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Embedding information literacy and writing development into the disciplines

Abstract:

The development of information literacy (IL) is essential in the current climate of tertiary education, where the abundance of electronic information is leading to information overload. IL involves students accessing and evaluating information, and using that information to complete assessments in an appropriate writing style. Integrating new knowledge successfully into writing is an important component of IL development. However, many students are not prepared for the demands tertiary education places on them, and lecturers should not assume students will be able to learn IL skills on their own without timely interventions. Rather, students need to be explicitly taught how to access information using the variety of tools available at the library and online, how to evaluate those sources, and how to integrate the voices of others into their own writing. Much of this knowledge is discipline-specific, and ideally should be embedded within the context of their content papers. This paper outlines one example of a formative assessment task created to support the development of information literacy and academic writing skills within a New Zealand university first year content course. It highlights the importance of embedding IL learning opportunities within the disciplinary context and curriculum to ensure students are supported to develop essential academic skills.

Biographical notes:

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Lisa Emerson is an Associate Professor in the School of English and Media Studies at Massey University. She is widely published in the field of science writing, WAC, and academic writing, and she teaches courses on scientific writing and writing centre theory and practice. She has won the Prime Minister's Supreme Award for Tertiary

Teaching (2008) and a TLRI research award (2011), and is currently researching at the University of Vermont where she has taken up a Fulbright Senior Scholar award to complete her work on the attitudes, beliefs and experiences of scientists as writers.

Keywords:

Writing – Information literacy – WAC – Writing in the disciplines – Teaching and learning – Library – Transition literacy.

Introduction

Larger numbers of students entering universities appear unprepared for the demands of academic learning and the gap between high school and university appears to be widening (Angier & Palmer 2006; Callahan & Chumney 2009; van der Meer 2006; Ladbrook & Probert 2011). University lecturers often express concerns over students' poor writing. However, lecturers' evaluation of poor writing may be connected to students' inability to find and evaluate appropriate, relevant information and effectively integrate this information into academic writing tasks. Rather than being unable to write, students may be exhibiting a lack of information literacy (IL).

The development of students' IL skills is essential in the current climate of tertiary education, which focuses less on knowledge transmission and more on preparedness for learning. Head and Eisenberg (2010) state that 'evaluation, interpretation and synthesis are key information competencies for the 21st Century' that enable students to navigate 'the future and present information landscape' (38). However, many students are not prepared for the demands tertiary education places on them, and need explicit support to learn both IL skills and how to communicate their own ideas and opinions alongside the voices of others (van der Meer 2006). Much of this knowledge is discipline-specific, and is ideally embedded¹ within the context of content papers.

This paper reports on the development and modification of one first year intervention developed within a larger research project conducted at a New Zealand university, which explored how IL instruction can be embedded into the disciplines over a full undergraduate programme. This study aimed to identify and implement ways students could appropriately synthesise information from a variety of sources, and relate it to written assessment tasks within the disciplinary context. Using participatory action research (PAR), the researcher, content lecturers, academic learning advisors, and the librarians collaborated to develop pedagogy and assessments that supported the development of students' IL and academic writing skills in a systematic way.

Defining Information literacy

The concept of IL is commonly understood by librarians, but less so by academics. The widely cited American Library Association (1989) definition of IL states 'to be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information' (para. 3). The Australia, New Zealand Information Literacy (ANZIL) Framework² explains that IL is common to all disciplines and learning environments, and to all levels of education. It enables critical engagement with content, and more self-directed and controlled learning (Bundy 2004). Furthermore, it contends that communicating ideas and information is integral for IL, and that it is 'necessarily demonstrated in a context and within a domain of content' (2).

While early models of IL focused on a step-by-step skills-based approaches, from the mid-1990s holistic views described IL as a way of learning rather than a discrete set of skills (see Kuhlthau 2004; Bruce 1997, 2000; Ward 2006, Webber & Johnston 2000). Such models emphasise 'the process of locating and retrieving information'

(Grafstein 2002: 200), because students use these skills to find information when needed. More recently, Bruce's (2008) holistic concept of 'informed learning' emphasises that using information and learning are inseparable.

This research engaged with the more holistic views of IL, which captured its fundamental role in supporting learning in higher education. We drew on the definition developed in the *A New Curriculum for Information Literacy's* (ANCIL) study (see Secker 2011; Coonan 2011; Secker & Coonan 2011) which states: 'Information literacy is a continuum of skills, behaviours, approaches and values that is so deeply entwined with the uses of information as to be a fundamental element of learning, scholarship and research' (Coonan, Secker, Wrathall & Webster 2012: 2). The holistic views connected IL to critical thinking, reflective learning, and writing to communicate new knowledge.

The importance of teaching information literacy in the disciplines

Many academics believe that students will learn IL and academic writing skills independently and that by setting inquiry-based tasks, the students will be exposed to the skills they need and will seek help if they need it (McGuinness, 2006). However, Marshall (2005 in Moore 2005: 7) sees this as a false presumption. Rather, students need 'repeated opportunities for seeking, evaluating, managing and applying information gathered from multiple sources and obtained from discipline specific research methods' (Bundy 2004: 6). Grafstein (2002) argues that the different epistemological structures across disciplines require different research processes. Thus, critical evaluation can only take place if students understand the way knowledge is created within the discipline. Teaching content is likely to have limited effectiveness if students are not able to communicate that content effectively, and place what they are learning within the wider context of disciplinary knowledge.

Acquiring IL involves learning a set of generic skills that enable subject-specific knowledge acquisition (Grafstein 2002). Taking library skills into the disciplinary context ensures that practical information-seeking behaviours are further developed. Then, skills necessary for subject-specific source evaluation are developed within the specific disciplinary context under the instructor's guidance. Therefore, collaboration between librarians and instructors, and the wider academic community is important to ensure that IL instruction is spread across courses and consistently reinforced throughout the full degree course (Simmons 2005).

The changing information landscape and the difficulty many students have reading complex academic texts provide further support for explicit IL instruction. The overabundance of electronic information is making research 'one of the most difficult challenges facing students in the digital age' (Head & Eisenberg 2010: 2). Furthermore, Kirkness and Neill (2011) found that although more motivated students attempt to read demanding texts, 'many will give up in frustration if they find the readings beyond their competence' (6). This may discourage students from finding journal articles a useful source of information, instead opting for simpler, easily accessible and comprehensible (but less reliable) online sources. To tackle this problem, instructors can provide tools to help students effectively read and value more

complex texts, and offer opportunities for students to discuss and reflect on the readings together.

Four key stages of IL

Today's Net Gen³ undergraduate students tend to go to search engines, such as Google, rather than library web-sites or electronic databases, and stop searching before they have thoroughly exhausted all avenues, thereby possibly missing out on valuable contributions to the research topic, and getting their materials from less reputable sources (Abram & Luther 2004; Thompson 2003; Windham 2006). Furthermore, academics often also confuse IL and IT literacy, and assume that because students can easily access free, electronic information, they can also 'find, select, organise and use relevant information sources' (Macklin 2001: para. 3). In reality, students need to be offered opportunities to progressively develop four key (non-linear) stages in the research process as they move towards becoming informed learners.

Stage one involves *identifying the information need*. Macklin (2001) observes that students often look for information before they have clearly identified their actual information need. To ensure students learn to conduct effective information searches, they need support to understand exactly what information they need and how to judge the most reliable sources from the mass available.

Stage Two is *finding appropriate information*. MacDonald and Dunkelberger (1998) feared that students would use easily accessible online sources, rather than selecting those most relevant for their research. Students may also look at the web information with a 'naive' view of the purpose of internet sites (Walton & Archer 2004). Teaching students to find the most appropriate information can be done with point-of-need library sessions and lecturer-facilitated in-class discussions on information sources. Chain searching⁴ may help clarify how the information fits together, and may help students avoid selecting random, and possibly unreliable, sources.

Stage three involves *evaluating information* sources and is more closely linked to the discipline. The internet itself is not an inappropriate source of information, but students tend to accept the most popular results uncritically (Windham 2006). While the Web is highly valued for its currency, it falls down on other important criteria such as completeness, usability, stability, validity, and credibility (Dalglish & Hall 2000). To help address this issue, lecturers can provide appropriate information sources for a particular task, then use activities to encourage students to engage with the model texts on a deeper level. Part of any assessment could include reflection on the sources used; this encourages students to think about how their sources contribute to the conversations in the literature and the classroom, and may help improve the quality of the written tasks being submitted.

The final stage is effectively *using and synthesising information* to transform the information into knowledge and to apply this knowledge appropriately to the assessment task. As much assessment is in a written form, having opportunities to

practice and get feedback on writing concisely and seamlessly incorporating source information is valuable prior to any assignment submission.

Scaffolded learning and reflection

Regardless of where IL is taught, the idea of scaffolding⁵ learning over a number of tasks is important (Thompson 2003; Walton & Archer 2004; Emerson 2005; Hyland 2003). Scaffolding ideally starts at the beginning of the research process, from the formulation and understanding of the questions, to searching for information, selecting relevant information, then analysing that information and synthesising the ideas (Walton & Archer 2004). Scaffolding also needs to take place beyond the first year of study as students progress to more complex tasks in specialised papers.

Instructors may also consider providing opportunities for students to reflect on the process of learning, ideally focusing on the development of the learner and not just the assessed content. Giving timely formative feedback at the research and writing stage, and providing opportunities to reflect on the learning process, may result in higher quality writing, less time spent marking poor assignments, and greater lecturer and student satisfaction.

Outline of the current research

A key purpose of this research was to help content lecturers identify ways they could embed information literacy development into their classrooms and assessment. The Bachelor of Environmental Planning (BEP) discipline at one of New Zealand's universities was approached because the BEP lecturers had expressed concerns over the poor quality of the written work and the lack of wider reading and source evaluation being done at all levels of their undergraduate programme. The four-year BEP degree had a structured timetable and was a cohesive, predominantly cohort-based programme, and therefore provided a good foundation for the implementation of a model of IL development across the full undergraduate programme.

Participatory Action Research (PAR) was selected as the methodology for our research as it enables a collaborative approach to problem-solving through an on-going process of action and reflection (McNiff & Whitehead 2006; Seymour-Rolls & Hughes 2000). It is designed to help people function more skilfully and intelligently within a specific context by improving practical judgement, rather than providing a scientific measure of truth (Burns 2000). We drew on six key themes in action research definitions, which we referred to as the '6 Cs' of action research: 1) Cyclical, 2) Collaborative, 3) Context-specific, 4) Combines theory and practice, 5) Critically Reflective, and 6) Change-focused. In this research, academic and support staff and the researcher collaborated to implement a change within pedagogy and curriculum design. Participating lecturers were encouraged to critically self-reflect on their pedagogy and assessments in light of the dual goals of facilitating the development of information literacy, and offering students more opportunities to learn through the research and writing process.

Five BEP instructors teaching six courses across the four-year BEP programme voluntarily participated in our research over two action research cycles. For staff participants, data collection methods included the researcher's reflective journal, and conversations (with follow-up written notes) and semi-structured interviews. Feldman (1999) promotes conversation in PAR as a valid research method because participants engage in directed and meaningful conversations and the 'sharing of knowledge and the growth of understanding occurs through meaning making processes' (126). Interviews with the BEP lecturers helped identify how the programme could become more cohesive and build on skills and knowledge being taught across all core papers.

Student participation in the research varied over the two action research cycles, and participation in focus groups and e-mail journals increased as the research progressed (Table 1). Student data was collected via focus groups conducted at the end of each semester, fortnightly e-mail journals, and anonymous surveys in selected courses.

CYCLE ONE	S2 2010	Course	Class total	Not partici- pating	Assignment review		Journal		Focus Group		Survey	
					No	%	No	%	No	%	No	%
		1-2	44	0	44	100	1	2	4	9	22	50
	2-2	25	0	25	100	1	4	5	2	20	80	
	S1 2011	1-1	37	0	37	100	8	22	9	24	X	X
3-1		22	0	22	100	2	9	5	28	X	X	
4-1		19	1	18	95	10	53	7	37	X	X	
4-D		22	3	18	82	10	45	7	32	X	X	
CYCLE TWO	S2 2011	Course	Class total	Not partici- pating	Assignment review		Journal		Focus Group		Survey	
					No	%	No	%	No	%	No	%
		1-2	31	0	31	100	6	19	10	32	19	61
	2-2	26	0	26	100	4	15	5	19	25	96	
	S1 2012	1-1	37	5	32	86	4	11	6	16	25	68
		3-1	27	0	27	100	4	15	5	19	25	93
		4-1	21	0	21	100	7	33	9	43	X	X
		4-D	24	0	24	100	7	29	9	36	X	X
* Course Code represents the year and semester the course was offered. For example, Course 1-2 is Year 1, Semester 2 and Course 4-D is Year Four, Double Semester.												
** Focus Groups for Course 4-1 & 4-D were combined as the same students were taking both courses.												

Table 1: Cycle 1 and cycle 2 Student participation data

The student data was used to determine any awareness of the new approaches to assessment and pedagogy, and to support the development and modification of interventions designed for the programme. A review of marked assignments from consenting students provided insight into the students' writing, source selection, synthesis, and citation skills, and helped identify areas that needed further development in the subsequent phases of action research.

Key changes in assessment and shifts in instructors' and students' perspectives of teaching and learning were needed to ensure that supporting students' IL and writing development was effective. A shift to a learner-focused, experiential, process-oriented view of learning guided the research. This involved reconceptualising writing concerns as developmental, creating opportunities for formative feedback, and promoting reflective teaching and learning practices.

The next section of this paper considers the effectiveness of one formative assessment opportunity created within the larger project: the Source Justification intervention. Representative quotes have been selected to support the key conclusions drawn from the overall student feedback.

The Source Justification Intervention: focusing students on source selection

One participating lecturer was concerned with previous first year students' over-reliance on web-based sources, which had resulted in a lack of scholarly sources and over-use of poor quality sources in assessment tasks. To focus students on using quality sources, the course instructor and researchers collaborated to develop a Source Justification task connected to the essay assessment, which was worth 10% of the overall course grade.

The task required students to conduct a brief critical reflection on source selection and took the form of modified and extended annotated bibliography connected to the essay topic. To help prepare for the essay, we offered a two-hour extended, hands-on library session, and created the new formative Source Justification task. The key purposes of the task were to encourage students to start information searches early, to read purposefully, and to make considered source selections.

The Source Justification task required students to: Identify key sources relevant to the essay question, practise APA format, identify key points in the source connecting to the essay question; and, justify their source selection (evaluation). Students were encouraged to apply source selection and evaluation strategies they had learned in the two-hour library workshop to complete the Source Justification task.

Trialling the Source Justification Task

In our initial trial of the Source Justification task, students were asked to choose 5 sources they were planning to use in their essay, with no guidance on source types, and only a brief outline of the task in the course outline. The instructor provided formative feedback on the sources selected before the essay was completed, thereby reducing the number of inappropriate or irrelevant sources students used.

The addition of the Source Justification task following the extended library session did encourage most students to consider source selection carefully. A review of reference lists and student feedback showed both an increased focus on source use and evaluation and that early feedback reduced the use of inappropriate sources.

Student feedback indicated that the inclusion of the Source Justification task, following the extended library workshop, made them carefully consider source selection for the essay.

The Source Justification was good. I liked being made more critical when you think and finding specific information from them rather than sometimes I just look at them and go 'oh yeah this will do' and quickly flick through (Focus Group 2011).

Early feedback reduced the use of inappropriate sources. The inclusion of the task effectively eliminated Wikipedia and other less appropriate sources from reference lists. Students appreciated the feedback on source selection prior to writing the essay, as this enabled them to make changes prior to completing the essay task.

I got told one or two of my sources really didn't have much to do with my essay, which probably helped me because I went and found better sources (Focus Group 2012).

However, the task also created a number of challenges and considerations for modifications to the task for the next semester. These included a lack of evaluation skills and the continued dominance of government sources.

Although the student entries showed that key considerations for evaluating sources were being used, these were often applied inappropriately. In the example in Figure 1 below, the student had selected a Facebook fan-page created by environmentally conscious National government supporters. The student alluded to the currency of the source, as well as its connections to other credible government sources, but there was no recognition of the potential bias of government sources⁶, or that Facebook fan-pages would not be considered an appropriate source for an academic essay.



 Bluegreens. (2011, February). In Facebook [Fan page]. Retrieved 3 May, 2011, from http://www.facebook.com/pages/Bluegreens/113973225304721?sk=app_2373072738#!/pages/Bluegreens/113973225304721?sk=wall

by Keegan Aplin Thorne (id:14201646) - Thursday, 5 May 2011, 08:08 PM

How / Where did you find it? –

- My own internet search.

5 Key points (bullet points)-

- This Facebook fan page is for the National Party's advisory group on environmental issues and describes plans and initiatives undertaken by the group.
- A Brief summary of a government target of greenhouse gas emissions being reduced by 50% by 2050, based on emission production levels in 1990.
- An announcement of a 74% contribution to total electricity production by renewable sources in 2010.
- Recognising and encouraging the 23,000 Department of Conservation volunteers over the past eight months.
- An announcement of a Bluegreen initiative to recycle plastics into road cones, reducing resin imports, promoting recycling and innovation and stimulating job creation.

Justification of source selection –

- This source is useful for this essay as it shows the environmental plans and initiatives under the National government, helping to understand what sustainability the National Party is concerned with coming into the 2011 general election. It is directly related to a New Zealand context. Using a Facebook fan page as a source has certain advantages as having the ability to be updated as quicker than most sources and having close communication with other webpages such as [beehive.govt.nz](http://www.beehive.govt.nz), so as to share information from credible government sources.

Fig. 1. Example of a Student Source Justification Stream posting entry

Despite the emphasis on the value of using scholarly sources in the library session and the feedback on source selection in the Source Justification task, we found that

government sources dominated reference lists and there was a still noticeable lack of scholarly, peer-reviewed sources used. The task did effectively eliminate Wikipedia from reference lists, but also emphasised the lack of scholarly material found during the early research stage.

Modifying the Source Justification Task

In the following semester, the Source Justification task was modified based on our reflections and student feedback and then re-trialled. Students were given more detail on how to approach the assessment in the course outline.

Figure 2 below outlines the key changes for the modified version of the task. Key source types were stipulated and students were provided a Word document template on the course website to complete. Students were still required to provide the full APA reference and identify three key points connecting the source to the essay question. A reflective element was also added to the task, asking students to reflect on what they had learned about their information search process. The rationale for the change was to encourage students to focus on the different way information is presented in different source types. Students could then choose whether to use or reject the source based on their analysis.

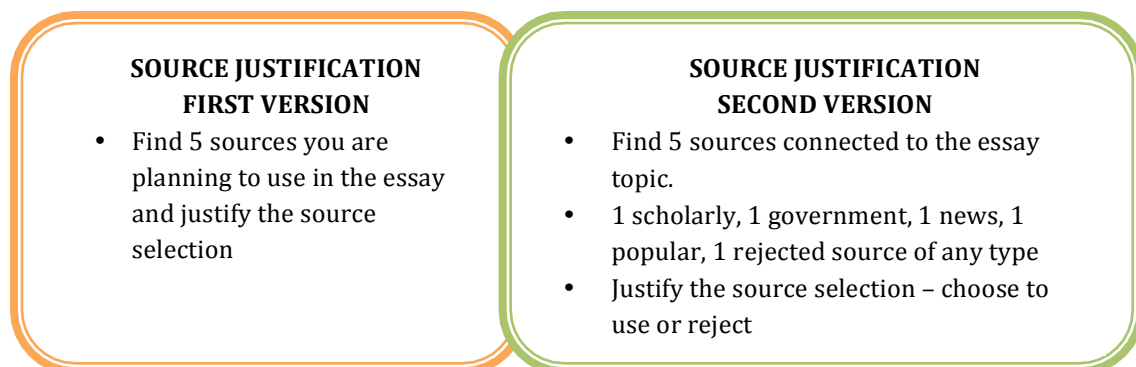


Fig. 2. Changes in Source Justification requirements

Student feedback and a review of the modified task submissions provided key insights into the value of the Source Justification task.

The new Source Justification format

There was a mixed response on identifying the source types. Some students suggested that specifying the source types didn't work, as this led them to finding sources to fill the Source Justification requirement rather than focusing on what they would actually use for the essay (for example, finding a news article). However, others felt it was good to look at all the different source types to help evaluate which ones were more useful. One student commented that this task definitely helped with other assignments too, indicating some transfer of skills following the task completion.

An unexpected comment was that some students struggled to find a source to reject.

I couldn't find a rejected source for ages... because the website would actually be a legit website (Focus Group 2012).

We had assumed there would be more sources to reject than to use. For the rejected source, students could choose to reject a quality source because, on further reading, it was recognised as irrelevant. However, most students didn't reject sources on this basis, and the rejected source was mostly Wikipedia because 'it can be edited'.

Recognition of purpose

Student feedback on the modified task was generally positive. Students recognised the task was developed to support their learning around searching for, evaluating and using information to complete assessment tasks. Some indicated the key purpose of the Source Justification task was to focus on evaluation over content and to promote deeper reading beyond content to look for other credibility indicators.

To teach us to evaluate them better instead of just looking at the content I guess.

Like actually reading and seeing if they're biased or not ... I thought that was good (Focus Group 2012).

One student also recognised how the task required them to reflect on both source selection and personal learning.

It was to get us looking at resources that would be good for our essay and then also to evaluate how well we are doing ourselves. So we can look at ourselves and say yep this referencing is good or this is a good source ... it made us look at ourselves as well as the sources (Focus Group 2012).

Other comments connected to helping them start early and the value of formative feedback was evident.

Just finding out what sources are good and how to properly evaluate them, use them and I think it also gave us a bit of a head start on our essay because I got told one or two of my sources that I used didn't really have too much to do with my essay which probably helped me because I went back and found better sources for my essay (Focus Group 2012).

Changes in search habits

A common theme in the students' reflections was that the task, combined with the extended library session, had supported a change in student search habits and reduced reliance on Google. The example of modified search habits is seen in the student reflection in Figure 3 (bold emphasis added). The student reflections also helped us to identify where students were still struggling with information searching and source selection. The completed assessments showed that many students needed further support to understand how information supports learning. However, we could also see

that they were thinking about source selection and starting to make considered choices, thus indicating value in the Source Justification task.

SCHOLARLY SOURCE
1. APA reference
Berke, Philip R. (2002). Does Sustainable Development Offer a New Direction for Planning? Challenges for the Twenty-First Century. <i>Journal of Planning Literature</i> , 17(21), 21-36. doi: 10.1177/088122017001002
2. How did you find this source?
Google Scholar: challenges OR opportunities 'sustainable development'
3. Identify three key points that are relevant to the essay
<ul style="list-style-type: none"> The increase of planning participation (particularly in low income areas) An increasingly design-oriented approach to urbanisation (New Urbanism) Ensuring an appropriate balance between environmental, economic and social values <p>The article was written in the United States, and was produced to analyse the origins and applications of sustainable development.</p>
4. Reason you chose to use this source
<p>I have decided to use this source because it explores the idea of planning based on a guiding principle: sustainable development. After the Brundtland Commission Report (1987), sustainable initiatives began appearing in statutory policy worldwide, which pushed sustainable development into the political spotlight in many countries. Prior to this, planning was perceived as directionless, and drew criticism from politicians and the public. It also explores the origins of public participation, which is a key aspect of modern planning. This journal article explores these ideas in depth, and provides relevant information on the planning process. I cannot detect any bias in the source, however a significant drawback is that it is not a New Zealand source. Relevant information concerning New Zealand specifically will have to be found elsewhere. The article is part of the Journal of Planning Literature, and its site address ends in .com. This indicates a commercial site, and the Journal itself is released quarterly. The author, Philip Berke, is a lecturer at the University of North Carolina at Chapel Hill and teaches courses in land use and environmental planning and policy, environmental analysis and land use planning, and planning theory. As a lecturer, Dr. Berke is a qualified source, and based on his area of expertise, is also a credible source.</p>
a. What have you learned about the information searching process?
<p>Before I came to university I used to use the first couple of sources that a standard google search spat out. I had no idea about google scholar, and seldom endeavoured to check out textbooks on the subject. After the library session I realised that there are so many more sources available than a simple google search. Discover, Google Scholar and the Library Catalogue provide scholarly/academic papers on a range of topics. I also learned that newspapers, magazines and blogging are not acceptable sources at a university level. I also learnt about the referencing formats we must use, and about the APA interactive tool on the Massey University website.</p>

Fig. 3. Student example of modified Source Justification task

Timing and shortcuts with task completion

A key challenge was the timing of the task and lack of connection to the wider purpose of finding appropriate sources for the essay. As a result, at least half of the sources used in the Source Justification tasks did not appear in the essay reference lists. For a number of students this could be attributed to feedback suggesting the source was inappropriate, but for others, it was because they hadn't started thinking about the essay, and were completing the task, then finding better sources to use later. Thus, the assessment didn't stop some students from taking shortcuts in the task completion.

Some of the sources I selected were not ones that I actually ended up using in my essay because I selected them mainly because it was easier to write about for the Source Justification (Focus Group 2012).

Evaluation remains a challenge

The entries in the Source Justification tasks showed that for a number of students, source evaluation remains a challenge. The student example in Figure 3 above, shows this student was starting to use some of the language of source evaluation, including recognising bias, commenting on author's credentials and considering the location of the source (Figure 3, question 4, bold emphasis added). However, the message about newspapers, magazines and blogs has been distorted. This indicates the use of these source types for pre-research understanding, and consideration of whether they are relevant and appropriate for the task was not clearly emphasised. Rather than these sources being unacceptable, the message for the students should have been to use with caution. Overall, the Source Justification task achieved its purpose of getting students carefully considering and reflecting on why source selection matters. One student commented that: 'No other lecturers have ever asked us to think about the sources we are using before' (Focus Group 2012).

Conclusion

Improving academic writing within a specific disciplinary context requires an explicit focus on the development of IL skills within the research and writing process. Initial extended library instruction is very important, but further IL skills development can continue in the classroom under the lecturers' guidance, with a focus on the evaluation of the sources found using the discipline specific conventions. This ideally should continue beyond first year as the curriculum becomes more complex and specialised. Feedback on the interventions developed in this research conducted in a New Zealand University showed that increased support with IL skills development in the disciplines can support successful learning outcomes at the university.

The Source Justification task presented in this paper was only one of a range of interventions created as part of our larger PAR project focused on integrating IL development throughout the four-year BEP programme. The extended library session and the addition of the Source Justification task integrated an explicit focus on IL into

the core first-year course. The introduction of the Source Justification allowed us, as educators, to see the kinds of sources students were selecting and advise on inappropriate sources before they were used in students' essays. We observed that students were starting to recognise the value of different types of information, and the importance of carefully considering source selection. While challenges around source evaluation remained, first year students in the BEP degree had a solid foundation to build on in subsequent courses.

Endnotes

1. A programme where information literacy skills development is Embedded, means the curriculum design is one where students have ongoing interaction and reflection with information, rather than extra-curricular classes and self-paced packages (Generic and Parallel – complement the curriculum) or separate classes and packages that are part of the curriculum (Integrated) (Bundy 2004: 6).
2. The following list of attributes in the ANZIL Framework state that an information literate person is able to: recognise when, and to what extent, information is needed; access the information efficiently; critically evaluate the information and its sources; classify, store, manipulate and redraft information collected or generated; incorporate selected information into their knowledge base; use information effectively to learn, create new knowledge, solve problems and make decisions; understand economic, legal, social, political and cultural issues in the use of information; access and use information ethically and legally; use information and knowledge for participative citizenship and social responsibility; and, experience information literacy as part of independent learning and lifelong learning (2004: 3).
3. The group of young people born in the 1980s who have never known life without computers, who tend to want instant gratification and immediate search results. Also referred to as 'Digital Natives' (see Prensky 2001).
4. Using reference lists and cited by functions of databases or Google Scholar to identify how the various texts fit together
5. Scaffolding identifies 'elements of a task that are initially beyond a learner's capacity and allows them to focus on aspects of the task they can manage. Scaffolding equally refers to making tasks meaningful by building on and recruiting what learners already know' (Walton and Archer 2004: 5).
6. While the Beehive website has links to researched government papers, it also links to a range of government-produced documents that favour the political views of the ruling party, and thus need to be analysed for any bias present from viewing issues through a particular lens – i.e. strong recognition of the benefits to the economy with little recognition of any potential negative environmental impacts.

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