Program Wise Information Literacy Skills of Students: A Comparative Study in a Private College in the Middle East

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ABSTRACT

The current study furthers the understanding of the Information Literacy (IL) competency skill levels between the health science and non-health science students in the United Arab Emirates. IL-HUMASS survey on information literacy questionnaire was partially adopted (17 categories) for surveying the IL competency skill levels between the Health and non-health students at college A. The questionnaire comprised four information competency categories: "Information Searching, "Information Evaluation, Information Processing/Application, and Information Dissemination and Communication". The Mann-Whitney U test was used to test the hypotheses. The research findings revealed that among all participants the levels of Motivational Engagement (ME) in the four competence areas were higher, than their levels of Self-Efficacy (SE). Further, interestingly, students enrolled in non-health programs displayed higher levels of both ME and SE in all four categories. Additionally, there were significant variations in IL Self-Efficacy levels between the two programs across the categories. Besides, the application of Pinto's IL-HUMASS survey instrument to a new user population has provided valuable insights. These insights highlight the importance of considering motivation and self-efficacy levels when designing information literacy programs, especially for health science students. This study is possibly the first in the UAE conducted on a global sample comprising 22 nationalities.

Keywords: Information literacy; Information literacy self-efficacy; Information literacy motivational engagement; Middle east; IL instruction; IL-HUMASS survey; Health sciences

1. INTRODUCTION

In the contemporary era, characterised by technological progress, we are surrounded by a vast amount of easily accessible information. However, the mere availability of information does not guarantee the authenticity and relevance. Finding the most relevant and authentic information particular to one's needs is crucial. Users can easily get lost in the vast information available around them. Especially, in institutions with a vast range of resources in both print and electronic provided by the libraries, the users may find it difficult to get the relevant and authoritative resources for their information need. Thus, Information Literacy (IL) training is very important to make aware to find the user's information needs, by identifying, finding, evaluating, and application of the information. Researchers claimed that general IL training for students from different disciplines is less efficient and effective[1]. ACRL standards[2] and ACRL frameworks[3] highly emphasise subject-specific IL training as the user's need for the information varies for each subject.

"College A" library is considerably rich in resources to support academics by offering a comprehensive service for the students, faculty, and staff. The library supports the students and faculty by providing print, electronic, and online-offline information services. Researchers have argued that IL, on a personal level, cannot be built without the support of an external environment, such as an institution where one studies or works[4]. IL policies and initiatives taken up by academic institutions are vital. The study focuses on discovering the IL competencies of students at "College A". The research tries to grasp the status of IL competencies among the respondents by employing three variables: "Motivational Engagement" (ME), "Self-Efficacy" (SE), and favoured "Source of Learning" (SL). These variables were employed in the past[5-6]. Based on the result of this study, the library would like to take measures to improve the IL levels of the users.

In "College A", the four programs, Health Lab, Emergency Care, Respiratory Care, and Health Management, belong to the health programs. Information Technology belongs to applied technology, and business administration belongs to social science. Hence, the current research has categorised subjects into health and non-health programs. Each category constitutes distinctive challenges and similarities in identifying, evaluating, processing, and communicating information. The role of librarians in each discipline should be determined based on the

IL skills order, such as lower or higher-order IL skills required for the students and staff [7]. This study attempts to determine program-specific IL competency levels of students by grouping them into agglomerated disciplines of health and non-health programs. During the initial research proposal and the data collection phase, the college had a different name with health and non-health programs as mentionedabove. Then, the college merged with another college. As a result, more disciplines were added to both health and non-health programs. Due to these reasons, we are maintaining the college name as anonymous and named "College A".

2. LITERATURE REVIEW

Information literacy (IL) skills and competencies help students evaluate, manage, and use information effectively[8]. These skills assist learning beyond formal education and ensure lifelong learning[2]. Students with higher information literacy skills know how to approach information better[9]. Furthermore, continuous evaluation of students' IL skill levels helps detect insufficiencies and offers solutions before graduation[10]. The emergence of the concept of IL goes back to 1974[11], and since then, several researchers on a personal and institutional level have tried to define the idea[2-3,12-14]. Most of these definitions revolve around similar skills and competencies.

2.1 Impact of IL Program on Students

Over the years many academic studies have been conducted to assess the information literacy abilities of students, from diverse backgrounds in different countries. The findings of these investigations strongly indicate that information literacy skills play an integral role in students' educational journey helping them achieve both academic and social goals. Moreover, these studies underscore the importance of information literacy skills in equipping students with the tools to navigate and utilise information resources effectively.

Shoeb, 2021 studied the impact of IL programs on students' perception regarding online research in a pre-and post-intervention study. They disclosed that well-structured IL programs could benefit the students and positively impact their research practices[15]. Further, Safdar, 2023 research showed that students with higher IL skills are better learners than those with lower IL skills[16]. Majid, et al., 2020 emphasised that incorporating IL topics into the curriculum can also enhance IL skills. Additionally, discovered that secondary students in Singapore possess a middle level of IL skills[17]. Another similar study showed that students know the importance of being information literate to achieve their educational goals. However, it was also found that students needed to be more information literate[18]. Yebowaah, 2018 revealed that many undergraduate students need more basic IL skills, which results from non-compliance with plagiarism and copyright policy[19]. Likewise, Hussain, et al., 2022 revealed that undergraduate students in Pakistan needed better skills in identifying their research needs, implementing good practices in academic work, and having less awareness of copyright issues and accessing the proper resources. Furthermore, they observed that students are proficient users of social networking applications[20]. A comparative evaluation by Soltani and Nikou, 2020 disclosed an interesting finding that domestic students were more information literate than international students in Finland[21]. Another program-wise comparative study disclosed that environmental science students are more well-versed in the basic IL skills than the other programs[7].

2.2 IL Skills and E-Resource Usage

A few studies were reviewed to determine if there were any indications of IL skills being utilised and the use of e-resources by students. Ukachi, 2015 found a strong association between undergraduate students' IL skills and the usage of electronic library resources in Nigerian Universities[22]. Dreisiebner and Schlögl, 2019 disclosed databases were the most used resource invariably[23]. Statistically significant differences in competencies were found based on the "academic level, addressing scientific research and research in databases in the course of the study, frequency of meeting the supervisor to discuss the research and university sector"[24]. Students were found to have good skills in identifying information for their basic requirements. Most of the students knew how to access the electronic and print resources[25]. Researchers found that native english speakers are more competent in using search strategies, e-resources, and ethical issues than non-native english speakers. Both groups have a similar level of competencies regarding academic databases and citations[26].

2.3 IL Skills of Students Enrolled in Health Programs

Ivanitskaya, et al., 2012 investigated health IL skill gaps in health science students with the help of a feedback-based study. The students were willing to work on improving their overall IL skills[27]. Another similar study found that most students possessed health IL skills and could utilise various search strategies and evaluate information sources[28]. Rao, et al., 2020 revealed that Health and Dental students exhibited better health literacy skills than Allied Health Science students[29]. In contrast, the IL skills of Health students needed to be more satisfactory at "Shiraz University of Health Sciences"[10].

2.4 IL Self-Efficacy

IL Self-Efficacy pertains to how individuals assess their competence, in using and understanding IL skills. Stokes et al., 2021 revealed a stimulating finding that deep and strategic learners exhibited higher self-efficacy with IL than surface learners[30]. Shoeb, 2021 found that "self-emotion appraisal, other-emotion appraisal, use of emotions, had a statistically significant positive impact on IL SE of the health students"[31]. No noteworthy differences in students' perceptions of IL competencies between Spain and Portugal were found. However, a higher "Belief-in-

Importance" (BI) score was observed compared to the "SE" score[6]. A comparison of students' pre- and post-IL tests showed a negative effect on their IL self-perception. Further, they found no significant relationships between students' academic performance and IL test scores[32].

2.5 Obstacles and Solutions

Common barriers to accessing resources such as "lack of time and support from library staff, poor Internet connectivity, information overload" were highlighted[28]. Improving IL skills can be achieved through a systematic focus on various levels of training and by fostering effective collaboration between faculty and librarians[7]. Further, proficiency in the English language and attendance in IL sessions significantly positively impacted the "IL SE" of health students[31].

The literature reviewed supports the idea that students recognize the importance of having Information Literacy skills. However, often their actual proficiency, in these skills falls short of standards. Incorporating tailored approaches, for teaching Information Literacy skills based on programs could have advantages for students, across different academic programs. Based on the literature review, it is evident that there is a scarcity of research conducted, in the Middle East regarding the examination of Information Literacy skills in relation, to different academic programs.

3. OBJECTIVES

Based on the review of the literature, the objectives of the study are:
- To investigate the levels of Motivational Engagement (ME) and Self-Efficacy (SE) about IL competencies among students, both in health and non-health programs.
- To find out the preferred Sources of Learning (SL) among the respondents.
- To determine the library services utilised by students enrolled in health and non-health programs.
- To examine if there is a difference in the levels of IL competencies between the health and non-health programs.

4. HYPOTHESIS

We propose the following hypothesis:
H_1: There is no significant difference in the ME levels regarding the IL competency categories between the health and non-health student samples.
H_2: There is no significant difference in SE levels regarding the IL competency categories exists between the Health and Non-Health student samples.

5. METHODOLOGY

This section covers in detail the method adopted for the study. Several frameworks[2-3,12-14] for evaluating the IL skills and competencies were reviewed to formulate the methodology.

5.1 Questionnaire

The questionnaire is adopted partially from "IL- Humas surveys on information literacy in higher education"[5]. There are 4 categories and 26 sub-categories in the original IL- Humas questionnaire. We have stuck to the four categories of "Information Search (IS), Information Evaluation (IE), Information Processing/ Application (IP/A), and Information Communication and Dissemination (ICD)" while preparing the questionnaire. However, we have modified the 26 sub-categories. Based on our requirements, 17 categories were created with a few new additions and a few eliminations (Table 1). The questionnaire contains 37 questions, including demographic information. The interpretation is planned to compare health programs such as Respiratory Care, Emergency care, Health Lab, and Health Management and non-health programs such as Business Administration and Information Technology.

5.2 Data Gathering

A digital survey among students and faculty members from both health and non-health programs was conducted in Academic Year 2023 at "College A, Abu Dhabi, UAE". The questionnaires were distributed online and reached 750 students and 75 faculty members.

5.3 Data Collection Period

The raw data for the study was collected during a two-and-a-half-month period from March to May 2023. After three rounds of follow-ups through WhatsApp, 200 responses were received, including students (n= 185) and faculties (n= 15). However, for this study, we focused on the students only.

5.4 Data Analysis

For analysing the data, such as finding out the descriptive statistics and hypothesis testing, IBM SPSS 26 was used. Descriptive analysis helps determine the mean values and their spread in the sample. "The Mann–Whitney U" test determines the significant differences. If the p-value< 0.05, the differences are substantial; hence, reject the null hypothesis.

6. RESULTS

The perceived levels of ME and SE are studied according to competencies as well as by grouping the competency categories. The preferred SLs are also compared. The demographic characteristics shown in Table 2 validate that 61.08 % sample belongs to the health program and 38.92 % belongs to the non-health program. Out of the total sample, 72.97 % belongs to non-native students from 22 different nationalities.

6.1 Overall Descriptive Scores

Total mean scores of health and non-health respondents regarding the categories of ME and SE are different in both programs (Table 3). The ME mean scores are slightly higher than the SE mean scores. Non-health programs have higher ME and SE levels than Health Programs.

Table 1. IL competency categories based on "IL-humas surveys"

Category	S. no.	C = Competency
	C1	Using printed sources of information (books, papers, etc.)
	C2	Using automated catalogues
	C3	Using electronic sources of primary information
IS	C4	Using electronic sources of secondary information
	C5	Searching and retrieval of Internet information using advanced search strategies
	C6	Use the e-textbook/ e-textbook platform
	C7	Use the library portal/deep knowledge portal for the information resources and services
	C8	Assessing the quality of information resources
IE	C9	Determining whether the information is updated
	C10	Knowing the most relevant authors and institutions
	C11	Schematising and abstracting information
IP/A	C12	Handling statistical programs and spreadsheets. (SPSS, Excel, etc.)
	C13	Writing a document (report, academic work, etc.)
	C14	Knowing the code of ethics in your academic/professional field (copyright, plagiarism, acknowledgment etc...?)
IDC	C15	Knowing laws on the use of information and property
	C16	Creating academic presentations
	C17	Disseminating information on the internet (webs, blogs, etc.)

Table 2. Demographic details of the sample population

Program	Category of students	Male	%	Female	%
	Native	1	0.54	16	8.65
Health N=113 (61.08 %)	Non- native	17	9.19	79	42.70
	Working	6	3.24	14	7.57
	Non- working	12	6.49	81	43.78
	Native	18	9.73	15	8.11
Non-health N=72 (38.92 %)	Non- native	21	11.35	18	9.73
	Working	23	12.43	11	5.95
	Non- working	16	8.65	22	11.89

6.2 Key Descriptive Procedures by Category and Dimension

Regarding ME, inter-program mean scores are slightly different in each category. In the case of SE, significantly different mean levels are observed between the programs (Table 4). The highest ME and SE level is seen in terms of the competency category IE among the non-health respondents. The lowest ME and SE level is observed among the health program respondents for ICD and IS.

Table 3. Descriptive results regarding ME and SE levels (differences by program)

Dimension	Program	Mean	Median	Std
ME	Health	3.78	4.00	0.849
	Non-health	3.94	4.00	0.899
SE	Health	3.23	4.00	1.434
	Non- health	3.75	4.00	1.165

Table 4. Key descriptive procedures by dimension and category: comparison between programs

10	ME.				Category and dimension	SE.			
	Program	Mean	Median	Std dev		Program	Mean	Median	Std dev
IS	Health	3.71	4.00	0.967	IS	Health	3.17	3.43	1.429
	Non- health	3.87	4.00	0.914		Non- health	3.70	4.00	1.204
IE	Health	3.80	4.00	0.784	IE	Health	3.27	4.00	1.408
	Non- health	3.99	4.00	0.730		Non- health	3.81	4.00	1.101
IP/A	Health	3.64	4.00	0.807	IP/A	Health	3.20	3.50	1.348
	Non- health	3.94	4.00	0.910		Non- health	3.72	4.00	1.183
ICD	Health	3.66	4.00	0.942	ICD	Health	3.19	3.60	1.375
	Non- health	3.98	4.00	0.967		Non- health	3.71	4.00	1.263

Table 5. Significant differences concerning information competencies by program

Category	Competency	ME. P value	SE. P value
IS	C1	**0.293**	**0.160**
	C2	0.048	0.006
	C3	**0.125**	0.004
	C4	**0.526**	0.003
	C5	**0.298**	0.011
	C6	**0.051**	0.001
	C7	**0.094**	0.014
IE	C8	0.034	0.001
	C9	0.043	0.009
	C10	**0.909**	**0.194**
IP/A	C11	0.038	0.014
	C12	0.005	0.002
ICD	C13	0.030	0.007
	C14	0.010	0.001
	C15	0.004	0.001
	C16	0.021	0.011
	C17	0.108	0.034

(p-values ≤ 0.05, Test: Mann– Whitney U)

This study is a novel attempt to understand the perceptions of IL competencies between health and non-health library user groups. To test the hypotheses, this segment tries to confirm the significant differences between the two groups regarding perceived IL competencies. Table 5 validates there is no significant difference between the ME levels regarding the IS competencies, as the null hypothesis is retained for 7 out of 10 statements. However, in terms of the other three competency categories, significant differences are observed between the programs. Further, it is observed that the SE levels across the categories are significantly different between the programs except for the IE category.

6.3 Sources of Learning

Self-learning is the preferred SL for respondents from both the programs table (6 a and b). Library and classroom are less preferred resources over self-learning across the competency categories and overall, as well.

The "College A" library provides its clientele with various online services. We tried to identify the most used services by the study respondents. Electronic textbooks (29.91% = Health; 26.51% = non-health), other electronic resources (25.30% = non-health; 20.51% = health), and Online Public Access Catalogue (OPAC) (16.87% = non-health; 7.69% = health) are found to be the most used online services across both the programs. Frequently Asked Questions (FAQ) (1.71% = non-health; 0% = health) and Inter-Library Loans (ILL) are found to be the least-used services across programs.

The purpose of the library visit unfolds crucial information regarding user needs and information use. Table 7 represents that most of the program respondents visit the library to do their assignments (health = 27.20%; non-health = 24.87%) and perform research activities (health = 20.69%; non-health = 18.86%).

Year of Course-wise self-efficacy of respondents across the programs by different competency categories is displayed in Table 8. The 1st year and the 3rd year respondents are found to have more self-efficacy levels than the 2nd year and 4th year respondents.

7. DISCUSSION

In the current century, graduates must be skilled in identifying the information needed, finding the information, critically evaluating, applying, and delivering. A previous

Table 6(a). Preferences (%) of SL by program

Program	Classroom	Library/library training	Other	Self-learning	No-response
Health	26.85%	13.71%	8.18%	47.86%	3.37%
Non-health	26.25%	24.35%	8.57%	40.07%	0.76%

Table 6(b). Preferences (%) of SL by competency category and program

Program	Category	Classroom	Library/ library training	Other	Self-learning	No-response
Health	IS	22.73%	3.67%	8.03%	51.96%	3.59%
	IE	23.29%	17.09%	6.41%	49.78%	3.41%
	IP/A	29.74%	12.64%	8.03%	46.49%	3.07%
	ICD	30.94%	12.14%	9.91%	43.59%	3.42%
	Global	31.21	13.75	7.72	56.11	3.95
Non-health	IS	23.61%	24.10%	8.92%	43.37%	0
	IE	26.20%	23.49%	9.94%	40.06%	0.30%
	IP/A	26.02%	25.78%	8.92%	38.07%	1.20%
	ICD	29.16%	23.86%	6.75%	38.80%	1.45%
	Global	21.79	20.17	7.16	33.26	0.61

Table 7. Purpose of use of library resources by the program

Health			Non-health		
Purpose	Number	%	Purpose	number	%
Assignment	142	27.20	Assignment	149	24.87
Presentation	100	19.16	Presentation	103	17.2
Quizzes	63	12.07	Quizzes	65	10.85
Exams	15	2.87	Exams	72	12.02
Research	108	20.69	Research	113	18.86
Self-study	94	18.01	Self-study	97	16.19
Other	0	0	Other	0	0

Table 8. Year of Course wise self-efficacy by competency category and program

Year of course	Health IS	Non-health	Health IE	Non-health	Health IP/A	Non-health	Health ICD	Non-health
1st	58.04	74.18	66.67	70.50	65.63	78.85	58.75	65.38
2nd	47.93	51.10	51.61	49.10	46.77	44.74	44.52	46.32
3rd	47.90	62.90	61.76	71.10	55.88	66.67	52.35	69.33
4th	39.63	64.90	39.78	54.50	38.71	50.00	43.23	67.27
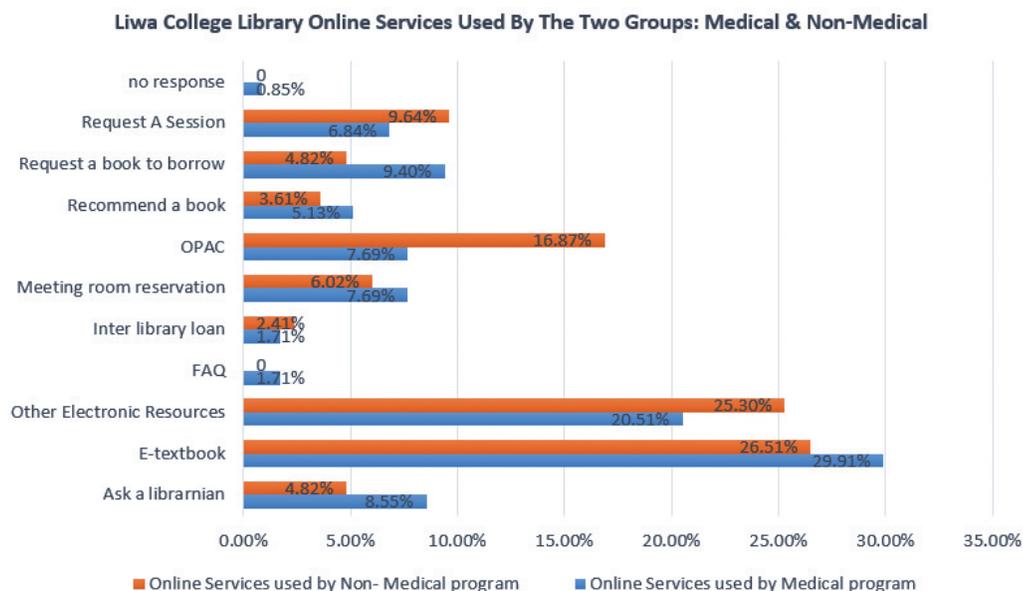
Figure 1. Program wise online library services used by the respondents.

study found no significant difference between countries regarding students' SE levels[6]. At the same time, our study revealed substantial differences in SE levels across the competency categories between the two programs. This indicates that SE levels of students are independent of country of belonging and dependent on the programs enrolled.

A study found that nursing (Health) students exhibited sufficient professed level of information competency[24]. However, our study shows that non-health students have higher perceived IL SE levels. Researchers found substantial differences in disciplines in recognising the most probable information sources[23]. Similarly, our study found differences between the programs in using the information sources[28]. Stated that the purpose of using electronic library resources for students is for academic research activities. In addition, our study revealed that the purpose of library visits is to do assignments and research activities in both programs[28]. Found a strong association between IL skill and e-resource usage; in our study, the non-health students are found to have higher SE and ME levels and their usage level of e-resources and OPAC is more as well.

The results shown in Table 8 may be representative of the Dunning-Kruger effect among the 1st and the 3rd year students. This theory propounded that the participants having the lowest skill levels overrated their own capabilities and alleged that their skills were above average[33]. This theory was further studied by Khalid Mahmood[34]. He found that most low-performers overestimated their skills in self-assessments. Table 8 reported that 1st year students who were freshly admitted might misjudge their knowledge/skills and overrate their SE level. In contrast, 2nd year students might start to diagnose their lacunas and state less self-efficacy. Further, after gaining slightly more skills in the 3rd year of the course, they might feel a bit more confident about their IL self-efficacy levels only

to go into the final year, staring down graduation, and again begin to comprehend their further shortcomings and hence stating reduced self-efficacy.

8. CONCLUSION

Information is dynamic and multifaced. IL competencies enable one to be an effective user of information. Libraries play a significant role in providing their clientele with IL-related training or workshops. Although our study was conducted with a small sample, it represented 22 different nationalities, allowing it to offer a global perspective on IL skills. The descriptive statistics of the survey indicated slightly higher ME than SE levels in each competency category among all the respondents. It specifies that students are motivated and willing to learn these IL skills. Since there is a significant difference in the ME and SE levels regarding the competency categories, the library may conduct separate IL interventional workshops for the two programs, keeping the respective engagement and efficacy levels in mind, as a previous study has also proved that IL training improves students' research behavior[15]. The health respondents have the lowest SE level regarding the information search category. "College A" may initiate a workshop on information search strategies among the health respondents. The study results disclose that self-learning is preferred over library resources and the classroom, even though the library possesses plenty of collections. This issue needs prompt attention from the appropriate stakeholders. The respondents hardly utilise individualised services such as ILL, request a session, and request a book. These services may be brought to the notice of library users for better utilisation. The Non-Health program respondents have a higher perceived SE level regarding IL competency across all the categories. The literature survey provided evidence that this type of program-wise IL competency study has not been conducted in Indian institutions which makes scope for future research.

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