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Information Literacy for Higher Education in the 21st Century

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Abstract
An information and digital economy is currently in the era of the Internet and technology, and it has a strong impact on every part of our lives in the twenty-first century. This era of digital information requires a set of skills for users to find, retrieve, analyze, and use information. These skills formulate *Information Literacy* as salient to anyone who has to use his or her abilities and skills to comprehend when information is needed and able to locate, evaluate, and know how to use the needed information effectively. Information literacy is definitely important and necessary for personnel in higher education.

The Association of College & Research Libraries: ACRL has identified five areas that those who need information through information technology must be able to: (1) determine the nature and extent of information needed, (2) access the needed information effectively and efficiently, (3) evaluate information and its sources critically, and incorporate selected information into one's knowledge base and value system, (4) use information effectively to accomplish a specific purpose, and (5) understand many of the economic, legal, and social issues surrounding the use of information and to access and use information ethically and legally.

In accordance with ACRL, the Society of College, National and University Libraries known as SCONUL has created seven pillars of information literacy as a core model for higher education. These pillars or abilities include: (1) identify a personal need for information, (2) assess current knowledge and identify gaps, (3) construct strategies for locating information and data, (4) locate and access the information and data they need, (5) review the research process and compare and evaluate information and data, (6) organize information professionally and ethically, and (7) apply the knowledge gained: presenting the results of their research, synthesizing new and old information and data to create new knowledge and disseminating it in variety of ways. This paper will describe and discuss *Information Literacy* as outlined by ACRL and SCONUL.

Keywords: *information literacy, education, higher education, information technology*

1. Introduction

Information literacy describes various initiatives in higher education that seek to meet the broad demands of the information society (Johnston and Webber, 2003), while *the information society* refers to a society in which creation, distribution, and manipulation of information is the most important economic and cultural activity (UK National Inventory Project, 2000). Since the information society has turned to be a focus of success in the twenty-first century--the way in which knowledge is produced and applied as relevant to higher education (Gibbons, 1998).

In higher education, learning is considered a life-long process for students in coping with change that demands participation in producing the target outcomes as well as independent problem solving skills (Pauk, 2007). The need for autonomy and cooperative learning in students is apparently necessary (Jacob and Farrell, 2001). Instructors need to

adjust their role as facilitators in providing support and encouragement for their students to go through their self-critical and self-directed process. Particularly, teaching and learning styles deserve attention from all parties concerned—instructors and students all alike—to achieve target learning outcomes. Students are expected to have a good control over learning required by programs developed for higher education (American Association of School Librarians & Association for Educational Communications and Technology, 1998).

Thus, researching and communicating information via digital environments with the use of information technology as well as users' abilities are now in focus (Katz and Macklin, 2007). Undoubtedly, the needs for educating learners at the higher education level in Information literacy has never become greater (Webber, 2003).

2. The Definition and standards of Information Literacy in Higher Education

Rising from the advent of information technologies in the early 1970s, the idea of information literacy, has grown, taken shape, strengthened, and recognized as the essential literacy for the twenty-first century (Bruce, 2002). Since then, the information society has called for people to become information literate which means that they should not only be capable of recognizing when information is needed but also being able to identify, locate, evaluate, and use it effectively or fulfilling their alternate goals (K and Bhandi, 2006).

In the early 1990s, Shapiro and Hughes (1996) called for an interpretation of expanded information literacy and the goals for its attainment, emphasizing adaptability, critical thinking, responsible citizenship as the concept of "Information for Liberal Arts," that was later extended and broadened the ACRL standards of information literacy. Various definitions were defined and a set of standards also were identified for college and university students.

In the United States, the Final Report of the American Library Association's Presidential Committee on Information Literacy defines *information literacy* was as, "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (Association of College and Research Libraries, 2000).

There were five standards for information literacy**.** Those five standards require that information literate students be able to:

1) determine the nature and extent of the information needed;
2) access needed information effectively and efficiently;
3) evaluate information and its sources critically and incorporates selected information into their knowledge base and value system;
4) individually or as a member of a group, use information effectively to accomplish a specific purpose; and
5) understand many of the economic, legal, and social issues surrounding the use of information and access or use information ethically and legally.

The standards of information literacy in higher education, thus, are translated and applied into lesson plans, assignments, and activities for students to understand the following:

1) Standard One -- the nature and extent of information needed to comprehend the discipline (including getting a good grade);
2) Standard Two -- the way in which the information will be assessed (where to search; how to search; and how to locate material found in the course of a search);
3) Standard Three – the way in which the information and its sources will be critically evaluated (within the conceptual framework of the discipline);
4) Standard Four-- the way in which disciplinary information will be used to communicate knowledge and understanding to others; and
5) Standard Five -- the importance of building upon and respecting the works of others.

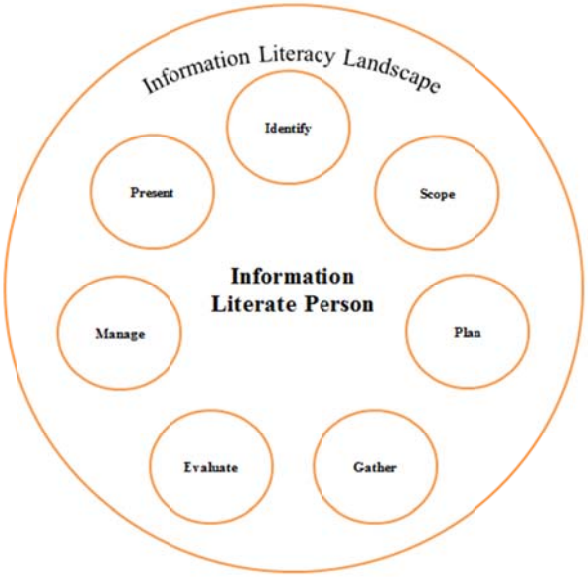
These five standards of ACRL information literacy are most widely recognized and developed in the context of learning contents in the instructional framework created by diverse areas of disciplines both within the United States and worldwide (Stanger, 2009).

In the United Kingdom, the Society of College, National and University Libraries (SCONUL) formed its Working Group on Information Literacy in 1999 and published "Information Skills in Higher Education: A SCONUL Position Paper" that introduced Seven Pillars of Information Skills Model (SCONUL, 1999). Since then, the Seven Pillars SCONUL Model has been adapted and applied by librarians and scholars across the disciplines worldwide as a generic core model for Higher Education (SCONUL, 2011).

SCONUL (2011) identified that information literate persons would demonstrate an awareness of how to use, manage, synthesize and create information in an ethical manner and possess the information skills to do so effectively. The Seven Pillars of Information Literacy: the Core Model, the core skills, competencies, attitudes, and behaviors (as proof of understanding), were considered the heart of information literacy development in higher education. These pillars were presented in an iterative model in order to highlight the need for practice and application of those skills to reach the expertise level (Jarson, 2010).

Seven Pillars of core skills, competencies, attitudes and behaviors of literate individuals formulate one's abilities to:
1) Identify; that is, to identify personal need for the information;
2) Scope; that is, to assess current knowledge and identify gaps;
3) Plan; that is, to construct strategies for locating information and data;
4) Gather; that is, to locate and access the information and data they need;
5) Evaluate; that is, to review the research process and compare and evaluate information and data;
6) Manage; that is, to organize information professionally and ethically; and
7) Present; that is, to apply the knowledge gained; presenting the results of their research, synthesizing new and old information and data to create new knowledge and disseminating it in a variety of ways.

The SCONUL Seven Pillars of Information Literacy: Core Model for Higher Education illustrates how these seven pillars can work for information literate individuals, as shown below.



Source: SCONUL. (2011). The SCONUL seven pillars of information literacy: Core model for higher education. United of Kingdom: SCONUL Working Group on Information Literacy.

3. Information Literacy Competency for Higher Education

Higher education institutions all over the world nowadays have emphasized the importance of information literacy as significant skills for college and university students. Balkevicius and Svediene (2014) stated that the studies of higher education should help learners to recognize how important modern technologies can create their future. Since the ability to catch up with information is essential for self-learning and success in academic achievements, each university curriculum requires information literacy from learners in their studies at the course and project levels (Katz and Macklin, 2007). This is to prepare them as graduates after program completion with abilities of cope with tasks and demands on the job that require good competency in information literacy (Herman, 2000).

Information literacy has been the focus in higher education in various aspects as reflected in nationalized curricula in several countries. In Australia, the higher education sector has integrally developed the Australian Qualification Framework across all levels of higher education; information or digital literacy is definitely required in all courses. This means that students' competency in using information technology is expected in courses at the undergraduate and graduate levels (Australian Qualification Framework Council, 2013). The notion of information literacy includes conceptions, such as critical information consumption, managed media attention, ethical collaborative research, network coproduction of knowledge, and digital citizenship (Rheingold, 2012). This leads to a clear consensus in the Australian higher education sector, that information and digital literacy is essential for future success (Chase and Laufenberg, 2011).

In New Zealand, advanced information literacy skills are considered necessary for teachers and students in higher education and for lifelong learning. Obstacles that prevent developing information literacy have been tackled by the government. The study of Jeffrey,

Hegarty, Kelly, Penman, Coburn, and McDonald (2011) in Developing Digital Information Literacy in Higher Education revealed obstacles to developing one's information literacy skills as ranging from attitudes to access or opportunities. Self-limiting barriers associated with self-efficacy, confidence, and attitudes were to change to fit in the new learning with various conditions that require information literacy. One solution in support of learners to cope with information-literacy-based learning could be a provision of collaborative learning environment where students can participate as part of the team and as a result feel less at risk in performing on new learning tasks. In such a supporting context, students are supposed to feel free to ask for help and thus gain more confidence in facing difficult times and stages in becoming information- literate. It can therefore be concluded that information literacy for one's lifelong learning can be developed from adequate support given in the learning environment, both internally and externally.

In the United States, information literacy has been emphasized in higher education since 1970s. There have been several calls for improving student retention, supporting learner progress, promoting program completion, and prompting solutions that engage and inspire faculty and students all alike. The value of digital fluency has become increasingly self-evident in all aspects of higher education. Faculty members and researchers have to cope with digital media for personal engagement and professional aspiration as part of students' learning experiences. As emphasized in the work of three researchers Ice, Diaz, and Wagner (2010), smart employees and new graduates both value competency in expressing ideas on a full scale of information and digital media.

In China, the standards of information literacy could not be currently applied throughout the country. This is due to the lack of computers and Internet systems in some remote and insufficiently developed areas. As such, information literacy in higher education in China is expected mostly in highly equipped colleges and universities. Interestingly, when it comes to information literacy behaviors; for example, the majority students at Peking University have good information literacy skills, especially in information search, but only showed these skills in their examination. It is rather unfortunate that their information literacy skills were not furthered applied in other areas of lives as reported in the study by Xiaomu, Ping, Mengli and Weichum (2008).

In the Caribbean countries, information literacy has been heavily used in vocational schools in the public and private sectors. Information literacy skills are widely applied in business and entertainment, education and for personal enjoyment. John (2005) noted that librarians were mostly involved in information literacy and took their duties in setting the standards for information literacy.

In India, Gedam and Agashe (2009) reported that information literacy was one of the national priorities. It was noticed that libraries were in charge of trainings for information professionals to become IT-literate; these trained professionals were to work with the government to create contents and provide information on services to the public or the mass. At the higher education level, University Grants Committee (UGC), the professional societies, several academics and professional associations made great efforts to bring together the professional expertise along with academic and media experts to design and develop viable curricula for various levels of education. They collaborated with teachers, librarians and

media experts to design and promote information literacy programs. Through education and practices, it is expected that information literate persons acquire knowledge as resources to generate wealth and welfare for themselves and the society at large.

In Kenya, the government publicly acknowledged in 2008 the importance of achieving an "information based society" as a national development goal (Poghisio, 2008)). Tilvawala, Myers, and Andrade, (2009) reported that Kenya as a developing country had an acute need to develop information literacy in the country's national development plan. Their research findings suggested that Kenya's educational system was to promote literacy at all levels by communicating the salience of information literacy throughout various Kenyan vernaculars with the development of appropriate contents and pedagogical practices embedded with Kenyan's cultural identity.

As for Thailand, its National Qualifications Framework for Higher Education in Thailand was developed in 2006. It specifies that all study programs are to support implementation of the educational guidelines with emphasis on information literacy. Those guidelines include transfer and application of cognitive familiarity with and support for national culture and competitiveness in the international knowledge-economy. In accordance with this policy, graduates are expected to have the ability and commitment to engagement in lifelong learning and capacity for effective communication. In this regard, information literacy is definitely one major tool to realize attainments of the policy.

One good example on information literary awareness and action in Thailand was shown in the study by Tuamsak in 2013. The researcher conducted a research into information literacy instruction used in eighty Thai universities. The study examined the conditions of information literacy instruction in Thai higher education in terms of (1) responsible units, (2) teaching patterns, (3) course details and contents, (4) teaching and learning methods, (5) learning assessment and evaluation, and (6) the roles of libraries in promoting information literacy in universities. The results of the study indicated that 70.93% of 80 universities offer information literacy as a taught course with contents on information sources and resources, information accessing and searching, followed by academic report writing. As for the course instructions, it was found that active learning, problem-based learning, and inquired-based approaches were supported by course instructors. This study therefore showed awareness and actions upon information literacy at the university level. Such a positive result in turn revealed that Thai universities in the study were responsible for developing information-literate manpower in support of the society and the knowledge-based economy of the country.

4. Conclusion

Competence in information literacy has been widely recognized as a tool for a citizen at the country and the world level to realize life-long learning as an ultimate goal of higher education. Efforts have been made to create information literate manpower by setting specific standards for effective information literacy for new economy and cultural environment as shown by ACRL and SCONUL (Association of College and Research Libraries, 2000; SCONUL 2006). The most important components of information literacy include knowledge, attitudes that define the main characteristics of information search abilities in (1) identifying the characteristics of the required information and its extent, (2) finding the required

information, (3) critically analyzing the information and its sources, (4) integrating old and new information and knowledge together, (5) using information and knowledge in pursuing some specific task(s), (6) applying the information and knowledge in creating effective economy and cultural environment in an ethical manner. These abilities are identified as information literacy standards in the works of Association of College and Research Libraries (2000), Balkevicius and Svediene (2013), Jeffrey, Hegarty, Kelly, Penman, Coburn, and McDonald (2011), and SCONUL (2006).

It is without doubt among university academics that the identified information literacy standards are to serve as guidelines for teaching and learning in higher education institutions. The program contents, instructional methods, learning activities, target learning tasks and outcomes, and evaluation/ assessment methods are to be carefully designed to respond to and accommodate the needs of learners at the university level. All of these are to create competent graduates with effective information literacy tools and aspiration for life-long learning in support of the economy, and particularly create them to be noble digital citizens for the society they belong to.

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