THE DEVELOPMENT OF STUDENT LEARNING AND INFORMATION LITERACY: A CASE STUDY

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ABSTRACT

Literacy is documented as a fundamental human right. The ability to exercise this right improves an individual's life chances by achieving their personal, social, occupational and educational goals, and it opens opportunities for social, economic and political integration. Currently in an information and knowledge society, there is a salient need for Information Literacy (IL). IL can be defined as knowing when and why one might need information, where to find it, and how to evaluate, use and communicate it in an ethical manner. There is a need for undergraduate and postgraduate students to demonstrate a competency with information literacy skills. For example it is essential for the student to develop a thesis statement, i.e. research question and to consequently search, organise, share and evaluate the results.

In this paper we present a case study highlighting the role of Library and Student Support (LSS) based at Middlesex University London. LSS works in conjunction with the University Departments (Schools) and leads on the development and implementation of a coherent and strategic approach to improving learner competencies. These are identified through the development and implementation of relevant University policies and strategies. We argue that other Higher Education institutions may benefit from our experience of implementing IL policy in collaboration with a Library and Student Support service.

Key words: Information Literacy, Higher Education, Learner Development Unit

1. INTRODUCTION

1.1. The right to literacy and information literacy

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) categorically state that *Literacy* is a fundamental human right and the foundation for lifelong learning. "*It is fully essential to social and human development in its ability to transform lives. For individuals, families, and societies alike, it is an instrument of empowerment to improve one's health, one's income, and one's relationship with the world.*" (UNESCO, 2015).

The Chartered Institute of Library and Information Professionals (CILIP) define Information Literacy (IL) as "knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner" (CILIP, 2014). IL was proclaimed as a fundamental basic human right in the digital world: "Information literacy empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals. It is a basic human right in a digital world and promotes social inclusion in all nations." (UNESCO, 2005)

1.1.1 Mainstream Education

Breivik (1997) states "there is growing acceptance of the need to have more active learning environments that prepare students for lifelong learning." The Association of College & Research Libraries (ACRL, 1989) advocates the importance of placing Information Literacy at the very core of academic provision. In doing so, there are a number of possibilities revealed, including:

- **More interactive learning experience**: students pursuing questions of personal interest would interact with fellow peers, teachers, information resources and community.
- **Open ended and long term pursuit**: students engaged in at least one open-ended, long-term quest for an answer to a serious social, scientific, aesthetic, or political problem.
- **Primary and secondary sourced information**: students' searches would involve not only examining print, electronic, and video data, but also gathering primary data via techniques such as interviews, questionnaires, observation, document analysis, etc. both inside and outside of school. This would result in learning being more self-initiated.
- **Teachers collaborating with other professionals**: teachers would work regularly with librarians, media resource people, and instructional designers both within their schools and in their communities to ensure that student projects and explorations are challenging, interesting, and productive learning experiences.

The intellectual demands of asking *productive* questions and consequently gathering data of all kinds, reducing and synthesising information, analysing, interpreting, and evaluating information in all its forms is seen as being important for firmly embedding IL in the school curricula. Thus the role of the teacher shifts from lecturing to be one of coaching and guiding. In such a school environment teachers "would have come to see that their major importance lies in their capacity to arouse curiosity and guide it to a satisfactory conclusion, to ask the right questions at the right time, to stir debate and serious discussion, and to be models themselves of thoughtful inquiry" (Breivik, 1997).

1.1.2 Lifelong Learning

Sharma (2002) states that at its very core the basic idea behind Lifelong Learning can be concisely stated: it is that deliberate learning can and should occur throughout each person's lifetime. The European Union Lifelong Learning Programme (EU LLP) was designed with a twofold intention: to enable people, at any stage of their life, to take part in stimulating learning experiences (Lifelong Learning) and in developing education and training across member states of the European Union (EU, 2015). Empowerment of lifelong learning implies effective performance of personal, professional and civic responsibilities. Koss, et.al. (2012) suggests that digitisation, and access to information, assists people at every stage of their lives. Some of the benefits include:

- **Education**: improve education outcomes, raise standards, and prepare students for the world of work.
- **Employment**: encourage job online searching by the unemployed, and Internet-enabled flexible work situations allow people to retain jobs they would otherwise have to leave.
- **Later life**: permits older people to stay connected to friends and family, and helps counter depression; and improve health outcomes by remote online monitoring.

They know how to learn because they know how knowledge is organised, how to find information and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information required for any problem solving and decision making.

1.1.3 Employability

Employability implies something about the capacity of the graduate to function in a job and be able to move between jobs, thus remaining employable throughout their life. Yorke (2004) defines employability as: "a set of achievements (skills, understandings and personal attributes) that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy". Therefore, amongst other

skills, Information literacy is not only vital within academic studies and personal use of information but also in employability and working life. A survey conducted by the British Computer Society (BCS, 2015) of Human Resources professionals and employers revealed that 90% rate working a digital device as important to the majority of roles in their organisation. The significant findings of the survey revealed that a vast majority of employers regarded digital skills to be an important requirement when employing people. Skills vital to the majority of roles in their organisation included: email skills, word-processing, spreadsheets and the ability to use social media. Employers declared in the survey that they demanded that people have these skills to be productive straight away in a new role and believe digital skills improve employee efficiency and increase business productivity.

1.1.4 Transferable Skills

Bruce (1997) states the ultimate goal of Information Literacy is to impart the skill of *lifelong learning* or learning *how to learn*. The ACRL (1989) declares "ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how information is organised, how to find information, and how to use information". A further important goal of Information Literacy programs, according to ACRL (1989), is to develop in students the capability of both critically evaluating the information they encounter and of continuing to use the skills that they have acquired to confidently handle the new challenges that will confront them throughout their lives. Grafstein (2002) notes that in a digital world, where there is a mass of unregulated information, it is vital that students from the very start of their academic careers make use of generic critical thinking skills. These will engender the ability to evaluate the information they encounter for: authenticity, accuracy, credibility, authority, relevance, concealed bias and logical inconsistency.

1.2. EU Initiatives and RINGIDEA

The EU TEMPUS programme, supports the modernisation of Higher Education in partner countries such as Eastern European countries, to develop Information Literacy for lifelong learning and the knowledge economy. The RINGIDEA Tempus project [17117-**TEMPUS**-1-2011-1-IE-**TEMPUS**-JPHES – **RINGIDEA]** is underpinned by the notion of 'libraries and information literacy (IL), which is a precondition for lifelong learning, the knowledge economy, labour markets and a key to fulfilling the Lisbon strategy'. Specifically to this project the objectives of RINGIDEA are:

- Development of IL programmes for lifelong learning through their use in curricula as appropriate;
- Development of innovative online IL modules for lifelong learning;
- Harmonisation of the IL programs with those currently active in Western Balkan countries;
- Strengthening of the capacities of higher education institutions for the strategic planning and implementation of IL programmes to instil transferable skills for a competitive, dynamic, knowledge-based economy;
- Development of IL policy, and guidelines;
- Dissemination of approaches to IL development and ensuring of their sustainability;
- Development of lifelong learning in society at large- a national priority for Albania, Bosnia and Herzegovina, Kosova and Montenegro and a regional Priority for the Western Balkans.

The future of Western Balkan countries must be rooted in innovation and in mobilising their collective brainpower for the creation of the knowledge-based society envisaged under the Lisbon Strategy. Information competencies are a key factor in lifelong learning. They are a vital step in achieving educational goals. The development of such competencies should take place throughout citizens' lives. Their transferability is vital for the Information society.

The RINGIDEA project adopted the SCONUL model for Information Literacy. The main features of this project include the identification of best IL practice, transfer of knowledge, development and implementation of IL programs and training including online IL suites, development of IL policy and

dissemination and exploitation of results across all participating countries. The project is a furthering of the Bologna Process for a Europe of knowledge by exploring inclusion of IL competencies in curricula. Academics and Information Scientists/Librarians are developing (under the auspices of the RINGIDEA project) curriculum-integrated IL programs, embedded in the three-cycle system (bachelor/master/doctorate), quality assurance and recognition of qualifications for the development of lifelong learning in society at large. These innovative technologies will benefit all stakeholders such as undergraduate and postgraduate students, Librarians, academic staff, Ministries, National and public libraries, Local communities. The RINGIDEA project emphasised the fact that membership of the EU requires the existence of a functioning market economy and the capacity to cope with competitive pressure and market forces within the Union. The project identified a set of problems with regard to lifelong learning around the world, and western Balkans are not isolated from the common phenomenon of lack of information literacy practices. IL skills can help to "decrease the developmental discrepancy between Bosnia and Herzegovina" (Policy of Information Society Development in Bosnia and Herzegovina) and the EU, progress information society services in Albania (Albania 2009 progress report) and promote regional cooperation for the creation of a business environment and an economic space in the Western Balkans (Regional cooperation in the Western Balkans). The RINGIDEA project has proposed new methods for IL delivery by harmonising cultural diversity. A set of new products (online modules, teaching materials, policy) are developed and knowledge transfer can take place at all levels. The results (including online learning and teaching materials) can be used in new contexts or in other Western Balkan countries that can customise the results to suit their conditions. This project ascertained the visibility through dissemination, trainings and conferences.

1.3. Availability of too much information

In the information age we are exposed to unprecedented volumes of information. Yang (2003) defines *information overload* often referred to as *infobesity* or *infoxication* is the difficulty a person can have understanding an issue and making decisions that can be caused by the presence of too much information. Information is core to effective decision making and problem solving. Speier, et.al. (1999) argues that when information overload occurs, it is likely that a reduction in decision quality will occur. The PIECES (**P**erformance, **I**nformation, **E**conomics, **C**ontrol, **E**fficiency, and **S**ervice) framework, developed by Wetherbe, permits the classification of problems faced by organisations and systems. In the context of the digitisation of information and the Internet, of advances in computer and information technology, which have led to the ability to produce more information more quickly and to disseminate this information to a wider audience than ever before, the PIECES framework highlights information overload as a potential problem in existing information systems (PIECES, 2015).

1.4. Evaluating Information

Information is obtainable via libraries, community resources, special interest organizations, media, and the Internet. All the time, more information comes to individuals in unfiltered formats. This invokes issues concerning the information's authenticity, validity, and reliability.

The evaluation of information allows the question of authenticity, validity and reliability of information to be addressed. There are a plethora of definitions for evaluation, including Bloom (1956): "Evaluation is defined as the making of judgments about the value, for some purpose, of ideas, works, solutions, methods, material, etc. It involves the use of criteria as well as standards for appraising the extent to which particulars are accurate, effective, economical, or satisfying. The judgments may be either quantitative or qualitative, and the criteria may be either those determined by the student or those which are given to him". The evaluation process will require paying attention to criteria such as the credibility, authority, currency and purpose of disseminators of information, be it individual authors, websites, publishers, organisations, governments, etc. The Open University (2012) formulated PROMPT, which offers a structured method for evaluating any information that you find

online. PROMPT outlines six evaluation criteria, each criterion demanding questions to be answered concerning the evaluation of the information being considered.

- **P**resentation: *Is the information clear and the language right? Can I find what I need here? Is it succinct?*
- **R**elevance: *Does this information match my needs right now? What is it mostly about?*
- **O**bjectivity: *It's important to be aware of opinions and hidden agendas. What are you being "sold" here? A particular product/corporate view? Is the language used emotive? Are opinions expressed? Are there sponsors? What are they selling? What are the vested interests?*
- **M**ethod: *If statistical data is presented, what is this based on? How was data gathered? Was the sample used really representative? Were the methods appropriate, rigorous, etc.?*
- **P**rovenance: *Is it clear who produced this information? Where does it come from? Whose opinions are these? Do you trust this source of information?*
- **T**imeliness: *Is this current? When was it written and produced? Has the climate/situation changed since this information was made available? Is it still up-to-date enough?*

Rowley and Johnson (2013) report on a study conducted to ascertain how users establish the trustworthiness of digital information. In the first instance users commented on the factors and processes associated with trust formation, e.g. authorship and references, quality of writing and editing, and verification via links to external reference sources. Further factors, when assessing the trustworthiness of articles, identified by the study, include: content factors such as authorship, currency and usefulness together with context factors such as references, expert recommendation and triangulation with their own knowledge. It is important to understand that authoritative, current, reliable information is not only important for academic purposes such as research papers and group presentations but in everyday decision making and problem solving.

2. INFORMATION LITERACY AND HIGHER EDUCATION

Bruce (2004) identifies four critical components of an information literacy program in nay educational sector, including Higher Education (HE):

1. Resources to facilitate the learning of specific skills, e.g. web based information skills enhancement packages and other point of need, or self-paced instruction.
2. Curriculum that provides the opportunity to learn specific skills, either early in a course or at point of need, (from self-paced packages, peers, lecturers, librarians)
3. Curriculum that requires engagement in learning activities that require ongoing interaction with the information environment
4. Curriculum that provides opportunities for reflection and documentation of learning about effective information practices.

These components can be incorporated into workshops delivered by information specialists, which staff and students can access on a needs basis where and when. These components can also be embedded into the curricula of under/post graduate programmes as a standalone module or embedded into each and every specific module that constitutes a particular programme of study.

2.1. Standalone Modules

In order to continue teaching and promoting information literacy, stand-alone modules can be developed. These stand-alone modules contain standardised, information literacy instruction. The content will typically detail generic stages of the research process. This will include: topic development, searching techniques, database selection and use, resource searching and evaluating, and plagiarism avoidance and citation assistance. In order to avoid reinventing the wheel, where academics are looking for the best way to teach search strategies, citing and referencing or keeping up to date for researchers, librarians can deliver information literacy resources and instruction via standalone modules. Thus a dedicated team of IT trainers and Academic Librarians are required to be

combined in order to develop and deliver an IL module. A number of issues are raised by using the standalone module format, including:

- In an institution providing a diverse portfolio of subjects, in order to keep realistic, optimum class sizes, there may be a need to combine subjects, thus "Sports Studies students were sitting alongside Archaeology students". In such circumstances it is difficult to provide a *targeted* session, which ties in with specific assignment briefs (SCONUL, 2004).
- In the context of asynchronous learning, for example with self-directed learning and eLearning, access is an important issue. Standalone modules provide a point-of-need instruction/resource at the finger-tips of the users 24/7
- "It has become clear that the "one-off" demonstration-style information skills classes delivered out of curriculum context do not necessarily coincide with the students' need for information, are sometimes not valued by the students, and do not necessarily prepare them for the challenges of research, problem solving, and continuous learning" (Orr et. al., 2001)

2.2. Taught across different modules

Alternatively, information literacy instruction can be delivered, where IL related learning outcomes can be integrated, into different, specific programmes, as opposed to delivery in a standalone module format. This approach would require non-specific information literacy resources to be tailored, for example, in order to create subject-specific and course-specific guides. The disadvantages of stand-alone modules and online tutorials are avoided in course-integrated information-literacy modules: librarians teach asynchronously to students who have immediate assignment-based needs.
Orr et. al. (2001) argues that instead of generic information-literacy skills, course-integrated IL focuses on skills needed by students to accomplish specific assignments. Tobin (2004) reports that unless information literacy is incorporated into a course curriculum, grading and academic expectations, that the majority of students would be unlikely to access and make use of standardised, generic IL instruction made available via standalone modules.

2.3. The role of Libraries and Information Science

One of the key roles played by libraries is the recognition that both digital and information literacy are of paramount importance in learning, teaching and research and essential skills for students and staff. Generic digital literacy programmes help them use technology to support their teaching and research. Common to workshops are topics such as:

- Finding and using scholarly resources for teaching and research, including literature searching, keeping up to date and using reference management tools;
- Critically evaluating the value and quality of the information found;
- Using new tools and technologies such as social media (Twitter, blogging), managing web presence and collaborative writing.
- Copyright, data protection and bibliometrics and citation analysis

These topics are increasingly important as Libraries increasingly become the suppliers of invisible electronic resources rather than physical items in a building and students come to us without the skills to find and evaluate academic resources as this is not taught as part of the school curriculum.

3. CASE STUDY: LIBRARY AND STUDENT SUPPORT AT MIDDLESEX UNIVERSITY

Library and Student Support (LSS) at Middlesex University covers a wide range of services, including UniHelp (http://unihub.mdx.ac.uk/support/unihelp/index.aspx), which is the student "one-stop shop" for most enquiries and support. UniHelp refers students to the appropriate specialist support which includes that provided by Librarians and the Learner Development Unit (LDU) (http://unihub.mdx.ac.uk/study/library/index.aspx). The Librarians and LDU are part of the Library and Learner Development directorate of LSS which is composed of the following teams:

- Liaison Librarians are aligned to programmes and academic departments. They identify resource and support needs, ensure relevant resources are available and deliver information literacy teaching at all levels.
- LDU: Provide academic writing and numeracy support.
- Bibliographic Services: Manage the acquisition and cataloguing of resources.
- Research: Support open access publication and the University's Research Repository.
- The Directorate also includes copyright and digitisation; inter library and postal loans and the Museum of Design and Domestic Architecture.

These teams are supported by staff from Library Systems and Library Operations, located in different directorates, who manage stock and circulation. The Librarians are expected to focus on information literacy training. The levels of academic engagement depend on the nature of the subject, with, for example, less teaching in art and design and more in nursing, where evidence based practice is key. A typical first year workshop for Computing students in the School of Science and Technology comprises a two hour workshop which looks at the range of academic resources available, constructing keywords, hands on searching for information using the University's resource discovery system Summon and evaluation of the information found. Where possible this is followed in the second and third year by further workshops which build on existing knowledge and skills.

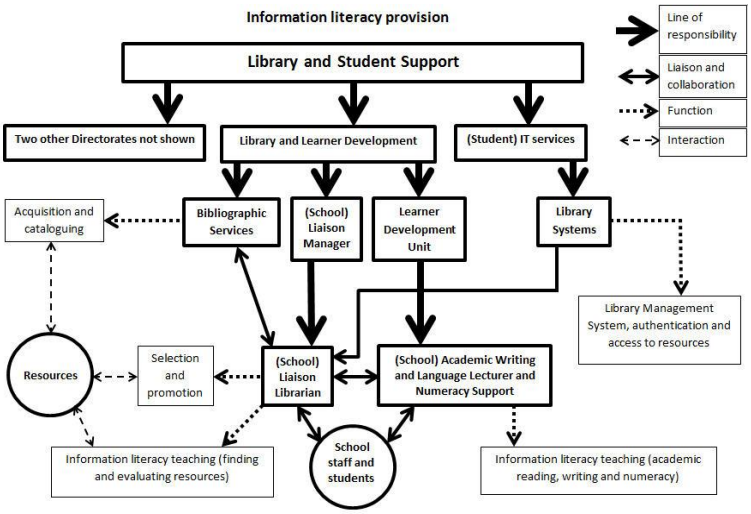

Figure 1: LSS IL links

Games and activities are used throughout to encourage engagement, interaction and peer learning (Edwards and Hill, 2014). The development of these games and activities led to the Librarians supporting computing being nominated for a Times Higher Education Leadership and Management Award in 2014. The games and activities include a card sorting exercise designed to encourage students to think about the range of resources available to them and how these can be used in their academic work e.g. academic journals and books. Resources are matched with a description plus the pros and cons of using each one (see Fig. 2). Another activity uses images to help students devise effective search terms in order to find information. All the games and activities used are described more fully with instructions for use on JORUM (Edwards and Hill, 2013). During the current academic year Librarians have taught 1561 hours and seen 19,602 students. However levels of input vary between programmes. For example Product Design students have three sessions in their first year, while in other programmes, the only formal contact with a Librarian is during Induction Week.

Figure 2: *Thinking about resources* card game

The University has a Graduate Skills Framework (not publicly available) which ensures that key skills are built into programmes as part of the validation process. However this does not necessarily mean that information literacy is embedded in all programmes. One possible way to increase the embedding of library teaching into the curriculum might be to adopt a more comprehensive and collaborative approach to information literacy. There are a number of frameworks and curricula available which see information literacy as a vehicle for lifelong learning and therefore integral to a student's entire education.

4. LESSONS LEARNED

Traditional methods of teaching information literacy involve a lecture style approach, typically including a rehearsed demonstration of a literature search by the librarian, and with no student activities. This 'passive' approach does not engage students effectively. The model developed by Middlesex LSS facilitates student involvement by using games and other activities, and by focussing workshops on a central project theme relevant to the student group. The workshop model has been found to work best by embedding it within one or more of the students' modules rather than running it as a stand-alone activity. Attitudes of academic module leaders (usually lecturers) have mostly been very welcoming and supportive, and Middlesex LSS is now sharing best practice with other universities and organisations including the UK National Health Service.

5. GUIDELINES

Most Information Literacy initiatives have been led by a top-down approach. Policies and strategies by UNESCO and the European Union, National Agencies, and various Committees emphasised that *Literacy* and Information Literacy are fundamental human rights and the foundation for lifelong learning. Schools and universities need to prepare the citizens of the 21st century to face the challenges and capitalise on opportunities offered within the information and knowledge society. Top down led initiatives nevertheless need to be implemented from the bottom up. A student-centred approach focusses all stakeholders to providing the resources, inspiration, and support to students. Much debate centred on who is best placed: Lecturers or Librarians, to deliver Information Literacy education. It is evident that an integrated, blended and synergistic approach will be both effective and efficient in developing, implementing and supporting Information Literacy programmes. Figure 3 shows the student at the centre and on the outer ring the Lecturers, Librarians, Tutors/Laboratory Assistants, Technicians as well as Other Students imparting and exchanging knowledge and skills to support their learning. Students support each other particularly when engaging in group projects and courseworks. Depending on the local processes of programme and module approval (certification and validation) the core Information Literacy knowledge and skills can be delivered by a synergistic collaboration between the academic staff (Lecturers, Tutors and Laboratory Assistants) and the library/learning resource.

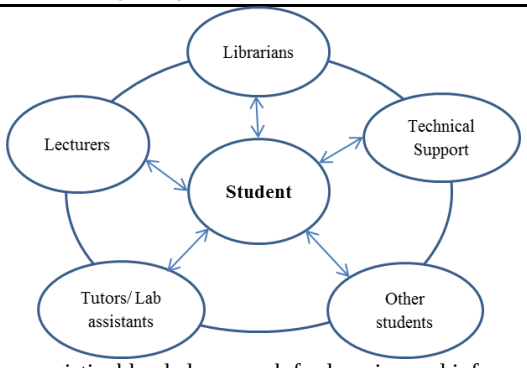

Figure 3: A synergistic, blended approach for learning and information literacy

A degree of autonomy, customisation and flexibility is required in order to ensure that students are supported by a combined effort of all involved. The support of the management teams at university, school/ faculty, and departmental levels is imperative. Both staff development and professional updating, especially regarding new technologies, are required to be ongoing. Resources need to be allocated for updating the infrastructure. Feedback mechanisms from, and to all involved, and especially from students will ensure continuous improvement. Openness and transparency foster trust and re-inforce the synergies and resolve conflicts.

6. CONCLUSION

There is considerable awareness of the pivotal of literacy and information literacy in the socio-cultural and economic development of individuals, groups and nations. Within Europe there is an uneven development of both the infrastructure and methods of achieving Information Literacy.
In this paper we presented a case study from Middlesex university where Information Literacy is delivered in the form of interactive workshops by librarians in parallel to the subject curriculum, mainly during the induction week to all students (first, second and third cycles). In addition, project and doctoral students benefit from customised workshops on critical reading and writing, as well as on research ethics. The paper concludes with high level guidelines encapsulated by a synergistic, student-centred model. The student is supported by a variety of stakeholders who collaborate to impart and reinforce knowledge and good practice. It is suggested that synergies are both effective and efficient if based on openness, transparency and trust. Lessons from current research on Academic Literacy will mould future methods and practices. Future work will concentrate on improving process with a long term perspective incorporating new methods and products across the curriculum.

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