

Information Literacy Self-Efficacy of Information Technology Students in Eastern Mediterranean University (EMU)

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Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Information and Communication Technologies in Education

Eastern Mediterranean University
February 2018
Gazimağusa, North Cyprus

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ABSTRACT

Information literacy is the basis for lifelong learning, and it can also be seen as a set of cognitive and practical skills and like any other science, proper training is needed, and standard-based education is definitely better and evaluation would be easier. Information literacy skills, especially for the student in an environment that is full of information from multiple technologies are being developed is equally important. This study aimed to investigate and evaluate the information literacy self-efficacy (ILSE) of Information Technology undergraduate students at Eastern Mediterranean University.

Furthermore, this research would create awareness for educationalist and help to recognize individuals with low self-efficacy of the expressed idea based on gender, age and study level, which may serve as a limiting factor for them to penetrate into their information literacy skills.

The quantitative research method was employed in order to collect the data. Hence, the data were collected from 130 participants through the questionnaire in order to evaluate the students' information literacy self-efficacy. The data were analyzed through SPSS software, version 22. Moreover, descriptive analysis, independent sample t-Test, and one-way ANOVA tests were used for evaluating the obtained data.

The findings specify that there is a remarkable statistically significant difference on male and female students ILSE skills. Also, the results indicate that out of the three levels of Information Literacy Skills (ILS), Basic Information Literacy Skills (BILS) has the highest percentage compared to Intermediate and Advanced Information

Literacy Skills (IILS and AILS). However, there is a significant difference in how students define and locate the information they need based on their study level and age. Finally, the study showed that students' information literacy skills as the greatest impact were on increasing the ability to access information.

Keywords: Information literacy, Information literacy skills, self-efficacy, information literacy self-efficacy, Undergraduate students.

ÖZ

Bilgi okuryazarlığı hayat boyu öğrenmenin temelini oluşturur ve aynı zamanda bilişsel ve pratik beceriler kümesi olarak ve başka herhangi bir bilim gibi, uygun eğitime ihtiyaç duyulabilir. Bilgi okuryazarlığı özellikle de öğrencilerin birden fazla teknolojiye elde edilen bilgilerinin bulunduğu bir ortamda becerilerini geliştirilmesini açısından önemlidir. Bu çalışma, Doğu Akdeniz Üniversitesi'nde Bilgi Teknolojisi lisans öğrencilerinin bilgi okuryazarlığı öz-yeterlik düzeylerini (ILSE) araştırmayı ve değerlendirmeyi amaçlamıştır.

Ayrıca, bu araştırma, eğitimciler için bir farkındalık yaratacak ve bilgi okuryazarlığı becerilerine nüfuz etmede sınırlayıcı bir faktör görevi görebilecek, cinsiyete, yaşa ve çalışma düzeyine dayalı ifade edilen düşünceleri düşük özyeterlikli bireyleri tanımaya yardımcı olacaktır.

Verilerin toplanması için niceliksel araştırma yöntemi kullanılmıştır. Bu nedenle, öğrencilerin bilgi okuryazarlığı öz-yeterlik düzeylerini değerlendirmek için 130 katılımcıdan elde edilen veriler anket yoluyla toplanmıştır. Veriler SPSS yazılımı, versiyon 22 ile analiz edilmiştir. Elde edilen verilerin değerlendirilmesinde betimsel analiz, bağımsız örnek t-Testi ve tek yönlü ANOVA testleri kullanılmıştır.

Bulgular, erkek ve kız öğrencilerin ILSE becerileri üzerinde istatistiksel olarak önemli bir farkın var olduğunu belirtmektedir. Ayrıca sonuçlar, Bilgi Okuryazarlığı Becerileri'nin (ILS) üç seviyesinden Temel Bilgi Okuryazarlık Becerileri'nin (BILS) Orta ve İleri Düzey Bilgi Okuryazarlık Becerileri (IILS ve AILS) ile karşılaştırıldığında en yüksek yüzdeye sahip olduğunu göstermektedir. Bununla birlikte, öğrencilerin

alıřma dzeyine ve yařına dayalı olarak ihtiya duydukları bilgiyi nasıl tanımladıęı ve yerleřtirdikleri konusunda nemli bir fark bulunmaktadır. Son olarak, alıřma, ęrencilerin bilgi okuryazarlıęı becerilerinin en byk etkisi olduęu bilgiye eriřme yeteneęini arttırdıęını gstermiřtir.

Anahtar Kelimeler: Bilgi okuryazarlıęı, Bilgi okuryazarlıęı becerileri, z-yeterlik, bilgi okuryazarlıęı z-yeterlik, Lisans ęrencileri.

DEDICATION

To my family

ACKNOWLEDGMENT

My most sincere gratitude goes to Almighty God for His countless blessings on me and for granting the grace to complete my studies and to achieve this degree. I promise Him that with this I will contribute positively to my field of expertise and especially in His vineyard.

Most importantly, I thank, Asst. Prof. Dr. Alper Doganalp, my supervisor for his help, support and for proof-reading this work. His remarks to this thesis were great sources to its accomplishment. I equally express my gratitude to Prof. Dr. Mustafa Ilkan, my co-supervisor, the director of School of Computing and Technology at Eastern Mediterranean University (EMU). His guidance, and insight throughout the course of this research work, patience and expertise have helped in making this thesis to be of academic standard. The success of this endeavor is by his encouragement. I also wish to thank Assoc. Prof. Dr. Ersun Iscioglu, my course advisor and the Chair, Department of Computer Education and Instructional Technology, EMU, for his words of advice were really inspirational all through the period of my Master's degree program. His encouragement and suggestions on this research work cannot be overlooked. My gratitude also goes Sr. Instr. Mobina Beheshti for copy editing my thesis and for putting me through with SPSS software, and to the students who participated in this research work.

My special appreciation goes to my beloved husband, Mr. Lawrence Adedayo Farinola (Doctor of Mathematics in view) who supported me financially, academically, spiritually, and morally from the beginning of the programme to the end. Also, his

advice sees me through my rigorous study at EMU. I equally thank my eleven months old son, Master Giovannifavour Adetemidayo Farinola for teaching to be a good mother and not disturbing me too much during the writing of my thesis.

I feel indebted to my mother-in-law, Mrs. Veronica Bamidele Farinola (JP) for her help during the first four months of my baby birth. Also to my beloved parents, Mr./s Damian Nwanna for their word of encouragement and understanding during my master's degree programme, my sincere gratitude to my siblings, my in-laws, my friends, my colleagues, church members, and all who have supported and encouraged me in one way or the other.

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LIST OF ABBREVIATIONS

ACRL	Association of College and Research Libraries
AILS	Advanced Information Literacy Skills
ANOVA	Analysis of Variance
ANZIIL	Australian and New Zealand Information Literacy
APA	American Psychological Association
BILS	Basic Information Literacy Skills
ICT	Information and Communication Technology
IL	Information Literacy
ILS	Information Literacy Skills
ILSE	Information Literacy Self-Efficacy
IILS	Intermediate Information Literacy Skills
NELSON	Northampton Electronic Library Search Online.
NFIL	National Forum on Information Literacy
NICE	National Institute for Health and Care Excellence
UNESCO	United Nations Educational Science and Cultural Organizations
SPSS	Statistical Package for the Social Sciences

Chapter 1

INTRODUCTION

1.1 Introduction

Motivation is one of the key elements in the system of learning and it is the sole factor that has a direct impact on the academic success (Roohi, 2013). In today's societies, the widespread of technology has made it easier for the delivery of information in the educational system. Recent research has shown that we are in the world of an information society, and as the level of information increases, technology gains more strength and societies conform themselves to the way they show a response to these changes (ANZIIL, 2004). The important characteristics of the 21st-century learner is that of extensive availability of information resources. Information is therefore needed for the rapid increase in information resources and various method of access. People experience different choices of information in their workplace, studies and as well as their life. Information can be available through community sources, media, special interest organization, service provider, and internet. Information literacy infuses proficiency of people working in any learning environment, any educational level to think critically about content and influence their self-directed exploration and prepared for systematic learning (ANZIIL, 2004).

1.1.1 The Concepts and Kinds of Information

An adage says "If you are not informed, you are deformed". This shows the importance of information in everyday life. Information is related to knowledge and data.

Knowledge of information signifies understanding of real things or concepts that are abstract while data refers to values attributed to the parameter in consideration.

Information has long been perceived as an idea suitable for exploration in social sciences and humanities (David, 1991). The 20th century Engineers in Electrical started using the information to describe the conveyance of data and they concentrated on evaluating information as an attempt to make large information communicated or received, or reduce noise, or both. Generally, David, (1991) define information as the output characteristics of processes, these being informative about the process and the input. Table 1 below provides the summary of where to find different kinds of information:

Table 1: Different kinds of Information

Source	Kinds of information	Where to look
Books (and eBooks)	Introduction, subject overviews and theories	Library Catalogue and NELSON
Journal Articles	Specific information, case studies, and research	Library Catalogue and NELSON
Newspapers	Breaking news and current issues/awareness	Lexis database
Legislation	Current legislation and cases	Lexis database
Internet or web resources	National Guidelines, care pathways, frameworks and statistics	NICE Evidence (NHS Evidence) Government websites Office for National Statistics
Grey Literature	Unpublished research or policy documents	NICE Evidence (NHS Evidence)

(Source: <https://mypad.northampton.ac.uk/llsot/types-of-information/>)

1.1.2 Information Literacy

Lifelong learning is very essential, the rate at which information increases makes access to information simple and affordable (Bong & Skaalvik, 2003). Hence, students should possess the deep studying idea as well as the Information Literacy Efficacy (ILE) which can easily be obtained, having essential features, possessing the information needed, and forming a critical opinion (Andretta, 2005). Furthermore, Information literacy is the ability to access required information and having the skill to utilize it. Information literacy has been seen as one of the vital components that make education more strong as expressed in different kinds of literature (ANZIIL, 2004). Information literacy skills can be classified into three main skills which include basic, intermediate and advanced (Kurbanoglu et al., 2006).

1.1.2.1 Basic Information Literacy Skills

Basic information literacy skills are referred to skills that deal with the use of books, encyclopedia, periodicals, chronologies sources and so on. It also focuses on how students make use of library catalog and electronic, to source and/or locate information in the library (Kurbanoglu et al., 2006).

1.1.2.2 Intermediate Information Literacy Skills

Intermediate information literacy skills are those skills that require the students to know how to prepare and create bibliographic records for different kinds of materials like articles, textbooks, projects, thesis, web and so on (Kurbanoglu et al., 2006). The information literacy skills at this level expect the learners to know how to interpret information from graphs, diagrams, tables, etc. Also, writing research papers, making citations, using quotations within the text, selecting and defining information needed are very essential in this category of information literacy skills (Kurbanoglu et al., 2006).

1.1.2.3 Advanced Level Information Literacy Skills

Advanced level information literacy skills deal with synthesizing and summarization of information gathered from different sources with previous information and criticizes the quality of the information processed and produced (Ismail, 2014).

1.1.3 Self-Efficacy

Self-efficacy point of view affects self-regulatory processes such as goal setting, self-monitoring; self-evaluation and strategy use. The higher the self-efficacy of students the more likely they will aim their goals higher and their self-monitoring strategies will be more effective (Waldman, 2003; Pajares & Schunk, 2001). Committed to achieving difficult goals, they often visualize success scenarios that lead to positive behavior and outcomes. In brief, the stronger students' self-efficacy is, the higher the goals they set, and the firmer their dedication becomes. However, self-efficacy is a perception of potential to accomplish given types of performances; outcome expectations are judgments about the outcomes that are likely to flow from such performances (Pajares & Schunk, 2001). Bandura (1986), underlines the outcome expectations of three different forms which include the negative and positive social, physical, and self-evaluative outcomes. Within each form, the positive expectations serve as incentives, the negative ones as disincentives. The outcomes people expect depend largely on their perception of how well they will be able to perform in given conditions.

1.1.4 Importance of Self-Efficacy in Information Literacy

Bong and Skaalvik (2003), stated that "acquiring information literacy skills, and having knowledge of these skills is also effective to consciously use them". This process is known as self-efficacy, which is also reasonable for information literacy (IL). According to Bandura (1997), self-efficacy is the act of assessing an individual on how competently they can perform the actions indispensable for adjusting to

possible conditions. The notion of self-efficacy can be applied to many other fields most especially in information literacy. Akkoyunlu and Kurbanoglu (2004), stated that “Self-efficacy of information literacy” is defined as one’s confidence in their-self to utilize information. According to Bandura and Bandura (1997), success does not only mean having absolutely essential talents. If one lacks self-confidence in carrying out action, he/she cannot be successful because they both work together, which means, having high levels of self-efficacy with regard to IL in students is of great significance as having IL skill.

1.1.5 Measuring Self-Efficacy

The strength of self-efficacy is measured by degrees of certainty that one can perform given tasks (Bandura, 2011). In addition, when different interest of activity is governed by similar sub-skills there is some inter-domain relation in perceived efficacy. Proficient performance is partly guided by higher-order self-regulatory skills (Bandura, 2011). These include generic skills for diagnosing task demands, setting proximal goals to guide one’s efforts, constructing and evaluating alternative courses of action and creating self-incentives to sustain engagement in taxing activities and to manage stress and debilitating intrusive thoughts. Self-management generic strategies developed in one realm of activity are serviceable in other activity domains with resulting co-variation in perceived efficacy among them (Kurbanoglu et al., 2006).

1.1.6 Related Research

Yingqi and Hung (2013), used a survey method to investigate the relationship between information literacy and self-efficacy skills of distance learning students in order to improve library instruction targeting this particular user group. They found out that “high self-efficacy students demonstrated superior knowledge on how to use

appropriate resources to accomplish their learning needs;” however, many students were not able to select and use resources wisely.

Waldman (2003), surveyed students enrolled in an introductory psychology course to “examine some factors that correlate with students’ usage of the library’s electronic resources,” including self-efficacy. Waldman (2003), found that students with higher levels of self-efficacy were more likely to use the library’s resources, to visit the physical library, to be motivated to learn about the library’s electronic resources and find them easier to use.

Ren (2000), explored how “performance and behavior will affect self-efficacy” within the context of searching electronic information. Library instruction, which included a library search assignment, was given to undergraduate students enrolled in a basic English composition course. Before and after the instruction and assignment, students were asked to rate statements related to information-seeking self-efficacy, as well as attitudes toward library instruction and the research process.

Pajares and Schunk (2001), and Waldman (2003), show through their studies that ‘self-efficacy beliefs influence self-regulatory processes such as goal setting, self-monitoring; self-evaluation and strategy use’. An information literate person embodies the attitude that learning is lifelong. To be a lifelong learner you need to be able to self-regulate – actions of independent learning and self-reflection come into play here. Such a person understands that the only constant in today’s knowledge society is changing. This person adopts a flexible approach to learning, aware that the information landscape is constantly changing. An information literacy person has traits that recognize that information literacy skills and abilities need to be developed and

that excellence in knowledge production takes time and determination. An information literate person in today's information society has a high self-efficacy because such a person can use an inquiry-based framework to read for understanding, eventually creating new knowledge and understanding.

Demirel and Akkoyunlu (2017), study aimed to determine the correlation between prospective teachers' lifelong learning tendencies and their information literacy self-efficacy. Their research make use of 200 prospective teachers and the findings revealed that prospective teachers' lifelong learning tendencies and their information literacy self-efficacy were quite high. Their lifelong learning tendencies did not differ in terms of their computer usage skills whereas a significant difference was found in terms of their gender, grade, achievement perception, willingness to pursue an academic career and achievement in workplace.

Chu (2012), paper reports an exploratory investigation of the information-literacy levels of primary 5 pupils in Hong Kong. The study use questions from a local public test of reading comprehension to measured reading ability of the participants which consists of 199 pupils (Female students, 97; while male counterparts are 102 in number). The information literacy of female students was higher compare to that of male. Results also revealed a positive and significant relationship between students' reading ability and information literacy. Finally, the findings of this research offer a preliminary understanding of the information literacy of children in Hong Kong.

1.2 Statement of the Problem

In the world today, in order for an individual to intelligently execute their problem-solving information actions, to become motivating, self-guiding, and life-long

learning, its expected of them to cultivate a positive self-efficacy perception on information skills (Akkoyunlu & Kurbanoglu, 2004).

In Gpek, Tekbiyik and Ursavag (2010), research, it has been revealed that self-efficacy discernment of postgraduate students is on the medium level.

Bard et al. (2000), argue that research causes students to think of having an accelerating effect on their attitudes towards the orientation of research and research skills. Improvement of self-efficacies of university students or prospective higher institution students shall impact their professional contribution growth positively and greatly to overcoming various kind of problems.

During the process of learning, there is no doubt that students act in a different manner from each other (Johnston & Sheila, 2003). Some students use a labored effort to have the idea for the subject/course with all respects, that is, they have extreme studying idea, while others just study in their heart the concepts without any effort of getting the meaning of what they are reading (become visible of the study idea) (Lau, 2006).

However, students learn how and when to study to be successful strategically on their own (Bong & Skaalvik, 2003). Majority of them spend much time doing this kind of reading and sometimes they still fail. Some of them are favored to memorized towards the examination and lucky to pass the exam. Finding out the ILSE level of Information Technology students will help in future studies in this situation (Bong & Skaalvik, 2003).

1.3 Aim of the Study

The main aim of this study is to investigate Information Literacy Self-Efficacy (ILSE) of Information Technology students in Eastern Mediterranean University (EMU).

1.3.1 Research questions

This research work tends to achieve the above aims and purpose through the following research questions:

1. What is the Information Literacy Self-Efficacy of IT students?
 - 1.1 What are the Basic Information Literacy Skills of IT students?
 - 1.2 What are the Intermediate Information Literacy Skills of IT students?
 - 1.3 What are the Advanced Information Literacy Skills of IT students?
2. What is the relationship between IT students Information Literacy Self-Efficacy and gender, age, and level?
 - 2.1 What is the relationship between IT students Information Literacy Self-Efficacy and gender?
 - 2.2 What is the relationship between IT students Information Literacy Self-Efficacy and age?
 - 2.3 What is the relationship between IT students Information Literacy Self-Efficacy and level?

1.4 Significance of the Study

Predicting information literacy self-efficacy of students will create awareness for educationalist and help to recognize individuals with low self-efficacy of the vague idea based on gender, age and study level, which may serve as a limiting factor for them to penetrate into their information literacy skills. In addition, knowing the level of students' information literacy skills will help in determining their academic studies, and provide necessary suggestions. Furthermore, determining whether there is a

relationship between self-efficacy regarding information literacy skills play significant role in all level of educational sectors (Tang and Tseng, 2013).

1.5 Limitation

This study is limited to Information Literacy Self-Efficacy (ILSE) of Information Technology undergraduate students' who registered in the School of Computing and Technology at EMU 2017-2018 fall semester.

1.6 Definition of Important Terms

Information Literacy (IL): This refers to the ability to use, evaluate, search, and cite information in a moral, ethical, and educated way (Akkoyunlu & Kurbanoglu, 2004). An individual who is able to perform any of these tasks is referred to as information literate.

Information Literacy Skills: is the ability to effectively define, prepare, find, select, organize, evaluate, interpret, determine, and use information (Cameron, 2018).

Self-Efficacy (SE): is an individual belief in one's capability to organize information and execute behaviors necessary to produce specific performance attainments (Bandura, 2011).

Information Literacy Self-Efficacy (ILSE): is a belief of the people towards the use of information, assessing the information, information evaluation and information sharing (Kurbanoglu et al., 2006).

Basic Information Literacy Skill (BILS): are the skills that are necessary to perform simple or simplest and concrete literacy skills and everyday information literacy activities (Cameron, 2018).

Intermediate Information Literacy Skill (IILS): are the skills necessary to perform moderately challenging Information literacy activities (Cameron, 2018).

Advanced Information Literacy Skill (AILS): are more proficient in information literacy and an individual at this level possesses the skills necessary to perform more complex and challenging information literacy activities (Tom, et al, 2016).

Chapter 2

LITERATURE REVIEW

2.1 Chapter overview

This chapter starts by looking briefly into the concept of literacy, where the word came from and later discusses different types of literacies, most especially those literacies that are closely related to the literacy we are considering in this study. Since information literacy is our main focus, this research examines the details about it by reviewing different studies that have worked in this research area, their role, importance, the dimensions of information literacy and basic, intermediate and advanced Information literacy skills were also given attention. This chapter also discusses the self-efficacy concept, importance and how it can be measured. The chapter concludes by integrating information literacy and self-efficacy and how they are related to life-long learning skills.

2.2 The Concept Literacy

Literacy originated from a Latin word, which means “literatus” or sometimes spelled as “litteratus”. This connotes “learned, educated, who knows the letters;”. Literacy came into limelight in the early 8,000 BCE with the development of numeracy and computational device. Chrisomalis (2009) developed a script which was used alone at least four times in human history in Egypt, China, lowland Mesoamerica, and Mesopotamia. The method of explaining literacy affect the aims and plans of the designed program selected by the people that make policy as well as learning and

teaching procedures, curricula and instructional aid used by educators. Its explanation establishes the way forward in solving the challenge of illiteracy (Bamford, 2003).

The definition of literacy utilized in the Education for All 2000 Assessment is the following: *“Literacy is one’s ability to read and write with the assimilation of an easy report associated to one’s daily life. It involves a continuum of reading and writing skills, and often includes also basic arithmetic skills (numeracy)”* (Soediono, 1989; UNESCO, 2004). Many countries have adopted this definition in their own ways in order to determine the literacy rates of their populations. Literacy is traditionally perceived as the skill to write, read, and use arithmetic. At present, the elucidation of literacy has been enlarged to involve the skill to use computers, language, numbers, pictures, and other fundamental ways to discern, impart, acquire helpful information and utilize the supreme character structure of a culture (UNESCO, 2004). UNESCO (2004), further describes literacy as the “potential to recognize, perceive, elucidate, produce, share and enumerate, utilizing copies and compose information related to changing environment”.

2.3 Different Types of literacy

There are so many kinds of literacy, comprising information, visual, computer, media, digital and technological literacy. Moreover, other types including are distance learning and e-learning, e-Government, e-Commerce, Conventional, Emergent, Initial, basic, functional, critical, professional, legal, medical, statistical, film, teaching, workforce, workplace, survival, business, street, scientific, agricultural, Ecological, transliteracy, magical, family, art’s, civic, electoral, adult, political, popular, diaspora, electoral, multi-literacies, emotional, oral literacy and so on (Woody, 2007).

2.3.1 Visual Literacy

Debes (1968), was the first to use the word “visual literacy” John, et al (1996), which connotes the concept as a set of perception ability a human being can experience by understanding and at the same time having and integrating other sensory skill (Bamford, 2003). This means that through visuals one can communicate the meaning and the passage of the information conveyed. Furthermore, Meghan et al (2002), see visual literacy as the “potential to formulate the explication from visual images”. On another hand, visual literacy can also be seen as the capability to elucidate, obtain, and make sense from what is conveyed in the form of reflection, expanding the denotation of literacy, which frequently implies an explanation of a written or printed text.

The significance of visual literacy has been clearly revealed to the mind across disciplines (Bamford, 2003). For instance, x-rays and maps reading has been of great significance to our lives. Identically, humans have reckoned on pictures to make relevant explication and perception of intellectual appealing and intricate suggestion such as mathematical/chemical formulas or the reading of architectural idea. Other disciplines including Communications studies, Cultural studies, Educational/Instructional Technology, Linguistics, Literacy, Media studies, Philosophy, Psychology, Perceptual physiology, Semiotics, Sociology, Instructional design, Visual arts, Art History, Aesthetics (Bamford, 2003).

The importance of visual materials in education is not that new, nor exclusive to the West. Visual materials had a smaller role in the classrooms of recent Western civilization, which was based on a language defined by sounds. As early as the late eighteen centuries, the Swiss educator Pestalozzi realized that visual materials had a

noteworthy influence on learning. He pioneered the use of manuals, a visual medium, as he was limited by the technology of the time (Meghan et al., 2002).

In the 20th century, visual materials have become increasingly dominant in schools. However, educators focused on written texts for the early part of United State of American history (ALA, 1998).

It was believed that students learned more from reading words than seeing charts, images or pictures. The evolution of the visual materials in classroom played a serious role and with the introduction of technology combined with attitudes change in education allowed this to happen. In American History textbooks, artwork proved a powerful medium to instill patriotic and ethnocentric themes along with lessons from history. The artwork would work as a complex text, encoding the desired emotions and attitudes in the visual medium or literacy (Bamford, 2003).

However, “Visual literacy in education” enhances a student’s visual literacy – their skill to understand, make use of, and exchange information via a visual mechanism, mainly in the guise of pictures or multimedia (Bamford, 2003). Visual literacy is a staple of 21st-century skills, which affirms that learners must “display the potential to elucidate, identify, acknowledge and perceive what is conveyed via perceptible acts, ideas, and characters, natural or man-made.” Although video technologies have a large impact on education, is obvious (Meghan, 2002).

A low level of visual literacy may be required to comprehend the ideas and attitudes in the educational artwork. However, it requires a high level of visual literacy to understand the artwork critically and to interact with the artwork instead of seeing it

as absolute truth. Knowledge now is constructed, teaching is a kind of coaching, and learning is active or interactive. The classroom is no longer isolated from the world (Meghan et al., 2002). Information technologies, increasingly presented visually, bring the classroom in real time contact with new information (Meghan et al., 2002). Andretta (2005), concept of “teaching as a coaching” is not new, but has a different meaning in relation to information technology. If the student has access to limitless information, it reduces the teacher’s role as information supplier. But if the student is not equipped with the tools of visual literacy, this overabundance of visual information is useless, or worse. One of the aspects of “coaching,” is to teach critical visual literacy (Andretta, 2005).

2.3.2 Computer Literacy

Computer literacy has two components: a knowledge constituent that necessitates people to have an understanding of how computers influence her/his daily life and a capacity vehicle that demand people to display hands-on experience with an application software (UNESCO 2006).

This means that computer literacy can be seen as the skill to utilize a computer and its software efficiently. On another hand, computer literacy is the productive skill which an individual utilize in handling computers as information processing device. A computer embedded both ICT and media literacy (John, et al., 1996).

Soediono (1989) and UNESCO (2004), categorize Computer Literacy into the following groups:

- **Hardware Literacy:** can be seen as a set of operations one need to know in order to use a computer or the physical element such as the computer data storage, monitor or hard disk drive (HDD) effectively. For instance, knowing

to use a mouse, a keyboard, a printer, a scanner, the monitor and other devices.

Hardware literacy deals with “observable,” and physical elements, and their performance (Soediono, 1989; UNESCO, 2004).

- **Software Literacy:** is the set of guidelines that tells the computer regarding the task to be performed and how to perform it. Major types of this literacies include basic software system (example: windows), word processing software (examples: Word/WordPerfect, spreadsheet/Excel, PowerPoint). Software literacy deals with non-physical and “imperceptible” things (Soediono, 1989; UNESCO, 2004).
- **Applications Literacy:** this refers to the fact of, and the potentials required to effectively utilize different remarkable motivation software packages (Soediono, 1989; UNESCO, 2004).

2.3.3 Media Literacy

The definition of Media Literacy deals with the skill to acquire, assess, examine, and create exchange information in different forms. Example of media literacy are newspapers, magazines, television and so on. Media literacy requires relevant facts needed to effectively access old and new media technology and expressing adverse relationship to media content at a time when the media comprise one of the most influential impacts on the society (Woody, 2007). This literacy helps to increase the knowledge of media in the society by encouraging active citizenship, good knowledge of development and lifelong learning (David, 1991).

Accessing media and media habit enhance the ability to use the function and the process effectively. For instance, changing the orientation of Television channels, using Internet links; having the capability in controlling media; comprehension of

enacting law and another directive in the fields (example, freedom of speech) (UNESCO, 2006).

Understanding means having the skill both to comprehend/explicate and to obtain viewpoint on media satisfaction as well as having a crucial orientation. Producing includes communicating with the media (calling radio programmers to give a suggestion, taking part in conversation rooms on the Internet, e-voting, and so on) as well as creating media content (Gilster & Watson, 1997). Eligible skill acquired by the production of quality information for media support to provide effective reasoning of media content (UNESCO, 2006).

Media literacy is a question of potential, knowledge, and understanding, but it is also contingent on the institutions, texts, and procedures through which facts and information are transmitted. Logically, the notion of media literacy is used both at the individual and the societal level (Head & Eisenberg, 2009).

2.3.4 Digital Literacy

Historically, digital literacy can be traced back to media literacy, as media literacy was used 3000 years ago which was effective for public speaker used as meaningful content (Bawden, 2001). Literacy in its own basis means the passage of information through language and was different to involve reading and writing. The use of movable camera has relieved the stress of creating and transmitting images - so instructor inaugurated the notion of visual literacy, draw special attention on the relevance of looking at images, and perceive the way images impart and convey the message (Gillen, 2015).

Digital literacy as a cross-curricular subject matter where learners will, obtain ability which involves the self-confident and vital use of ICT, leisure, and work. They also

emphasize that learners, obtain the needed potentials in ICT structured around four major overlapping strands (Gilster & Watson, 1997).

However, a report produced by the Royal Society (2012), shows that “Digital Literacy means the relevant skill or capability to utilize a computer effectively, confidently and safely which comprises the ability to utilize office software such as presentation software, word processors and the usage of the email effectively”. This lay emphasis on the required skill to produce and select audio, images, and video, and also the skill needed to use internet search engine and web browser effectively. These are the skills instructors/teachers who teach other subjects at the high school/colleges level should possess and they should be able to assume that their pupils possess the same ability to read and write.

In addition, digital literacy is another type of literacy that incorporates different cognitive ability that is used in tasks execution in digital environments, for example, using the internet and so on. Digital literacy has become a visible concept (Woody, 2007).

In the seminal work of Gilster and Watson (1997), he saw a progressive agreement about the digital literacy in which the word has very much contended.

In the work of Gillen and Barton (2010), it is emphasized that denotations are enhanced in a well-defined idea and become visible from different historical context. Their argument leads to the creation of working definition which target was to the specific audience. Similarly, different definitions came into existence to address a different audience.

2.3.5 Technology Literacy

Technology literacy is simply the appropriate use of technology to examine, accomplish, communicate, combine, assess, solve problems, and generate information needed for lifelong knowledge. In addition, technology literacy embeds many literacies among them are the internet, information, digital and computer literacy (Woody, 2007).

2.3.6 Information Literacy

Information literacy is one of the kinds of literacy and it is discussed in the next section and also elaborated throughout this research because it is very important concepts in this study.

2.4 Information Literacy and its importance

This section looked into the concept of information literacy, different levels of information literacy skills (basic, intermediate and advanced ILS), who is information literate, role, important and dimensions of information literacy (Andretta, 2005).

2.4.1 The Concept Information Literacy

Information Literacy concept cannot be described to the work of a single author, rather it was introduced in the 1970s for the first time in a report projecting its integration with US National Education Program in the ensuing a decade (Andretta, 2005). In his study, information literacy is described as: “the ones who have the potentials to employ in their works information and information resources are information literates. People who are blessed with such skills are people who can learn life-long since they can solve their problems on the basis of information”. In this approach, this denotation has achieved a wider elucidation and is seen as the key to rising as a successful individual in the information society (Andretta, 2005).

The word *information literacy* is also referred to as information efficiency, which is another kind of literacy and is defined as a set of ability that enables learners to pass through the abundance of knowledge currently accessible to them in order to find and reclaim what is pertinent and genuine for their research requirements (Woody, 2007). However, an information literate learner/student/pupil masters how to find, recover, evaluate, and utilize information effectively (Ranaweera, 2008). In addition, when there is a need for information, Information literacy is the means to recognize, that is, Information literacy is able to identify, locate, evaluate, and effectively use that information for the problem or issue at hand (NFIL, 2012).

A research by Andretta (2005) states that Information literacy notion develops from diverse fundamental library ideas such as user education, bibliographic education, library instructions and information literacy programs. Figure 1 summaries the idea of (Lau, 2006).

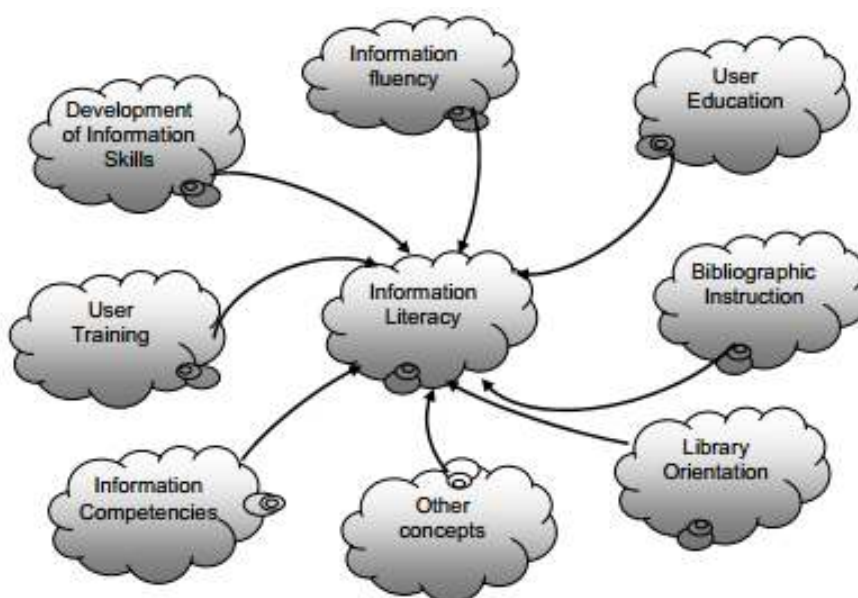


Figure 1: The concept of information literacy (Lau, 2006)

Furthermore, Grassian and Kaplowitz (2009) states that “IL is used as an umbrella expression for a set of potentials that are essential to discover, examine, analyze, and utilize information effectively”.

At present, the difficulty about promoting information literacy are deliberated regularly between instructors and librarians in higher education as competence associated to IL are suggested to play a vital function in the self-control and development of facts (Joo, et al, 2000).

With respect to teaching psychology, Navid and Rathus (2007), also focus on the need of promoting IL efficiency, as they are relevant for college students’ preparedness to participate in the systematic inquiry.

Johnston and Sheila (2003), argued that in spite of the need for IL, various studies reveal that students in higher education regularly do not possess these skills or effectiveness to the deficiency in IL decree result.

Similarly, Head and Eisenberg (2009), investigation show that college students’ approach to collect knowledge is sporadically developed and usually not changed in order to improve the quality of the information issue presented to them. As a matter of fact, promoting students’ IL in higher education seem to be completely obligatory.

2.4.2 Basic Information Literacy Skills

Basic Information Literacy Skills (BILS) are the skills that are necessary to perform simple or most simple and concrete literacy skills and everyday information literacy activities (Cameron, 2018). It can also be seen as an introductory class or elementary things that are expected to be learned or known for every student and researcher to

introduce some of the basic information about the library and its resources which can be used in order to search for information. At this level, students are expected to have the following information skills and ability to:

- use maps and user guides to locate services and collections of library materials
- locate an item by call number and use classification of the library system to browse
- develop a focused strategies and topic to obtain information that is needed
- gather background information in textbooks, journal, encyclopedic, and periodicals print sources
- search for information by author, title, and keyword in the online library catalog
- identify relevant vocabulary terms to the search topic
- observe copyright guidelines; use, store, and obtain data and text
- recognize the need for information for any purpose been work, personal and academic

2.4.3 Intermediate Information Literacy Skills

Intermediate ILS are the skills necessary to perform moderately challenging Information literacy activities (Cameron, 2018). At Intermediate level, students or researchers are expected to be able to undertake the following information skills:

- conduct a search in an interdisciplinary database
- modify information that is broad into a manageable focus
- identify the range of available resources for their specific study area
- interpret database and catalog search results
- match search tool to information that is needed. Examples of this tool are Google search, academic library databases, and so on

- revise the topic if the information provided is not satisfactory

2.4.4 Advanced Information Literacy Skills

In Advanced Information Literacy Skills (AILS), the researchers or students at this level are more proficient in information literacy and an individual at this level possesses the skills necessary to perform more complex and challenging information literacy activities (Tom, et al, 2016). At this level, students or researchers are able to:

- use appropriate subject-based style manuals or citation style formatting software
- investigate methods in the major subject
- search for information using the bibliographic database, MyCite, Google Scholar, Microsoft Academic, Open Access, and so on
- write by using bibliographic management (Mendeley), rephrase, mind map (sketchboard), cloud storage (Dropbox), data analysis (SPSS), and Plagiarism checker (Turnitin)
- publish articles and select journals that are suitable for the articles and also observe copyright checker.
- Monitor and share researcher profile; scientific social network like Research Gate and LinkedIn

2.4.5 Who is Information Literate?

An information literate individual is obliged to possess information technology readiness to meet information needs using related technologies (ACRL, 2000). Other criteria that information literate persons must possess are enumerated below:

- Ascertain the scope needed for information.
- Analyze the effectiveness of information in a competent way.
- Assess the sources of information deeply.

- Integrate specific information into one's understanding base.
- Utilize information effectively to achieve a particular objective.
- Use of information to understand cultural, economic, social, legal, and political-cultural issues.

Information literacy (IL) means knowing when one needs information, where to find the information needed, and how to analyze, utilize and exchange information in an ethical manner (ACRL, 2000). This meaning can be applied to several potentials. Furthermore, an information literate person is expected to understand:

- the information necessity
- the information obtainable
- how information can be found
- the importance to analyze results
- how to work with results
- how to exploit results
- how to exchange information discovered
- how to control his/her findings?
- how to share and/or communicate findings

The need to become information literate has become even more captivating which requires immediate action for school-going children in the 21st century (ANZIIL, 2004). At the primary level, to be information literate, school students are anticipated to know how to identify information he/she needs and have the skill to discover, analyze, and know how to utilize the required information.

Ismail (2014) states that “school education system today carries a heavy responsibility to educate students on information literacy to prepare them for higher education requirement and future working place”. Bawden (2001) defines “the characteristics of information literacy to include the following”:

- ability to integrate resources and knowledge of tools;
- not absolutely related to the library;
- well defined form, but essential to computer literacy;
- not just information searching;
- advanced through a particular perspective;
- labor and time intensive;

In conclusion, an individual is said to have information literacy when he/she can discover which information is required and can analyze them easily.

2.4.6 Roles of Information Literacy

Ghosh (2007), proposes five distinct focus areas and these areas indicate how stakeholders in information literacy can utilize the ability of knowledge resources needed to achieve all the listed societal goals shown in Figure 2:

- Knowledge accessing, this include library, open software source, open courseware, information infrastructure and networks,
- Knowledge concepts, this include professional skills,
- Knowledge creation deal with research capabilities in one field,
- Application of knowledge, this simply means one been productive in his/her area specialization, and
- Knowledge services mean one been sensitive to the common men causes or trying to offer free help to common men.

Figure 3 identified different stages in one's life starting from birth to retirement age. During infancy and childhood, one needs to take nutrition in order to grow normally and some basic education. The young people are expected to have formal education knowledge through secondary education and institution of higher learning where they can be informed through the program of information literacy. And after gaining the necessary knowledge and satisfied, he/she can get a job of his/her dream, get a family life and finally get retired, then the person are in a position of sharing wisdom and experiences (Ghosh, 2007).

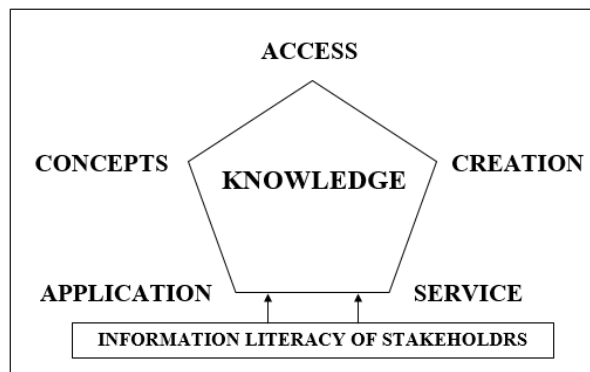


Figure 2: Knowledge of information literacy life cycle (Ghosh, 2006)

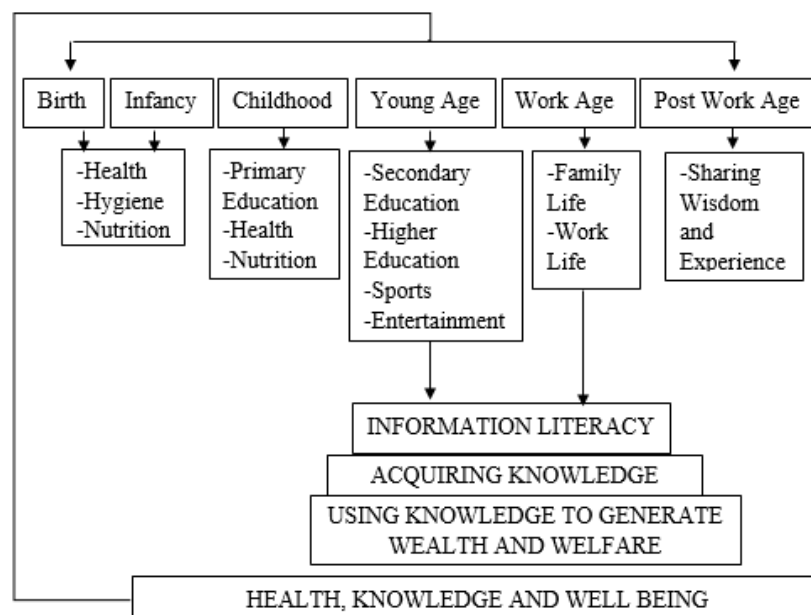


Figure 3: Information literacy life cycle based on an individual's entire life period (Ghosh, 2006)

2.4.7 Importance of Information literacy

Information literacy is one of the essential learning dexterity in the 21st century and its essence is exceptionally good showing the level of fact that is obtainable in current society. Exposing people to the substantial agreement of facts will not make them knowledgeable citizens; they need to learn how to use this information effectively (ACRL, 2000).

In addition, IL helps to solve problems that arise from data smog. Data smog, however, means an enormous excess of information that is obtained through the internet search. Furthermore, IL enables one to manage the smog data, thereby providing the required efficiency to identify when knowledge is needed, where to detect it, and how to efficiently and effectively use it. More-so, this aids productivity and conclusion making which is advantageous to the community, group and/or nation as a whole (Diehm, et al., 1980).

The concept, therefore, is very important in searching and evaluating information, more importantly, in searching for media environments and new information. Also, students/researchers exert the facts gotten via this means in their everyday activities. There are some factors that affect IL, amongst them are contextual factors such as psychological issues like personal efficacy, research, and education of all the persons involved (Diehm, et al., 1980).

2.4.8 Information Literacy dimensions

The Figure 3 indicates that information literacy is never an ending lifelong process and is comprehensive. Section 2.3 of this thesis discusses the most common wide range of different Information Literacy dimensions which include the following literacies: media, network, web, digital, scientific, visual, and critical. Other information literacy

dimensions are library orientation; bibliographic Instruction; user Education; and training on Information Skill (Kurbanoglu, et al., 2006).

2.5 Self-efficacy and its Importance

Self-efficacy also known as personal confidence, is an individual's own opinion about what he/she is competent of doing. It can also be seen as individual assertiveness in one's own capacity to achieve intended results (Tang and Tseng, 2013). Bandura (1977), defines self-efficacy as an individual's skill to literally attain an objective associated with whether or not an individual believes can be achieved successfully.

2.5.1 The Concept of Self-efficacy

Self-Efficacy (SE) was developed by Bandura (1977), and it has been used in various fields of education. Some of the researchers that have used this concept are: (Pajares, 2002) who studied self-efficacy in academic achievement; (Schwarzer & Jerusalem, 1995) used self-efficacy to study health psychology generalized scale; (Scott, 1996) discussed about the self-efficacy key to literacy learning; (Kurbanoglu, et al., 2006) developed the ILSE scale; and (Kurbanoglu, 2003) link self-efficacy and lifelong learning.

In the work of Bandura (1977), "individual possessing strong SE assume to be more successful in handling strenuous positions, believing they could achieve them". In the same way, individual having poor SE assumes, exercises are very hard and requires more effort to accomplish compared to the way it seems to be which keeps them away from such exercise (Bandura, 2011). The study carried out by Kurbanoglu, et al (2006) reveals that "beliefs of Self-efficacy establish extent that a person will continue and how strong is that individual when confronted with challenges and to what great extent will that individual consume on a task". According to Bandura (1997), in his academic

studies, he discovered that students who increase their effort, focus and motivation on the task at hand achieve successful outcomes with high self-efficacy beliefs while decreasing dispelling negative thinking and anxiety. In the same study, it shows that ‘SE convictions controls ones regulating actions which include the use of strategy, setting goal, and self-monitoring/-evaluation’.

Self-efficacy functions/roles have been investigated in relation to learners’ conscious skill, actual academic subject performance, and background characteristics. Various findings indicate that self-efficacy has implications for achievement and self-confidence. Moreover, Namok (2005), investigated both general and academic self-beliefs and the finding indicates more variance on the measure of course grades was accounted for in academic achievement. Exact self-efficacy is corresponding to academic self-efficacy but applies to credence in an individual capacity to be successful in a certain course of study or discipline (Tang and Tseng, 2013).

To take charge of a demanding recent surrounding that varies immensely from high school and demonstrates a powerful adherence to educational desire, learners are required to display strong SE (Yong, 2010). Hence, instructors are expected to understand SE causes learners/pupils to improve their confidence, and finally, academic achievements. In general, SE changes the mindset and character of an individual, effective development, choices and motivation (Nevid & Rathus, 2007).

2.5.2 Importance of Self-efficacy

Kurbanoglu (2003), states that “Self-efficacy is so important that, it influences functioning of human and help to discover how much achievement an individual expect on a given task, how long they will continue when facing difficulty, and how strong they will be in the countenance of unfavorable condition”. In addition, Self-

efficacy affects the behavior and thought of learners in numerous ways. For example, people that have strong SE are brilliant to foresee things happening and elaborate suitable methods to handle those that have an impact on their lives. Also, they accept activity that their SE is high but keeping away from those in which their SE is poor (Kurbanoglu, 2003).

Furthermore, self-efficacy affects learners' inspiration, cognized goals, their causal attributions, and outcome eagerness. As cited by Yong (2010), learners that have strong SE features attribute their non-success to inadequate performance in place of poor capacity. They embrace assumption that definite act generates precise esteem result. Awaiting good outcome, they only have to participate in the exercise they feel they can do, neglecting those they feel they are not capable of doing. They are also inspired by stating clearly difficult goals, direct their behavior, Self-satisfying goals, acting as the motive. In this case, self-efficacy has the power to influences the goals learners set, to what extent do they persist, how strong are they in conquering problems and how much effort they expend (Fung, 2010).

Moreover, self-efficacy has a significant influence on learners, the way they feel and the way they are being developed (adjusting to character, social behavior, and sense of humor). Adjusting the ability to produce the desired result influences how much depression/pressure/worry learners encounter in uncomfortable conditions. Handling efficacy enhances the trust to deal with new environment and conquer anxiety concept and possible threats. Adjusting and handling efficacy, in turn, helps them to lessen pressure, avoidant behavior, and fear (Ismail, 2014). On the other hand, social efficacy helps learners to initiate useful relationships that are important to minimize dejection, pressure or worry (Bong & Skaalvik, 2003).

Finally, self-efficacy affects the course choices they want to study, even it affects the career choice, personal development and so on. Learners usually choose activities and environments they trust and believe that can help their potential. They can develop different competencies, social networks, and interest.

2.5.3 Measuring Self-efficacy

The standard method for measuring Self-efficacy beliefs, people are offered with commodities describing the various level of exercise request, and they estimate the power of their viewpoint in their capacity to accomplish the required activities (Bandura, 2011). Moreover, it has been observed that self-efficacy deals with one's opinion in their skill to generate a stated achievement and is a major intention determinant (Bandura, 1997)

In contrast, Kurbanoglu, et al (2006) believes that there is no all-motive procedure to ascertain self-efficacy. The “one procedure is suitable for all” strategy normally has restricted descriptive and predictive worth a majority of the things in an all-purpose test may have little or no quality to the field of work. Besides, an attempt to fully carry out the plans, the information described are normally discarded in general title which is separated from the contingent wants and demand. This leaves much equivocation about what is totally evaluated or the level of activity and conditional request which have to be controlled. Scales of ascertaining SE must be customized to the specific field of operation which is the goal of attraction (Kurbanoglu, et al., 2006).

According to Bandura (2011), stated that same discern efficacy can happen if an expansion of efficiency is socially organized so that capability in a different area expands together and even if dissimilar task area is not sub-served by common sub-skills. For instances, learners are likely to develop a commonly strong understanding

of SE in different academic subjects, such as mathematics and language in the high-rank institution of higher learning, but correspondingly, poor understanding of efficacy in an inefficient institution does not encourage much academic learning in any subject or course of learning matter.

Finally, the powerful comprehensive knowledge or skill which does not yield visible evidence to individuals' proficiency influences personal development that can generate a transformational organized efficacy determination that is demonstrated over the various field of work. Exceptional personal feats serve as transforming the knowledge or skill.

2.6 Related Research

ILSE play an important role in student academic development and progress. ILSE play a very important role, most especially in the area of new information and media environments (Keshavarz, et al., 2017).

In fact, the combination of the two key concepts are foundations of lifelong learning because an Information literate person can use an inquiry-based framework to create new knowledge and read for understanding (Mitchell, et al., 2013).

The self-efficacy perception applies to all the fields most especially information literacy. The belief of ILSE can be seen as the belief of the people towards using the information, reaching the information, information evaluation and information sharing (Akkoyunlu and Kurbanoglu, 2004). An individual has to develop a positive self-efficacy perception in terms of information skills in order to apply the information problem-solving activities successfully and to be a lifelong learner, self-loading, and self-motivating (Akkoyunlu and Kurbanoglu, 2004).

Several authors have investigated students and ILSE and even published so many papers. The main focus of their research targeted a particular set of students'/pupils ILSE and their academic motivation while others study the information process as it relates to ILSE. Among them are Kurbanoglu, et al (2006) who created and tested an ILSE scale and found out that learners with higher levels of ILSE have a better understanding on how to select information materials and processes that are involved in carrying out research. According to Mitchell, Helen, and Kelli (2013), who surveyed business students and found that there is no significant difference in ILSE between the working class students and those that are not working.

Lifelong learning according to Coaldrake and Stedman (1999), is all informal, formal and non-formal learning, whether predicted or intentional, which occurs at any point in time across an individual lifespan. However, intentional lifelong learning, either self-managed or formally, is regarded as necessary due to rapid change in cultural, technological, economic and social. IL is a 'key enabler' and 'prerequisite' for lifelong learning. However, Head and Eisenberg (2009), argued that information literacy skill can also be regarded as lifelong learning for students in high schools or colleges (Figure 4).

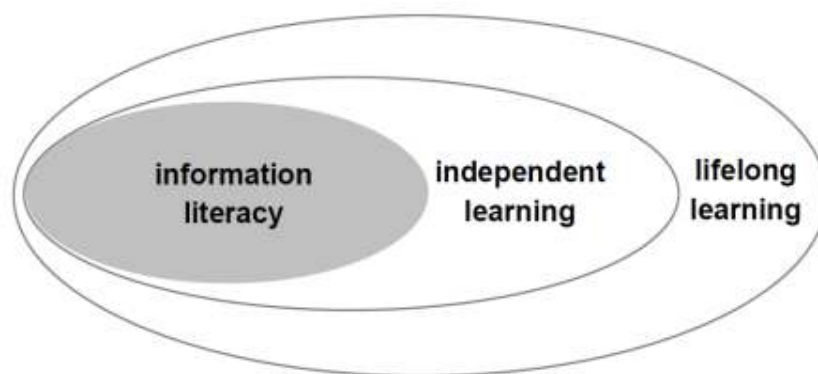


Figure 4: Relationship between Lifelong Learning and Information Literacy
(ANZIIL, 2004)
(<http://www.literacyhub.org/documents/InfoLiteracyFramework.pdf>)

ILSE role in the educational and learning achievements of students was also examined by De Meulemeester (2013). In the study, the research outcome showed that IL skills of learners did not change after the second year, but there is an increment in their ILSE according to their level of education.

Keshavarz, et al. (2017), examine elementary student teachers', ascertain ILSE in terms of the use of Information Communication Technology. Their research considered (1,801) student teachers using the Information Communication Technology (ICT) survey and ILSE perceived scale. The information discovered from this study discloses that ICT is often used by the primary school student teachers, most especially at the intermediate level, they access ICT from multiple locations. Furthermore, the use of internet, experience, and computer skills, as well as, access opportunities to computers and the internet by the primary school student teachers' has a significant effect on their perceived ILSE.

Studies have also been conducted to develop new information literacy self-efficacy scales. For example, Tepe and Tepe (2015), developed a scale in relation to information literacy knowledge test. The findings in this study resulted in the development of three instruments: a 25-item information literacy self-efficacy survey, a 50-item information literacy knowledge test, and a 25-item information literacy knowledge test. The information literacy self-efficacy survey and the 25-item version of the information literacy knowledge test have shown preliminary evidence of adequate reliability and validity (Tepe and Tepe, 2015).

Tuncer and Balci (2013), state that the relationship between self-efficacy, information literacy, and computer self-efficacy, as well as the achievement of information literacy,

has also been examined by researchers. Their findings show that computer self-efficacy has a positive effect on information literacy self-efficacy. Nevertheless, it is observed that the information literacy self-efficacy has no significant effect on the achievement of information literacy, and also the computer self-efficacy has no significant effect on the achievement of information literacy (Tuncer and Balci, 2013).

Chapter 3

METHODOLOGY

This chapter exploits the detailed information on research method, the participants, the research design, the tools for data collection, analysis of the data, the study reliability and validity.

3.1 Research Method

The research method of this study is survey. Therefore, quantitative research method is used in order to gather data.

Isaac and Michael (1997), define survey method as response to particular question(s) that have been raised to solve certain problems that have been observed, to determine whether or not specific aims and objectives have been achieved.

Furthermore, Glasow (2005), divided survey research into three distinguishing characteristics. Firstly, survey research is used to quantitatively describe specific aspects of a given population. Secondly, the data collected are subjective because it was collected from the people. The last characteristics of survey research are that it learns about a large group of the population and survey a sample of the population. Finally, survey method can obtain data using questionnaires.

A quantitative technique enables the researcher to examine the connection between two variables, while survey method is used to quantitatively illustrate certain features of a specific population. In inclusion, surveys are also used to determine necessity, assessing wants, and analyzing influence (Glasow, 2005).

The advantage of quantitative research is its systematic framework, easy data analysis, an expeditious way of explaining data, its empirical theory. Furthermore, the quantitative approach is often used in order to carry out social research. This method is rooted in a powerful academic stand that places relevant and meaningful confidence in the quantity that typifies divergent viewpoints and ideas (Aliaga and Gunderson, 1999).

However, quantitative methods deal with actual value and the statistical, mathematical or numerical analysis of collected data through questionnaires, surveys, and polls. Moreover, the quantitative research method is used to interpret frequency through the numerical data collection which is then explained based on statistical and mathematical methods (Aliaga and Gunderson, 1999).

In addition, this method is used to respond to questions on the connection between noticeable variables with the aim to describe, speculate and handle facts (Leedy, 1993). In the study of Bryman (2005), quantitative techniques are claimed to be imparted with positivism which is an approach to the study of people that command the implementation of the systematic method.

3.2 Participants

The participants of this research consist of 130 Information Technology (IT) students from School of Computing and Technology, Eastern Mediterranean University in the

academic year 2017-2018 Fall semester. Sample size is the number of completed responses of survey received (Table 2). It's called a sample because it only represents part of the group of people (or population) whose opinion or behavior you care about (Bryman, 2005). Table 3 below presents the students' demographic information frequencies.

Table 2: Sample Size of the Study

Sample Size	350
Confidence Level (%)	95
Margin of Error (%)	7
Total Sample Size	126

Table 3: Students' Demographics Information Frequencies.

Demographic Variable	Frequency (f)	Valid Percent (%)
Gender		
Male	106	81.54
Female	24	18.46
Age		
below 18 years	14	10.77
19 – 21 years	57	43.85
22 – 24 years	36	27.69
25 – 27 years	13	10.00
Over 28 years	10	7.69
Level/Class		
First Year	33	25.39
Second Year	50	38.46
Third Year	28	21.54
Fourth Year	19	14.62
Total	130	

According to the Table 2 above, the participants involved in this study are 130 students, of which 81.54% of them were females and 18.46% of them were males, from various level of the undergraduate program in School of Computing and

Technology. According to age of the students in the same table, 10.77% were below 18 years, 43.85% were between the ages of 19 – 21 years, 27.69% were between the ages of 22 – 24 years, 10% were between the ages of 25 – 27 years, and 7.69% were over 28 years old.

Besides, the research study considered all the level of undergraduate degree student, 25.39% of the students have just spent one year, 38.46% of the participants are in their year two, 21.54% are in the third year, while 14.62% of the students have been in their last year of their study.

3.3 Data Collection Tools

In this research work, the data are gathered through the questionnaire. The close-ended questions are provided and developed to obtain a general grasp of IT students' Information Literacy Self-efficacy, so the following explains the approach used for collecting data.

3.3.1 Questionnaire

A questionnaire is a collection tool/instrument that consists of a series of questions, for the purpose of information gathering from the participants. In order to use a questionnaire, the following steps are important: the objectives of the research, target of the respondents and methods to reach them, and results from interpretation.

The questionnaire used to obtain the data was developed by Kurbanoglu et al. (2006), titled "ILSE scale – 17-item initial version" (Appendix A). At the root of self-efficacy lies human motivation and personal achievement. The way a person perceives self-efficacy is not the measure of that individual's skills but the belief in their ability to perform under diverse conditions with the skills possessed. The scale, therefore, did

not test students' information literacy capabilities but rather their perceived confidence and competency in using the skills of information literacy.

The research objectives were addressed by the adapted questionnaire and it comprises of two sections. The first section is asking demographic information of students such as age, class level, gender, and the second section involved 17 items in order to obtain IT students' ILSE level. In addition, second section items containing 7 point Likert scale which included almost always true (7), usually true (6), often true (5), occasionally true (4), sometimes but infrequently true (3), usually not true (2), and almost never true (1) (Appendix A). The Likert scale number 7, 6, and 5 shows the level of confidence the participants have towards the information literacy and self-efficacy. However, "almost always true" means that the participant feels competent (85%-100%) while "usually" is around (75%-85%) and "often" true means that the respondent level of confident is around (65%-75%) respectively. For Likert scale number 4, 3, 2, and 1, it means that the participant is 55%-45%-25%-0% respectively confident and competent to ILSE skills.

3.4 Data Analysis

The collected data are analyzed using SPSS software, version 22. This software application contains powerful tools required to carry out the statistical analysis. This study calculated the mean, standard deviation, percentage, frequency, independent sample t-Test, and one-way ANOVA test in order to assess IT students' Information literacy self-efficacy. Also, to assess and investigate Basic, Intermediate, and Advanced Information Literacy Skills of IT students, and to examine whether there are significant differences between students' based on their gender, age, and study level.

3.5 Reliability and Validity

The concept “Reliability” is used for checking or analyzing quantitative research, the opinion is most frequently exploited in all sort of study. In addition, the research reliability can also be seen as the likelihood of acquiring a similar result when the researcher evaluates the identical variable more than once or different persons evaluating similar variable. Furthermore, reliability measures the extent to which measures are free from errors (Leedy, 1993).

A tool is said to be reliable if its assessment exactly indicates the accurate result characteristics in the state of examination. Therefore, reliability involves the evaluation of exactness of the data collection tools, and reliability is an effect tool for the validity of a study (Glasow, 2005).

The Kurbanoglu, et al. (2006) carried out a study on information literacy 17-item self-efficacy scale, with a Cronbach’s alpha reliability coefficient of 0.82, was employed to measure the students’ beliefs about their information literacy. The Table 4 below illustrates the Cronbach’s Alpha result of this study.

Table 4: General Reliability

	Cronbach’s Alpha	No of Items
Information literacy self-efficacy scale	0.912	17

As it can be seen in Table 4, the result of Cronbach’s alpha in this study is, (n=17), (0.912), which is quite high.

Notwithstanding, in this study, item discrimination and analysis were used to address the validity of the item on the scale to the extent to which the items tap the attributes they were intended to assess. The research validity is defined in three levels. The validity is considered as low in terms of internal validity, as limited based on the control over the research settings and variables, and as high in terms of external validity. In addition, external validity is the degree to which the research results can be generalized to other research settings and other people (Bryman, 2005).

Chapter 4

FINDING AND DISCUSSION

This chapter's aim is to examine the collected data regarding IT students' information literacy self-efficacy. The study utilized quantitative research method in order to examine undergraduate students' perceptions in terms of the use of ICT.

4.1 Information Literacy Self-efficacy of IT Students

The Table 5 below illustrates the descriptive statistics of students' answer to the items of the questionnaire, which contained 17 queries.

Table 5: Descriptive Analysis of Students Information Literacy Self-efficacy

Items	Mean	Standard Deviation
1. Define the information I need	4.75	1.700
2. Select information most appropriate to the information need	5.05	1.661
3. Interpret the visual information (i.e. graphs, tables, diagrams)	4.97	1.604
4. Write a research paper	4.32	1.843
5. Prepare a bibliography	4.08	1.619
6. Create bibliographic records for different kinds of materials (i.e. books, articles, web pages)	4.05	1.677
7. Make citations and use quotations within the text	4.85	1.700
8. Learn from my information problem-solving experience and improve my information literacy skill	5.05	1.720
9. Use different kinds of print sources (such as books, periodicals encyclopedias, chronologies, etc.)	4.89	1.658
10. Use electronic information sources	5.42	1.564
11. Locate information sources in the library	4.64	1.851
12. Use library catalog	4.31	1.999
13. Locate resources in the library using the library catalog	4.29	1.978
14. Synthesize newly gathered information with previous information	4.65	1.670

15. Determine the content and form the parts (introduction, conclusion) of a presentation (written, oral)	4.98	1.635
16. Create bibliographic records and organize the bibliography	4.04	1.727
17. Criticize the quality of my information seeking process and its products	4.90	1.760

The Table 5 includes the average and the standard deviation of the Information literacy self-efficacy. The mean scores of use of electronic information sources show the highest mean compare with other 16 items. While highest standard deviation was recorded in the use of library catalog.

Furthermore, the results of the survey showed that students enrolled in the Department of Information Technology have a positively perceived self-efficacy for information literacy, scoring 5.42 and 5.05. This can be interpreted as the students of the Information Technology Department feeling efficacious about performing information literacy related to the use of electronic information sources; selecting and learning information problem-solving improve their information literacy skills.

According to the mean scores of creating and organizing bibliographic records, students had the lowest score (4.04) while creating bibliographic records for different kinds of materials also give low average score of 4.05 which indicates that students didn't know how to perform the task compared with others items.

4.1.1 Basic Information Literacy Skills of IT Students

The Table 6 below shows the frequencies and the percentages of basic ILS.

Table 6: Frequency of Basic Information literacy skills of IT students

	Questions	Almost never true	Usually not true	Some Times but infrequently true	Occasionally true	Often true	Usually true	Almost Always true
1	Use different kinds of print sources (such as books, periodicals encyclopedias, chronologies)	6 (4.6)	9 (6.9)	11 (8.5)	17 (13.1)	32 (24.6)	34 (26.2)	21 (16.2)
2	Use electronic information sources	2 (1.5)	8 (6.2)	6 (4.6)	15 (11.5)	26 (20.0)	32 (24.6)	41 (31.5)
3	Locate information sources in the library	11 (8.5)	12 (9.2)	12 (9.2)	16 (12.3)	25 (19.2)	35 (26.9)	19 (14.6)
4	Use library catalog	14 (10.8)	21 (16.2)	11 (8.5)	15 (11.5)	23 (17.7)	26 (20.0)	20 (15.4)
5	Locate resources in the library using the library catalogue	15 (11.5)	18 (13.8)	12 (9.2)	18 (13.8)	22 (16.9)	26 (20.0)	19 (14.6)

As it can be seen from the Table 6 above, almost 75% of the students agreed that they can use electronic information sources and more than half of the respondents can use different kinds of the printed source of information like books, encyclopedias, and chronologies. 26% of the students reported not to be able to locate information in the library while almost half of the student cannot locate resources in the library by the use of library catalog.

4.1.2 Intermediate Information Literacy Skills of IT Students

The Table 7 below show frequencies and the percentages of intermediate ILS and many students show that they can Learn from information problem-solving experience and improve their information literacy skill.

Table 7: Frequency of Intermediate Information literacy skills of IT students

Questions	Almost never true	Usually not true	Some Times but infrequently true	Occasionally True	Often true	Usually true	Almost Always true
1 Define the information I need	7 (5.4)	9 (6.9)	14 (10.8)	21 (16.2)	28 (21.5)	31 (23.8)	20 (15.4)
2 Select information most appropriate to the information need	5 (3.8)	5 (3.8)	15 (11.5)	20 (15.4)	24 (18.5)	31 (23.8)	30 (23.1)
3 Interpret the visual information (tables, diagrams)	3 (2.3)	8 (6.2)	14 (10.8)	21 (16.8)	30 (23.1)	27 (20.8)	27 (20.8)
4 Write a research paper	12 (9.2)	16 (12.3)	10 (7.7)	28 (21.5)	29 (22.3)	15 (11.5)	20 (15.4)
5 Prepare a bibliography	6 (4.6)	20 (15.4)	21 (16.2)	28 (21.5)	32 (24.6)	11 (8.5)	12 (9.2)
6 Create bibliographic records for different kinds of materials (books, articles, web pages)	10 (7.7)	13 (10.0)	29 (22.3)	25 (19.2)	25 (19.2)	17 (13.1)	11 (8.5)
7 Make citations and use quotations within the text	5 (3.8)	9 (6.9)	12 (9.2)	30 (23.1)	21 (16.2)	25 (19.2)	28 (21.5)
8 Learn from my information problem-solving experience and improve my information literacy skill	5 (3.8)	8 (6.2)	14 (10.8)	18 (13.8)	19 (14.6)	36 (27.7)	30 (23.1)

As seen in the table, almost 40% of the participants do not know how to prepare and create bibliographic records from web pages, books, and articles. The result obtained shows that approximately 64% of the students can select, define, and interpret visual information from tables, maps, graphs, and diagrams thereby elucidating the appropriate information needed. Finally, students are more familiar with the use of quotations within the text and they can make citations.

4.1.3 Advanced Information Literacy Skills of IT Students

The Table 8 below shows frequencies and the percentages of advanced ILS.

Table 8: Frequency of Advanced Information literacy skills of IT students

	Questions	Almost never true	Usually not true	Some Times but infrequently true	Occasionally true	Often true	Usually true	Almost Always true
1	Synthesize newly gathered information with previous information	4 (3.1)	13 (10.0)	16 (12.3)	25 (19.2)	26 (20.0)	26 (20.0)	20 (15.4)
2	Determine the content and form the parts (introduction, conclusion) of a presentation (written, oral)	2 (1.5)	7 (5.4)	19 (14.6)	24 (18.6)	21 (16.2)	26 (20.0)	31 (23.8)
3	Create bibliographic records and organize the bibliography	8 (6.2)	16 (12.3)	35 (26.9)	19 (14.6)	23 (17.7)	14 (10.8)	15 (11.5)
4	Criticize the quality of my information seeking process and its products	8 (6.2)	8 (6.2)	9 (6.9)	23 (17.7)	27 (20.8)	26 (20.0)	29 (22.3)

In the table, almost 45% of the participants reported not to be able to create and organize bibliography while 40% reported otherwise and less than 15% still neutral. However, more than half of the students show that they can really synthesize newly gathered information and can determine the content and form the parts of a presentation and a good number of the students can criticize the quality of the information they process and produce. These findings was similar to that of Tang and Tseng (2013).

4.2 IT Students Information Literacy Self-Efficacy Based on their Gender, Age, and Level

This section discusses the findings of IT Student Information Literacy Self-efficacy based on their gender, age and level by using t-test and ANOVA. Also, descriptive statistics were used to describe the means and standard deviations for students ILSE based on their age and level.

4.2.1 IT Students Information Literacy Self-Efficacy and Gender

To examine whether IT students ILSE differs significantly among male and females, independent sample t-test is computed.

Table 9: IT Student's ILSE on how to make citations and use quotations within the text, depending on the gender

Gender	N	Mean	SD	df	t	p
Male	106	4.68	1.699	128	2.395	0.018
Female	24	5.58	1.530			

*p < 0.05

As displayed in Table 9, the average score for the male gender is 4.68, with a standard deviation of 1.699 and the mean score and the standard deviation for the female gender are 5.58 and 1.53, respectively. The result shows that there is a significant difference between male and female since $t(128) = 2.395$, $p = 0.018$ (which is less than 0.05). The results show that there is the remarkable significant difference on how students make citations and use quotations within the text for male and female.

Furthermore, Table 10 below shows the differences of IT students' ILSE for item-2 based on the gender.

Table 10: IT Student's find it easy to select information that most appropriate to the information needed, depending on the gender

Gender	N	Mean	SD	df	t	p
Male	106	5.02	1.656	128	-0.392	0.695
Female	24	5.17	1.711			

*p < 0.05

According to the result in Table 10, t-value is -0.392, sig=0.695 which is greater than 0.05, there was no significant difference between the female and male gender. This implies that students find it easy to select information that is most appropriate to the information needed. Therefore, it was concluded that male and female students are not negative in terms of information selection.

According to the findings, the mean score of female IT student's Information Literacy Self-Efficacy (Mean = 5.17, SD = 1.711) relating to lifelong learning tendencies are higher than those of male (Mean = 5.02, SD = 1.656). These findings are similar to those reported by Demirel & Akkoyunlu (2017); Chu (2012); Usluel (2007); and Coşkun (2009). In their studies, the information literacy self-efficacy of female students was found to be higher than that of the male students.

4.2.2 IT Students Information Literacy Self-Efficacy and Age

In order to confirm that the participants of ILSE on each of the question in the questionnaire are not affected by age, one-way ANOVA was computed.

As the outcome shows, in item 11, there is a significant difference on how to locate information sources in the library, among the IT students' ILSE from different age groups.

The Table 11 indicates the descriptive statistics of IT students ILSE on how to locate information in the library while Table 8 illustrates the students' ILSE level depending on the age.

Table 11: Descriptive statistics of IT students' ILSE on how they locate information sources in the library

Age	N	Mean	Std. Deviation
below 18	14	5.50	1.871
19-21	57	3.95	1.695
22-24	36	4.61	1.975
25-27	13	5.38	1.758
above 28	10	3.50	1.780
Total	130	4.41	1.887

Table 12: ANOVA summary table for IT Students' ILSE on how to locate information sources in the library, based on the age group

Variance Source	Sum of Squares	df	Mean Square	F	P	Significant Difference
Between Groups	50.918	4	12.729	3.895	0.005	below 18/above 28
Within Groups	408.475	125	3.268			
Total	459.392	129				

*p < 0.05

The analysis results in Table 11 indicate the descriptive statistics, including the number of the participants by age range, means, and the standard deviations. Table 12 indicates that there is a remarkable significance difference between IT students' ILSE and different age groups, [F (4, 125) = 3.895, p=0.005] on how student locate information sources in the library. Thus, an analysis of Bonferroni confidence intervals was examined as a follow-up test and the results indicate that the average score for age group below 18 (mean = 5.50, SD = 1.871) is more significant than age group that is above 28 (mean = 3.50, S.D = 1.780). Hence, the first group of students (below 18 years) know how to locate information sources in the library compare with other

groups. These findings are similar to those reported by Coşkun (2009); Demirel and Akkoyunlu (2017); and Kurbanoglu (2003).

4.2.3 IT Students Information Literacy Self-Efficacy and Level

The result of ANOVA on IT students' Information literacy self-efficacy indicate that there is no difference depending on the students' study level except the following items that did not concur:

4.2.3.1 Define the information I need

Table 13: Descriptive statistics of IT students' ILSE on how they define the information they need, depending on the study level

Level	N	Mean	Std. Deviation
Level 1	33	4.27	1.859
Level 2	50	5.24	1.585
Level 3	28	4.21	1.572
Level 4	19	5.05	1.545
Total	130	4.75	1.700

Table 14: ANOVA summary table for IT Students' ILSE on how they define the information they need, depending on the study level

Variance Source	Sum of Squares	df	Mean Square	F	P	Significant Difference
Between Groups	29.296	3	9.765	3.584	0.016	Level 2/Level 3
Within Groups	343.327	126	2.725			
Total	372.623	129				

*p < 0.05

Descriptive statistics for the definition of the information student need are shown in Table 13. The ANOVA results indicate a significant difference in how students define the information they need, $F(3, 126) = 3.584$, $p=0.016$ (see Table 14). More so, the results of the post hoc comparison show that two study levels, level 2 and level 3, differed significantly between the two study levels. These significant differences suggest that level-2 mean scores agreed on how students define information they need.

4.2.3.2 Make Citations and use quotations within the Text

The mean and the standard deviations for all the four study levels of the undergraduate degree students are described in the descriptive statistics Table 15 below. Next, ANOVA was used to compare the final learning results of the four levels (Table 16). Finally, post hoc comparison was run to examine whether there was a difference between the study levels. Below tables are the results obtained.

Table 15: Descriptive statistics of IT students' ILSE on how to use quotations and make citations within the text, depending on the study level

Level	N	Mean	Std. Deviation
Level 1	33	5.00	1.581
Level 2	50	5.24	1.422
Level 3	28	4.04	1.774
Level 4	19	4.74	2.130
Total	130	4.85	1.700

Table 16: ANOVA summary table for IT students' ILSE on how to make citations and use quotations within the text, depending on the study level

Variance Source	Sum of Squares	df	Mean Square	F	P	Significant Difference
Between Groups	27.155	3	9.052	3.298	0.023	Level 2/Level 3
Within Groups	345.768	126	2.744			
Total	372.923	129				

*p < 0.05

The Table 15 and Table 16 shows that there is a significant difference among IT students' ILSE from different study levels, [F (3, 126) = 3.298, p=0.023] on how students use quotations and make citations within the text. Studying Table 16 critically, it shows that level – 2 agreed more when compared with other three levels. For this, the post hoc comparison was conducted and the results indicate that mean scores for level – 2 is more significant than level – 1, level – 1 is more significant than level – 4

while level – 3 is less when compared with other three levels. Hence, level – 2 agreed more that students make citations and use quotations within the test.

These findings are similar to those reported by Demirel and Akkoyunlu (2017) in their study there are no significant differences found in the prospective teachers' information literacy self-efficacy in terms of grade. However, significant differences were found in terms of computer usage skills, achievement perception, willingness to pursue an academic career and belief in achievement in workplace.

Chapter 5

CONCLUSION

Information literacy are critical to achieve any potential economic, social and political empowerment for the development of the countries. It plays an important role by contributing positively to the spheres and dimensions of national development such as economic, social, political, environmental and cultural development (Demirel & Akkoyunlu, 2017). The findings Demirel and Akkoyunlu (2017) revealed that prospective teachers' lifelong learning tendencies and their information literacy self-efficacy were quite high. Their lifelong learning tendencies did not differ in terms of their computer usage skills whereas a significant difference was found in terms of their gender, grade, achievement perception, willingness to pursue an academic career and achievement in workplace.

The primary aim of this study is to investigate and evaluate the information literacy self-efficacy (ILSE) of Information Technology undergraduate students at Eastern Mediterranean University. Hence, the significance of this research were to create awareness for educators and help to recognize individuals with low self-efficacy of the expressed idea based on gender, age and study level, which may serve as a limiting factor for them to penetrate into their information literacy skills.

The findings specify that there is a remarkable statistically significant difference on male and female students Information Literacy Self-Efficacy (ILSE) skills. Also, the

results indicate that out of the three levels of Information Literacy Skills (ILS), Basic Information Literacy Skills (BILS) has the highest percentage compared to Intermediate and Advanced Information Literacy Skills (IILS and AILS).

In addition, the findings show that there is a difference between IT students' ILSE and different age groups on how students locate information sources in the library. Hence, age does not affect students' ILSE skills except how they locate information in the library.

Moreover, the outcome of the study shows that there is a significant difference between the study level of the student on how they define the information needed, this is possible because as students advance in their study it is also expected that they get to advance in the way they define the information they need to suit the search engine. How students use quotations and make citations within the text also has a remarkable difference between the study level of students mean scores in the ILSE, this is obvious because as students advance in education they get more information and more aware.

Furthermore, the study suggests that libraries should be storehouses of materials such as books; that textbooks should be adequate for research projects, and the teachers/instructors should give student project that will make them visit library. School librarians should encourage students to search information through the use of library catalogues. Finally, the absence of the position of school librarian requires serious consideration as the lack of access to an organized, functioning school library continues to thwart literacy and information literacy.

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APPENDICES

Appendix A: Questionnaire

Please tick in the box below the correct answer

Demographic:

GENDER:	Male	☐	Female	☐						
AGE:	18 – Below	☐	19 – 21	☐	22 – 24	☐	25 – 27	☐	28 – Above	☐
LEVEL:	First Year	☐	Second Year:	☐	Third Year	☐	Fourth Year	☐		

Instructions:

Please do not write your name or student number anywhere in this paper. The information obtained from this questionnaire will construct the basis of the scientific work and will not be used for any other purpose which means your confidentiality is guarantee. The questionnaire is prepared to evaluate Information literacy self-efficacy level of Information Technology (IT) undergraduate students in Eastern Mediterranean University (EMU). The questionnaire scale has been prepared to determine the level of efficacy on issues related with the information (to find, use and communicate information). Here the notations shall be referred to as:

1 = almost never true (0-25% confident)

2 = usually not true (25-35% confident)

3 = sometimes but infrequently true (35-45% confident)

4 = occasionally true (55-45% confident)

5 = often true (65-75% confident)

6= usually true (75-85% confident)

7 = almost always true (85-100% confident)

Items	Details	1	2	3	4	5	6	7
	I feel confident and competent to							
1.	Define the information I need							
2.	Select information most appropriate to the information need							
3.	Interpret the visual information (i.e. graphs, tables, diagrams)							
4.	Write a research paper							
5.	Prepare a bibliography							
6.	Create bibliographic records for different kinds of materials (i.e. books, articles, web pages)							

7.	Make citations and use quotations within the text							
8.	Learn from my information problem solving experience and improve my information literacy skill							
9.	Use different kinds of print sources (such as books, periodicals encyclopedias, chronologies, etc.)							
10.	Use electronic information sources							
11.	Locate information sources in the library							
12.	Use library catalogue							
13.	Locate resources in the library using the library catalogue							
14.	Synthesize newly gathered information with previous information							
15.	Determine the content and form the parts (introduction, conclusion) of a presentation (written, oral)							
16.	Create bibliographic records and organize the bibliography							
17.	Criticize the quality of my information seeking process and its products							

Adapted from Kurbanoglu S.S., Akkoyunlu B. and Aysun Umay (2006).
“Developing the information literacy self-efficacy scale”.

Appendix B: Department Research Authorization

To: The Head of Computer Education and Instructional Technology

04/01/2018

Assoc. Prof. Dr. Ersun Iscioglu

From: Tooichi Priscilia Farinola

M.Sc. Student

Subject: Permission for the application of research

I would like to inform you that due to my research studies I need to apply questionnaire with the students of the School of Computing and Technology Fall 2018. The questionnaire is attached for your consideration. I would appreciate a lot if you consider my application at your earliest convenience.

Appendix C: Concert Form

Toochi Priscilia Farinola
MSc Department of Computer Education
and Instructional Technology
05338732818
tochihedbio@yahoo.com

CONCENT FORM

Dear Participants,

I am a MSc student conducting my thesis on the “information literacy Self-efficacy level of Information Technology (IT) Students”.

Please answer all the questions sincerely and be informed that your personal information and individual responses will be kept confidential and used only for research purposes. Collected Data can be used for future publications. For more information, please feel free to contact me or my MSc thesis supervisor. Participating in this study is on the voluntary bases and you are free to withdraw from the study at any time. If you agree to participate, please fill the space provided below and sign it.

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0392-630-1600
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I have been properly informed about the objectives of the study and I agree to take part in it.

Name-Surname: _____

Data: _____

Signature: _____

Appendix D: Consent