Additionally, the study examines how IL self-efficacy is influenced by the demographics and academic aspects of new learners. It seeks to analyse the relationship of students' perceived IL self-efficacy with their level of study, gender, age and Information Communication and Technology (ICT) proficiency, as well as their academic level of study at the university.

## 2. Literature Review

This section is divided into three themes of literature review: (i) information literacy standard and framework, (ii) information literacy assessment, and (iii) information literacy self-efficacy.

### 2.1. Information Literacy Standard and Framework

In information literacy context, standards, models and frameworks are conceptual understandings that are designed to organise many concepts in information literacy. It is used as a reference in “developing learning outcomes, tools, and resources that some institutions have deployed to infuse information literacy concepts and skills” (ACRL, 2015, p. 7). One of the most referred information literacy standards is the *Information Literacy Competency Standards for Higher Education* (Association of College & Research Libraries [ACRL], 2000). The Standards were developed in the year 2000 due to the extensive collaboration between the American Library Association (ALA) and the Association of College and Research Libraries (ACRL). The primary focus of this Standards is to highlight the correlations among information literacy (IL), continuous learning throughout one's life, and the evolving methods of accessing information literacy. The Standards consist of five standards and twenty-two (22) performance indicators (ACRL, 2000). The ACRL (2000) established these standards as “a structure for evaluating individuals who possess information literacy skills” (p. 5). Many IL assessment tools and measurements such as *Project Standardized Assessment of Information Literacy Skills* (Project SAILS) (Mery et al., 2011), *Madison Assessment's Information Literacy Test* (ILT) (Podgornik et al., 2016), and *Research Readiness Self-Assessment* (RRSA) (Ivanitskaya et al., 2006) are developed based on this Standards. It effectively served its purpose as an evaluative instrument in evaluating IL competencies and skills. However, following the extensive and meticulous discussions in 2015 and 2016, the criteria were modified to encompass a broader spectrum and understand the information on literacy skills and practices. This adjustment was essential to align with the evolving information landscape, prompted by the introduction of novel and dynamics information technologies. The ACRL (2015) introduced the *Framework for Information Literacy for Higher Education* (The Framework) in 2015. The Framework is structured into six frames with each frame comprises of a core concept related to information literacy, a collection of knowledge activities, and a set of attitudes. Unlike the Standards, the Framework is formed by drawing upon a compilation of interconnected fundamental ideas and core concepts. It provides a variety of potential approaches for implementation rather than prescribing a fixed set of standards or required learning outcomes. Six notions anchor the frames, i.e., (i) authority is constructed and contextual, (ii) information creation as a process, (iii) information has value, (iv) research as inquiry, (v) scholarship as conversation; and (vi) searching as strategic exploration.

Besides the two ACRL Standards and Frameworks established in the United States, there are other IL guidelines and models introduced by other countries. The *SCONUL Seven Pillars of Information Literacy*, established by the Society of College, National and University Libraries (SCONUL), is a widely recognised standard for guiding IL evaluation. The standard is commonly known as the Seven Pillars of Information Literacy. It was developed in 2011 by the professional body for academic and research libraries headquartered in the United Kingdom (UK) and Ireland (Society of College, National and University Libraries, 2011). It consists of seven pillars, which, together with awareness statements (understands) and performance challenges (can), constitute the basis for IL practices in higher education in the UK and Ireland. The Australian and New Zealand Institute for Information Literacy (ANZIIL) created the Information Literacy Framework for Australia and New Zealand. The Framework is derived from a previous iteration developed by the Council of Australian University Librarians and the ACRL Standards (Bundy, 2004). The ANZIIL framework has six core standards and four guiding principles, which are utilised to ascertain precise learning objectives.

### 2.2. Information Literacy Assessment

Assessment and evaluation are crucial in determining the progress and comprehension of learners. According to Harlen (2004), assessment involves selecting, gathering, and evaluating evidence pertinent to the learning objectives. It is about collecting evidence on an individual or group's capabilities to achieve the learning objectives. Baker refers to assessment as an “inference made about student's behaviour,

sometimes their achievement and sometimes their affective states.” (Baker, 2012, p. 316-317). This includes reactions to routine assignments as well as to specifically designed projects.

Many higher education institutions (HEIs) and libraries design IL programs and courses to develop and enhance information literacy competencies to their students. In Malaysia, according to Mohd Saad (2008, as cited by Abdullah, 2010), the courses and programs can be categorised as:

- i. Orientation session for all incoming undergraduate and postgraduate students,
- ii. Elective skill development programs for senior undergraduate students,
- iii. Specialised programs that focus on information skills, such as utilizing databases and mastering Internet searching techniques,
- iv. Mandatory courses on information literacy skills that are awarded academic credits,
- v. The information literacy course is given the same number of credits as other electives in the Co-curriculum.

It is necessary to incorporate the measurements and assessments to analyse the effectiveness of the courses and programs. Besides measuring proficiency of information literacy skills among the students, another purpose of information literacy assessment is to evaluate the effectiveness of the courses. Oakleaf (2009) agrees that another objective of information literacy assessment is to better understand student strengths and weaknesses and, as a result, identify skills gaps.

IL assessment can be divided into two common approaches: a) information literacy test-based assessment, and b) information literacy perception-based assessment (Walters et al., 2020). Test-based assessment determines the real skills and knowledge of the candidates. Some examples of IL test-based approach assessment are fixed-choice assessments, such as multiple-choice (MCQs), matching, and true-false formats (Mery et al., 2011). Project Standardized Assessment of Information Literacy Skills (Project SAILS; Mery et al., 2011), Madison Assessment’s Information Literacy Test (ILT; Latham & Gross, 2011; Podgornik et al., 2016), and the Research Readiness Self-Assessment (RRSA; Ivanitskaya et al., 2004) are some examples of instruments developed based on test-based approach. Another approach of IL assessment is perception-based assessment. This assessment approach is based on students’ perception of their IL competencies and skills. Mahmood (2017) agrees that the most used IL perception-based approach instrument is Information Literacy Self-Efficacy Scale (ILSES). The purpose of this instrument is to measure students’ IL self-efficacy, and it is tested with high reliability and validity.

Many literatures discussed the impact of demographics and academic factors in IL self-efficacy of students. According to Pillai et. (2020), research scholars exhibit moderate information literacy abilities, shaped by demographic characteristics and ICT awareness, which affect their utilization of library resources. The study concluded that there was a significant association between ICT awareness of research scholars and their level of information literacy. The study discovered that male research scholars exhibit a better information literacy level compared to the females. Demographic factors such as age, educational attainment, and professional experience substantially affect information professionals' proficiency in news and information literacy (Ameen & Naeem, 2020). In the context of college students, Lanning and Mallek (2017) indicate that current university GPA and standardized test results substantially affect college students' information literacy proficiency. Another research by Almuomen and Al-Ma'Seb (2024) found that age and reading culture are among the variables that have a significant impact in influencing undergraduate students in a university in Kuwait in evaluating resources in social media. These findings show that demographics and academic factors contribute to the level of IL competencies.

### **2.3. Information Literacy Self-Efficacy (ILSE)**

Self-efficacy as defined by social cognition theory is the personal judgement of an individual’s capability to organise and implement actions in specific situations that may encompass unique, unforeseeable, and stressful features to achieve a specific objective (Bandura, 1982). It demonstrates a strong belief in one's capacity to influence and regulate their own drive, actions, and social surroundings. Self-efficacy beliefs play a crucial role in determining an individual's perseverance, resilience, and effort exerted in an activity, especially when faced with difficulties and barriers. A study by Kurbanoglu (2003) agrees that individuals who possess a strong sense of self-efficacy will anticipate in achieving success and persist in a task until it

is finished. In contrast, those who have a poor impression of self-efficacy expect failure and are less inclined to engage in difficult tasks. The study also highlights that students' academic progress is significantly predicted by their level of IL self-efficacy. Correspondingly, Aharony and Gazit (2019) agree that the levels of students' self-efficacy are directly related to the levels of academic achievement. Another interesting study related to a particular discipline such as IL self-efficacy, is from Kim and Park (2000), which indicates that self-efficacy is a more powerful indicator of learning and performance compared to general self-efficacy, such as school self-efficacy. Stokes and Urquhart (2011) concluded that self-efficacy in information literacy (IL) increased between the first and intermediate stages of a student's academic programme prior to experiencing a decline in research activity at the tertiary level. Hence, IL self-efficacy can be used as an effective measure of learning performance.

However, there are some drawbacks of IL self-efficacy. Multiple studies have consistently found that individuals tend to overestimate their information literacy abilities while engaging in IL perception-based assessments as compared to their actual abilities (Gross & Latham, 2009; Mahmood, 2017). Research by Zhou and Jenkins (2020), in reference to Dunning-Kruger Effect, stated that people who lack of competencies in a particular topic frequently fail to recognise their own incompetence due to a typical deficiency of metacognitive awareness. To reduce this effect, it is recommended that IL self-assessment is measured after the administration of information search tasks or tests (Rosman et al., 2014). Individuals may have a better understanding of their own abilities after completing the tasks and, thus, able to reflect on their IL self-assessment more accurately.

#### **2.4. Research Objectives**

- i. To assess the perceived IL self-efficacy of new learners at Open University Malaysia.
- ii. To examine the relationship of students' perceived IL self-efficacy with their level of study, gender, age, and Information Communication & Technology (ICT) proficiency.

#### **2.5 Research Hypotheses**

The hypotheses showed a significant association between the information literacy self-efficacy, and demographic variables and academic factors of new learners of Open University Malaysia. The following null and alternative hypotheses were formulated for testing the significance statistically.

H<sub>0</sub>1: Information literacy self-efficacy level does not increase with the level of study.

H<sub>a</sub>1: Information literacy self-efficacy level increases with the level of study.

H<sub>0</sub>2: ICT proficiency does not influence learners' information literacy self-efficacy.

H<sub>a</sub>2: ICT proficiency influences learners' information literacy self-efficacy.

H<sub>0</sub>3: There is no statistically significant difference between the new learners' gender and the level of information literacy self-efficacy.

H<sub>a</sub>3: There is statistically significant difference between the new learners' gender and the level of information literacy self-efficacy.

H<sub>0</sub>4: There is no statistically significant relationship between the new learners' age and the level of information literacy self-efficacy.

H<sub>a</sub>4: There is statistically significant relationship between the new learners' age and the level of information literacy self-efficacy.

### **3. Research Method**

This section consists of (i) data collecting tools, and (ii) procedure and analysis.

#### **3.1. Data Collecting Tools**

The Information Literacy Self-Efficacy Scale (ILSES) was created by Kurbanoglu et al. (2006) and it was employed to assess students' confidence levels in their information literacy skills. The scale consists of

seven components of IL and has 28 items. The seven components are developed based on the expected points extracted from various information literacy and information problem-solving standards and models, namely the *ACRL's Information Literacy Competency Standards for Higher Education*, *SCONUL's Seven Pillar Information Literacy Model*, *Doyle's Rubrics for Information Literacy*, *AASL & AECT's Information Literacy Standards for Student Learning*, *the Big 6 Approach to Information Problem Solving*, and *ANZIL's Information Literacy Standards* (Kurbanoglu et al., 2006). The scale of seven factors are determined as “defining the need for information”, “initiating the search strategy”, “locating and accessing the resources”, “assessing and comprehending the information”, “interpreting, synthesising and using the information”, “communicating the information”, and “evaluating the product and process”. The scale is a seven-point Likert scale, with scores ranging from 7 (almost always true) to 1 (almost never true). Based on the analysis of 184 respondents, this study recorded an estimation of reliability coefficient of internal consistency (Cronbach Alpha) of 0.97. Appendix A displays the 28 items of the scale.

The questionnaire collects demographic data, including questions related to respondents' gender, age, and level of study. The participants were also asked about their perceived proficiency in ICT skills. Simple random sampling is utilised in this quantitative research study

### 3.2 Participants

This study involved 184 new undergraduate and graduate learners from Open University Malaysia of May 2024 intake. They are from four (4) faculties namely, a) Faculty of Education, b) Faculty of Business and Management, c) Faculty of Technology and Applied Sciences, and d) Faculty of Social Sciences and Humanities. Majority of them are working adults. The university employs a flexible learning model that allows learners to pursue their academic degrees while maintaining their employment. Since almost all academic sessions and activities are conducted online, most of the learners search and retrieve their references such as books, journals and reports via online in digital format. As displayed in Table 1, among the 184 participants, 122 (66.3%) were females and 62 (33.7%) were males. 110 (59.8%) participants are less than 30 years old. 29 of them (15.8%) are aged between 31 and 35 years old, while 22 (12%) of them are from 36 to 40 years of age. As for their enrolment by educational level, 114 (62%) participants were undergraduates, and 70 (38%) of them were graduate learners. In term of ICT proficiency, 50.5% of the respondents declared themselves as ‘intermediate’, 34.8% as ‘advanced’, 5.4% as ‘novice’ and 9.3% as ‘expert’. In general, graduate learners show a higher ICT proficiency compared to undergraduate learners.

**Table 1.** Demographic Data of the Respondents

	Undergraduate	Postgraduate	Total	Percentage (%)
<b>Gender</b>	114	70	184	
Male	36	26	62	33.7
Female	78	44	122	66.3
<b>Age</b>				
Less than 30	75	35	110	59.8
31-35	12	17	29	15.8
36-40	14	8	22	12
41-45	12	6	18	9.8
46-50	1	3	4	2.0
51-55	-	1	1	0.6
<b>ICT Proficiency</b>				
Expert	7	10	17	9.2
Advanced	38	26	64	34.8
	<b>Undergraduate</b>	<b>Postgraduate</b>	<b>Total</b>	<b>Percentage (%)</b>
<b>ICT Proficiency</b>				
Intermediate	60	33	93	50.5
Novice	9	1	10	5.5

Source. Fieldwork (2024)

### 3.3. Procedure and Data Analysis

Data gathering tools were converted into online digital forms and distributed to all new undergraduate and graduate learners in May 2024, requesting them to complete the questionnaires. Announcements were reiterated twice in the university’s learning management system, My Virtual Learning Environment (MyVLE), at specific intervals. The data collection instruments were implemented in English language. Data from students who willingly completed measurement instruments was extracted from the database, organised, and prepared for analysis. A statistical software JASP 0.19 was used for data analysis.

## 4. Findings and Discussion

An analysis was established based on the collected data and the findings are discussed below:

### 4.1. Findings

Descriptive statistics were employed in examining the level of information literacy self-efficacy of the respondents. The data acquired from the scale were described using the mean and standard deviation. Table 2 shows the descriptive statistics of the data on the seven information literacy dimensions.

Prior to examine the assumption of the models, the statistical tests skewness (0.056) and kurtosis (3.13) were conducted to determine that the variables are normal. The indicators' values show that the distribution of all the variables was within the normal distribution. As shown in Table 2, the mean for the information literacy self-efficacy was 5.13 out of 7 (SD=1.28). It indicates that ‘communicating the information’ is the least skill possessed by the respondents; mean of 4.79 (SD=1.35). This is followed by ‘locating and accessing the resources’ with the mean of 5.00 (SD=1.40). ‘Defining the need for information’ is the skill or dimension mostly possessed by the ODDE new learners.

**Table 2.** Information Literacy Self-Efficacy Level by the Seven Dimensions (n=184)

Information literacy dimensions	M	SD
Defining the need for information	5.47	1.06
Initiating the search strategy	5.07	1.14
<b>Locating and accessing the resources</b>	<b>5.00</b>	<b>1.40</b>
Assessing and comprehending the information	5.30	1.13
Interpreting, synthesizing, and using the information	5.11	1.17
<b>Communicating the information</b>	<b>4.79</b>	<b>1.35</b>
Evaluating the product and process	5.15	1.13
<b>Overall IL self-efficacy</b>	<b>5.13</b>	<b>1.28</b>

Source: Fieldwork (2024)

Table 3 is based on the level of study in the institution (undergraduates and graduates). The two dimensions (‘communicating the information’ and ‘locating and accessing the resources’) are found to be the least IL skills mastered by both levels of studies of the learners. The study also shows that all graduate learners perceived themselves better in all seven dimensions or components of information literacy compared to undergraduate learners.

**Table 3.** Information Literacy Self-Efficacy Dimensions by Level of Study

Information literacy dimensions	M	M
	Undergraduate	Postgraduate
Defining the need for information	5.32	5.73
Initiating the search strategy	4.93	5.31
<b>Locating and accessing the resources</b>	<b>4.87</b>	<b>5.10</b>
Assessing and comprehending the information	5.22	5.32
Interpreting, synthesizing, and using the information	5.00	5.19
<b>Communicating the information</b>	<b>4.64</b>	<b>4.94</b>
Evaluating the product and process	5.03	5.23

Source: Fieldwork (2024)

The study also determines the direction of the relationship between the level of study in the ODDE institution and information literacy self-efficacy. The independent one-tailed t-tests are employed. Welch’s t-test that provides a more accurate estimation of the p-value compared to other methods, particularly student’s t-test, is applied because the two (2) levels of studies (undergraduate and graduate) consist of different sample sizes and variances. As displayed in Table 4, the analysis shows a p-value of 0.005, which indicates a relationship in mean scores of students’ information literacy self-efficacy with the level of study, as P-value for the mean of IL self-efficacy scale is lesser than the alpha values ( $P < .05$ ). Cohen’s d of  $-0.387$  suggests a small-to-medium effect size. It means that the difference between the groups is noticeable, but not large. The Confident Interval (CI) for Cohen's d from  $-\infty$  to  $-0.134$  indicates that the true effect size is likely to be negative, and there is a meaningful difference between the groups. The difference observed is unlikely due to random opportunity, and the real effect. Thus, the null hypothesis,  $H_01$ : information literacy self-efficacy level does not increase while the level of study is rejected. The alternative hypothesis,  $H_{a1}$  for this study posits that the level of information literacy self-efficacy increases with the level of study. Learners at higher levels of study (graduate) demonstrates a greater information literacy self-efficacy compared to those at lower levels of study (undergraduate).

**Table 4.** Relationship between Information Literacy Self-Efficacy and Level of Study

	t-value	Degrees of Freedom (df)	p-value	Cohen’s d	SE Cohen’s d	95% CI for Cohen’s ds lower upper	
Mean	-2.591	161.946	0.005	-0.387	0.154	$-\infty$	-0.134

*Note.* For all tests, the alternative hypothesis specifies that the group undergraduate is less than the group graduate. Welch’s t-test

*Source.* Fieldwork (2024)

As displayed in Table 5, ‘Expert’ in ICT proficiency shows the best total mean score, that is 164.118 and followed by ‘Advanced’ with the recorded mean of 146.547. An ANOVA test was conducted to determine the relationship between the ICT proficiency and total score of IL self-efficacy. It shows in Table 6, that there is a significant relationship between ICT skills and IL self-efficacy with the total score of  $p < 0.05$ . This means that higher proficiency of ICT is associated with the perceived information literacy self-efficacy skills. The research concludes that ICT proficiency plays an important role in determining the level of information literacy self-efficacy of new ODDE learners. This finding is in line with a study by Kurbanoglu (2003) which states that there is a correlation between information literacy self-efficacy and computer literacy. Thus, null hypothesis,  $H_02$ : There is no statistically significant difference in ICT proficiency and the new learners’ perceived IL self-efficacy is rejected. However, there is a statistically significant difference between the new learners’ ICT proficiency and the information literacy self-efficacy. ICT proficiency influences learners’ information literacy self-efficacy.

**Table 5.** Total Score of IL Self-Efficacy by ICT Proficiency

IL Self-Efficacy (ILSE) Total Score	ICT Proficiency			
	Expert	Advanced	Intermediate	Novice
Frequency	17	64	93	10
Mean	164.118	146.547	134.323	132.700
Std. Deviation	21.578	23.713	23.265	27.354
Minimum score	120	91	91	76
Maximum score	196	196	196	169

*Source:* Fieldwork (2024)

**Table 6.** Relationship between ICT skills and IL self-efficacy

ICT Proficiency	Unstandardised	Std.Error	t-value	p-value
Expert	162.111	5.485	29.556	$< .001$
Advanced	146.547	2.909	50.381	$< .001$
Intermediate	134.323	2.413	55.666	$< .001$
Novice	140.375	8.227	17.062	$< .001$

*Source:* Fieldwork (2024)



The study also looks at the significant difference between male and female new learners in IL self-efficacy. In Table 7, independent samples of the t-test are used. The analysis shows a p-value of 0.438, which indicates that there is zero correlation in mean scores of learners' IL self-efficacy based on gender, as P-values for the overall IL self-efficacy scale are greater than the alpha values ( $P > .05$ ). This proves that there is no statistically significant difference between male and female new learners in IL self-efficacy. Thus, the null hypothesis,  $H_03$ : There is no statistically significant difference in new learners' perceived IL self-efficacy and gender is accepted.

**Table 7.** Difference between gender of new learners in IL self-efficacy

	t-value	Degrees of Freedom (df)	p-value
Total IL self-efficacy score	0.777	182	0.438

Source: Fieldwork (2024)

As shown in Table 8, Pearson's Correlation analysis was conducted to examine the relationship between age of the new learners and information literacy level. The analysis yielded a correlation coefficient of  $r=0.1$ , suggesting a very weak positive linear relationship. However, this relationship was not statistically significant ( $p=0.176$ ), indicating insufficient evidence to conclude that age and information literacy level are related in the population under study.

**Table 8.** Pearson's Correlations between age and IL self-efficacy

Variable		Age	ILSE Total Score
Age	Pearson's r	-	-
	p-value	-	-
ILSE Total Score	Pearson's r	0.1	-
	p-value	0.176	-

Source: Fieldwork (2024)

## 4.2. Discussion

Based on the findings, it is known that communicating information and locating resources are two (2) least skills mastered by the learners. The university's library and faculties should increase their effort to teach information literacy skills to new learners especially the two skills mentioned in prior. In the practical aspect of the study, focus should be given to teaching the two components or dimensions of information literacy: a) communicating the information and b) locating and accessing the resources to all new learners. Communicating information, such as presenting assignments in a standardised reference and citation style, and preparing written research are some skills that should be given attention by the two university departments. In locating and accessing resources, a focus on resource-searching techniques such as Boolean Searching and Advanced Search techniques should be given priority to new learners. Multiple efforts should also be made in providing library instruction sessions such as workshops on information skills and citation style to the new learners. The study indicates a positive correlation between the level of study and information literacy self-efficacy, necessitating the implementation and practice of distinct information literacy teaching and training for undergraduate and postgraduate learners. There should be a different way of teaching IL and content delivery for the two levels of studies. The study also indicates that there are no differences between the level of IL self-efficacy and gender of the learners. Thus, there should not be any gender-specific information literacy trainings to new learners, as both male and female new learners exhibit equivalent levels of information literacy self-efficacy. ICT proficiency also significantly enhances the learners' IL knowledge and skills. Therefore, the university and faculties should organise more basic and intermediate online and physical training related to ICT, such as word processing and spreadsheet, internet search, and other skills related to computer and ICT. The study also implies that interventions to improve information literacy self-efficacy should not necessarily be gender-targeted, as both male and female new learners have similar levels of self-efficacy in information literacy.

The study has several limitations. Firstly, the findings are based only on learners' self-reporting, not actual test-based assessments. It only highlights learners' perceptions of IL skills and knowledge. Due to the influence of social desirability, several learners may have inflated their perceived level of information literacy skills and abilities. Learners' tendency to overestimate or underestimate their own IL abilities has also been noted. A future study should incorporate several standardised information-searching tasks to complement IL self-efficiency assessment, as Rosman et al. (2014) recommended in his research. The study exclusively utilised a single cohort of student admissions. Additional cohorts should be included in future research to gain a broader perspective. Finally, a subsequent study might potentially employ qualitative methods such as open questions and interviews to supplement the quantitative analysis.

## 5. Conclusion

The study highlights the critical role of assessing information literacy self-efficacy (ILSE) of new learners in open, distance, and digital education environment. It has become one of the mostly used techniques in assessing information literacy competencies among professionals and students. The relationship between the learners' ILSE and their demographics and academic factors such as level of study, ICT proficiency, gender and age, is important to determine how IL teaching and training should be conducted to the new learners. By understanding the ILSE, the research identifies gaps in learners' competencies, particularly in communicating information and locating information resources. ICT proficiency is a critical skill that will improve the information literacy skills and knowledge of new learners. Information literacy teaching and training approach should be based on the level of study and not based on age and gender. Although some studies argue that the self-perception assessment is not the best method to determine information literacy skills, the perspective of educational psychology states that self-assessment is a highly promising technique. Subjective ability is often regarded as a fundamental idea that underlies human motivation, performance achievements, and emotional well-being. It has the potential to positively impact the amount of effort exerted and the tenacity in completing tasks, particularly when faced with resistance or problems in their studies. By understanding information literacy self-efficacy of new learners, ODDE institutions will be able to plan and provide effective teaching and training on information literacy skills to the new learners. This comprehensive approach will foster the development of versatile and resilient ODDE learners who are equipped to face the challenges of the modern information-age society.

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**APPENDIX A**

I feel confident and competent to								
1	Define the information I need	1	2	3	4	5	6	7
2	Identify a variety of potential sources of information	1	2	3	4	5	6	7
3	Limit search strategies by subject, language and date	1	2	3	4	5	6	7
4	Initiate search strategies by using keywords and Boolean logic	1	2	3	4	5	6	7
5	Decide where and how to find the information I need	1	2	3	4	5	6	7
6	Use different kinds of print sources (i.e. books, periodicals, encyclopedias, chronologies, etc.)	1	2	3	4	5	6	7
7	Use electronic information sources	1	2	3	4	5	6	7
8	Locate information sources in the library	1	2	3	4	5	6	7
9	Use library catalogue	1	2	3	4	5	6	7
10	Locate resources in the library using the library catalogue	1	2	3	4	5	6	7
11	Use internet search tools (such as search engines, directories, etc.)	1	2	3	4	5	6	7
12	Use different kinds (types) of libraries	1	2	3	4	5	6	7
13	Use many resources at the same time to make a research	1	2	3	4	5	6	7
14	Determine the authoritativeness, currentness and reliability of the information sources	1	2	3	4	5	6	7
15	Select information most appropriate to the information need	1	2	3	4	5	6	7
16	Identify points of agreement and disagreement among sources	1	2	3	4	5	6	7
17	Evaluate www sources	1	2	3	4	5	6	7
18	Synthesize newly gathered information with previous information	1	2	3	4	5	6	7
19	Interpret the visual information (i.e. graphs, tables, diagrams)	1	2	3	4	5	6	7
20	Write a research paper	1	2	3	4	5	6	7
21	Determine the content and form the parts (introduction, conclusion) of a presentation (written, oral)	1	2	3	4	5	6	7
22	Prepare a bibliography	1	2	3	4	5	6	7
23	Create bibliographic records and organize the bibliography	1	2	3	4	5	6	7
24	Create bibliographic records for different kinds of materials (i.e. books, articles, web pages)	1	2	3	4	5	6	7
25	Make citations and use quotations within the text	1	2	3	4	5	6	7
26	Choose a format (i.e. written, oral, visual) appropriate to communicate with the audience	1	2	3	4	5	6	7
27	Learn from my information problem solving experience and improve my information literacy skill	1	2	3	4	5	6	7
28	Criticize the quality of my information seeking process and its products	1	2	3	4	5	6	7

Here the notations shall be referred to as 7: almost always true, 6: usually true, 5: often true, 4: occasionally true, 3: sometimes but infrequently true, 2: usually not true, 1: almost never true.