Academic Literacies: A Critical Review of a Core Information Systems Postgraduate Subject

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Abstract

This paper presents a case study review of a major assessment task in a core postgraduate-level subject in the Information Systems (IS) discipline. Through a critical analysis, the review identified three types of literacies that the subject aims to distil in students: critical, academic and digital literacies. The critical analysis was used to identify whether, and how, students were taught these literacies through the completion of a major assessment, which asked students to review an existing information system. Three opportunities for improvement were identified, these were: greater use of scaffolding in the development of literacy skills; involving experts from across the institution and industry to develop student skills; and embedding technology within assessments. Validation of the case study findings to determine their generalizability is underway. It is envisaged that these three methods can be applied in any information systems subject to improve students’ literacies. Through their application, it is expected that students will be better equipped to deal with the continual changes they will face in their careers.

Keywords: Higher Education, Literacies, IS Education, Case Study, Assessment.

1. Introduction

Recently, there has been increased discussion about appropriate approaches for engaging students with information to ensure that students have the literacies needed to operate appropriately in a higher education environment and to then transfer these skills into the workplace. This discussion is of particular importance considering the global context of the information society in which these students will operate after graduation. Initially, this paper outlines the issues surrounding literacy in the context of higher education in the Information Systems (IS) discipline. A discussion situating this research within the current discourse of literacy considering the culture of learning within the IS higher educational context is provided.

By presenting a transformative learning approach as a method to aid teaching literacy education, it is argued that there is potential for greater learning outcomes to occur. An analysis of this approach, considering benefits and limitations, is conducted, followed by consideration of how this approach can be used to improve academic skills for increasing literacy outcomes. Assessments need to be flexible and adaptive, have the ability to allow students to be collaborative and facilitate students becoming problem solvers within the context of their learning environment. After consideration of these issues, guidelines along with concrete examples of how this approach can be applied to achieve greater literacy learning outcomes are presented.

2. Literacy Literature

As the subject under consideration is a postgraduate subject, the traditional definition of literacy encompassing reading, writing and basic assessment of a student as literate or illiterate is not comprehensive [7], both in terms of the cohort and the modern issues facing
these students after graduation. The complexities of literacy have led to the introduction of the term multiliteracies [26]. Assessment of literacies has also developed, from an individual being considered literate or illiterate to an ordinal scale demonstrating literacy functioning [33]. The complexities of literacies have recently been identified in society, leading to the topic becoming an area of intense research and to the introduction of the term multiliteracies. This is an area of intense research with its meaning being embedded in context, economics and within different cultural norms and practices [11]. Students need to be aware that if they are not in ‘possession’ of a particular literacy [13], their learning challenges become “complex, cumulative and interactive” [28] and this influences their chances of future employment [5]. With the change in focus from ‘literacy’ to ‘multiliteracies’, it is important to consider literacy within both the general higher education context and within IS education specifically. This is of particular importance for ISD subjects at each stage of the Systems Development Lifecycle (SDLC).

Lonsdale and McCurry [18] argue that literacy consists of a range of skills and understandings held by an individual and that almost every new domain has its own ‘literacy’. Within academic contexts, terms including academic literacies [10, 15] and critical literacies [18, 39] are commonly used to pigeon hole student literacy skills. Academic literacy is concerned with the cultural and contextual practice of learning particularly “writing, reading, knowledge and meaning making” [13 p. 107]. Having an understanding of the complexities of teaching students with varying literacy abilities requires consideration of why literacy education is important. Luke and Freebody [20] identified four stages of critical literacy practice: (i) Break the code of texts; (ii) Participate in the meanings of text; (iii) Use texts functionally; and (iv) Critically analyze and transform texts. As a student enhances their literacy skills, they are able to move through the four stages of literacy. Further to the discussion on the broadening term of literacy, critical literacy theorists agree on the following points with regard to literacy [40]:

- There are numerous types of literacy.
- Literacy is specific to social contexts.
- Literacies exist on a continuum, with a student reaching a certain level of literacy in an area.
- Having literacy in a particular area brings no direct benefit; a student must engage with the literacy to gain benefit from their learning.
- Acquisition of a literacy is not solely an issue of education. It is about a student having a level of power in the social context for which that literacy is relevant.

Understanding this viewpoint of multiliteracies, in the ICT and IS domains the development of new literacy terms [9] such as digital literacies [3, 4], information literacies [18, 19] and computer literacies [32] has occurred.

Gilster defined ‘digital literacy’ as “the ability to understand and use information in multiple formats from a wide variety of sources when it is presented via computers. The concept of literacy goes beyond simply being able to read; it has always meant the ability to read with meaning, and to understand. It is the fundamental act of cognition” [8 p. 1-2]. Where Martin and Grudziecki argued that “digital literacy is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process” [21].

While constant in their reference to the understanding of use of information when presented through technology, the definitions above show that research concerning digital literacy is responsive to the constant development of technology and its capabilities. The focus of this research is to understand how a student can increase their digital and critical literacies whilst engaging with digital and information literacy issues.
A student in the IS discipline must grasp both literacy and numeracy skills to be able to function effectively in the classroom environment and their future workplace. Considering the digital era [17], also referred to as the ‘information age’ [16], in which students operate, new literacies that focus on digital concepts have been identified [12]. A student studying IS in higher education at the postgraduate level needs to initially understand that if they do not have a high level of literacy in a number of different areas of focus within the subject then this can create problems for their learning, meaning that they will not be able to fully address the subject’s objectives and learning outcomes.

In the subject under review, these issues are complex in nature and they build on each other throughout the session [28]. Scaffolding is therefore potentially an appropriate method for increasing the literacy levels of students in this subject. One of the major benefits of increasing the literacy levels is to increase students’ employability [5]; this is particularly true for this subject. Having an understanding of the concepts of literacy, it is important to contextualize literacy within ICT and IS education in higher education. The following section provides an overview of the subject under evaluation and the complex nature of what is taught to students.

3. Increasing Literacy: The Transformative Learning Approach

The goal of any educator is to foster change within a student; one approach that considers this issue at its core is the theory of transformative learning developed by Mezirow [35]. Transformative learning has three common themes designed to allow personal growth: individual experience, critical reflection and dialogue [34]. Since identification of these initial themes, new themes have emerged within this approach. These include holistic orientation, context awareness and authentic practice [35]. Theorists orientate transformative learning between different frameworks: individualistic or social and personal transformation. For the purposes of this paper a social and personal transformation view of transformative learning will be considered as a means of best developing student literacies in ICT higher education.

Considering transformative learning as a method for the development of adult learning skills, Tisdell [36] utilized popular culture as a means to engage students. By employing this technique Tisdell was able to situate the student within a context that they already understood before applying academic literacies within it. However, it has been argued that using popular culture in higher education can detract from the high culture typically used for teaching purposes in higher education [1]. However, by students understanding information within a social context (i.e. social literacy practices), they can then transfer this understanding to an academic literacy perspective [17]. To increase literacy skills, educators should develop materials for teaching students literacy skills using blended approaches from both traditional academic literature and more contemporary means, thereby increasing student engagement. In the literacy literature Lea [13] and Lea and Jones [14] identified a number of contemporary means that students are using to develop their ‘digital literacies’. This assists students to become aware of the context of their learning, which is a core principle of transformative learning.

One major criticism of the transformative approach is that it is fraught with difficulties when utilizing the underlying principles within a classroom environment [35]. Another criticism is that the approach is seen to embody the western value of individualism [23]. However, by implementing the practices of transformative learning and considering the socio-cultural focus, the core themes can be applied in many different ways. In order to consider socio-cultural impacts, it is necessary to conduct research within a real life context. This paper presents a case study of a real assessment task designed to develop and evaluate students’ digital literacies. The subject used for the case study is described in the following section.
4. **Subject Background**

As a core subject for all postgraduate students in the IS discipline and an option for students studying other postgraduate degrees in several other disciplines, the content covered is very broad. The student cohort, particularly in relation to educational background, is also diverse. The load for the subject is equivalent to a quarter of full-time study in a single academic session. The key points identified from the subject description and objectives are provided below. These are subsequently reviewed to determine the different types of literacies needed by a student to demonstrate that the requirements of this subject have been fully met.

The subject description states that the overall aim of the subject is to develop students’ academic skills at the postgraduate level, with an initial focus on writing for the ICT and IS discipline. This process will occur with students being expected to develop skills in critical listening, reading and the analysis of both text and data. These skills should be able to be communicated in both written and oral form. For the development of digital and information literacies students are required to develop skills in the location of information (through academic databases and the Internet), evaluate this information for their needs and the suitability of the information for their needs and use the information appropriately [38]. Based on the subject description the subject is primarily concerned with improving students’ critical, academic, digital and information literacies. Students’ critical and academic skills (critical and academic literacies) are developed through their understanding of information and their written and oral work.

A task involving use of the software application EndNote was the major assessment for the subject. To complete the assessment, students were required to learn to use the EndNote application (developing digital literacy skills) and then critically evaluate its abilities against other applications (academic and critical literacy skills). The assessment was designed to evaluate students’ critical and digital literacies through the selection of appropriate reference materials, and the selection and evaluation of other systems designed for the same specific purpose. The assessment task completed by students as follows:

1. Students were given five references in an EndNote library. All references were on a specified topic. The references contained errors, which students were required to correct.
2. Students searched library databases to find the five articles and correct the errors in the EndNote library.
3. Students searched library databases to find five more references on the specified topic. Students entered all of the reference details into their EndNote library.
4. Students used the Internet to identify, download and use two other applications that were similar to EndNote (i.e. other reference management packages). Based on usage of these other applications, students wrote a critical review and usability evaluation of EndNote compared with its competitors.

The ability to perform this assessment demonstrates that students have digital literacies in being able to use the software program effectively; and academic and critical literacies in being able to find other references on the same topic. Conducting the critical review of the three applications (EndNote, plus two others e.g. Mendeley, Papers, Zotero) demonstrates that students are able to critically review a software product based on its goals and then compare the products features and functionality. From a literacy perspective this assessment encompasses Luke and Freebody’s [20] ‘four stages of critical literacy’.

Having established an understanding of the different types of literacy education required to meet the objectives of the subject, the next issue to consider is the complexity of teaching students with varying literacy abilities. This requires consideration of why literacy education is important. Previous research has identified that there are a number of different types of literacy, that literacy is specific to social contexts, that a literacy has no direct benefit unless it is engaged with, and that literacy is more than just education – it is about power [40]. These
complexities will be discussed when examining the different literacies being evaluated as part of the critical review of the major individual assessment in the subject using EndNote.

5. Critical Review of Literacy Literature: A Review of the Assessment

From the subject’s perspective, the concept of scaffolding the information provided to students is an attempt to increase critical literacies (i.e. the four stages of the assessment). When students are studying, they are involved in a subject that is designed to adapt their ways of interpreting and understanding knowledge [15]. The processes of writing and reading are central to students being able to develop knowledge (students needed to identify the metadata needed to create an appropriate reference for the articles). If a student is able to demonstrate academic literacy skills he will have the abilities to operate within the theoretical and written environments of his subjects [25]. It is also important that the practices that students are engaged in are situated in cultural and contextual situations. Lea and Street [15] argue that teaching should be on the premise that, for a student to understand academic literacies, these literacies must be embedded in cultural and social practice (this draws in further discussion on why it is important to give credit to others work, and how the program under evaluation improves efficiencies).

One major issue within the academic literacy arena is that it is diluted with teaching critical thinking rather than critical literacies [9]; critical thinking alone does not adequately address issues of culture and politics. However, critical literacy in the ICT and IS domain has been argued to identify how “students might be encouraged to recognize and question the politics of computers” [31 p. 75]. An alternate view is that of Lonsdale and McCurry [18], who argue that the concept of critical thinking is a integral component for all literacies today. They raise questions about whether critical thinking is separate to other literacy practices such as information literacies. The role of literacy education has great value within ICT and IS courses in higher education, particularly when students are taught to critically reflect on its use. For students in this subject this is a particularly challenging task for the assessment being evaluated. The EndNote assessment requires students to use digital literacy skills to critically evaluate the different applications forming understanding to make appropriate technology decisions. The skill of critically assessing software is vital relevance in any ISD career.

The assessment also provided the opportunity for students to link their technical skills with digital and academic literacies. Lea and Jones [14] state that the complex relationship between academic literacies and technologies have the potential to disrupt conventional academic practices. The continual innovation in technologies means that digital literacies of students need to be continually redefined [16]. While educators need to be constantly aware of developing technologies [29], the effective management of changes in technology as part of the learning environment [27] needs to be given careful consideration. Digital literacies require a student to have more than the ability to use a software application or device. Digital literacies require a student to be able to fully engage as they employ a range of complex skills to be able to use the application effectively [4]. The use of technologies needs to be pedagogically sound and have relevance to the material being taught. In higher education, particularly in the ISD domain, students must be equipped with transferable digital literacies rather than providing students with step-by-step instructions on how to perform certain tasks within an application. This is one trap that should be actively avoided when employing technologies in a subject.

6. Recommendations

If students have an awareness of the educational values and approaches used in their studies then they are able to become “critical managers of their own learning and international communication practices with the teacher as cultural and educational mediator in this process” [22 p. 200]. The following section identifies three opportunities for IS educators involved in teaching subjects to increase students’ literacy skills. It is believed that each of these opportunities can be applied to any ISD subject. These three opportunities are: greater
use of scaffolding in the development of literacy skills; involving experts from across the institution to develop student skills; and embedding technology within assessments.

6.1. Scaffolding as a Process to Increase Literacy

One approach that could be developed further in the subject to increase literacy outcomes is that of scaffolding. Scaffolding is concerned with “developing the more complex skills associated with constructing academic argument through engagement with a range of texts” [30]. The process of scaffolding can be mapped to the EndNote assessment. Students are first exposed to the EndNote application with data already entered into the application. Students are then required to conduct their own information research to identify the accuracy of the data. By extending the scaffolding technique, focus should be given to the competencies obtained by students rather than just the digital literacy practices [9]. This could be conducted by giving students the option to critically reflect on the literacy skills obtained [35] and become self-aware about how they use their developed digital literacies.

Scaffolding also has the potential to allow for initial development of low-stakes tasks [6]. For example the use of the EndNote application to ensure that students have an understanding of its functionality before being required to critically assess it compared with competing applications.

6.2. Involve Experts where Appropriate to Ensure the Latest Techniques

Historically there has been much debate about the best location for teaching students literacy skills in higher education. While some researchers argue that literacy education should be moving towards reconstructing the importance of writing within a discipline area (and hence should be taught within that discipline) [2], [24], [41] most higher education providers deliver these services through centralized departments. When developing students’ literacy skills it is important to situate the learning with the discipline area. This allows support to be embedded within formal programs [17]. However, experts within the institution should be identified and called upon when appropriate for advice and best practice [2]. For the EndNote assessment, this could involve discussions with the library (the providers of the application) and staff delivering training to academics and researchers about how best to use the application. In the past this type of training was conducted, however, the focus of the training was importing references from journal databases but not critically reviewing the application from a technical and systems development perspective. This was a skill that the library staff stated that they were uncomfortable teaching due to their skill-set.

6.3. Embedding Technology from a Digital Literacy Perspective

The final recommendation for the assessment being evaluated is to embed appropriate technologies within the assessments. Prior research has demonstrated that there is a need to pay critical attention to the ways that students are accessing information when completing assessments, with students placing a great deal of attention on the digital information freely available on the Internet (i.e. Google) rather than on peer-reviewed academic literature [14]. Lea and Jones [14] argue that there are increased complexities for students in the digital era; where they need to use a range of different technologies and applications integrating the content for the purposes of their assessments. Initial analysis indicated that this was achieved effectively in the EndNote assessment, with students finding appropriate references for the development of their library in the first part of the assessment. However, further critical reflection showed that when students complete the evaluation of EndNote compared with competing packages they revert back to only referencing Internet sources rather than consulting peer-reviewed information; a practice identified in prior literature [13]. Clearly more work is needed to develop academic literacies concerning the appropriate selection of sources; this is an area for future research.
7. Concluding Remarks

When developing students' literacy skills in a higher education environment it is important to situate the learning with their discipline area. This allows support to be embedded within formal programs. This approach has two benefits for students: they are more likely to be engaged in an area of interest, and students are provided with the ability to articulate the information clearly which has the potential to improve overall communication skills. These concepts are supported in a transformative learning approach as it focuses on the student’s experience, with the student having an awareness of the context of their work. This follows the common themes of the theory of transformative learning where individual experience, critical reflection and dialogue allow for a student’s growth and learning.

This paper has presented a review of a major assessment in a core postgraduate subject in the IS discipline and how the subject has attempted to increase students’ critical and digital literacies. Through a critical analysis of the EndNote application, several initiatives have been identified. The three opportunities that were identified for increasing literacies were: greater use of scaffolding in the development of literacy skills; involving experts from across the institution to develop student skills; and embedding technology within assessments. The implementation of these initiatives in future deliveries of the subject is recommended in an attempt to increase these literacies. Further research is being conducted to establish whether and how these digital literacies skills can be applied in other subjects. By future educators implementing these recommendations, in other courses and subjects, it is expected that students will achieve greater literacy outcomes.

References


