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The evolution of an embedded information literacy module: Using student feedback and the research literature to improve student performance

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Abstract

The purpose of this paper is to describe the development and evolution of the embedded information literacy (IL) module for first year BSc in Marketing students in Dublin Institute of Technology (DIT) over a three year period between 2007-8 and 2009-10. It describes the pedagogical theories underlining the teaching and assessment of the course in its original format, the reflective practice in which the library team engaged, and the subsequent changes made to the teaching and assessment of the course, informed by the research literature. The study uses performance in the assessment task, student feedback drawn from survey questionnaires and a focus group as the methods of data collection, although the analysis also takes into account anecdotal evidence. The paper provides details of the correlation each year between student performance in the information literacy and marketing components of the assessment task. It outlines the students' evaluations of the course and, for the latter two years, it examines their perception of their information literacy skills before and after the embedded module. The issues raised in the feedback from students, the library team, and academic staff members were addressed using techniques drawn from the research literature. This involved underpinning the feedback and formative assessment for the programme with a student centred approach by introducing discussion board assignments to the course, and drawing on students' existing knowledge and experience by using worksheets at the start of class. The timing of the IL classes was also changed in 2008-9 to align them more closely with the assessment deadline. In addition, instructions in relation to the assessment task were rewritten and clarified in 2008-9 and 2009-10. The modifications made resulted in an improvement in student performance (as measured by the mean mark) in the IL assessment task, and in an increase in the correlation between the marks for the IL and marketing components of the assignment. The study has some limitations, while student feedback indicated a significant increase in students' confidence in their IL skills, the study did not examine at any stage whether this increase in confidence resulted in a change in their IL practice. Furthermore, while most students in the 2007-8 cohort indicated that they would apply what they had learned in the IL component to other courses, there is only anecdotal evidence that this actually happened. Nevertheless, the discussion on the issues and challenges experienced in relation to the teaching and assessment of an embedded information literacy module, and the analysis of the impact of the solutions introduced to address these issues should make this paper relevant to practitioners engaged in the delivery and assessment of similar IL modules.

Keywords

information literacy, embedded, assessment, academic libraries, student performance, undergraduate information literacy, reflective practice

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1. Introduction

This paper discusses the embedded information literacy module which has been delivered to first year BSc in Marketing students in DIT each year since 2007. It outlines the expectations of the author, fellow members of the library team, and the marketing lecturer before the course began and compares these expectations to the students' performance in the assessment task, and to the students' own perceptions of and confidence in their IL skills after completion of the course. The library team has taken a reflective approach to the delivery of the module. As a result, this information literacy module has evolved by integrating changes suggested by student feedback and by the research literature on learning and teaching and assessment. The paper will illustrate that this approach has led to a corresponding improvement in the students' performance.

In the summer of 2007 DIT Library Services conducted an IL project, to which the author was seconded. One of the project's tasks was to design a generic, adaptable IL pilot module to be marketed for inclusion in academic programmes in each faculty. This resulted in the development of a menu comprising 11 classes, one hour each in duration, which can be offered independently. The menu includes a description of each class and the learning outcomes each class is intended to achieve. Similar menu approaches to IL instruction have been adopted by a number of community college and university libraries in the United States and Canada in order to demonstrate to academic staff members the amount of content that can realistically be covered in a single session, to promote IL instruction and to standardise IL delivery within an institution (Benjes-Small et al. 2009). Similarly, University College Dublin has used an IL menu for several years (Byrne 2007). On completion of the IL project, assistant and faculty librarians marketed the menu of IL classes to academic teaching staff with the aim of increasing the number of embedded IL components in academic courses throughout DIT. This goal was inspired by the wide range of literature advocating the embedding of IL skills into academic programmes. Bundy (2004), for example, argues that embedding IL in the curriculum is the most effective method of IL education, while De Jager and Nassimbeni (2002) suggest that students are more likely to develop and retain IL skills if the skills are embedded into the subject which they are studying, rather than taught in a "generic" way. Proctor et al. (2005, p. 154) define embedding as "the process of aligning IL objectives with the learning outcomes of an academic course or program", and also found the embedding of IL skills into the teaching and assessment of a sociology programme to be effective and well received by the students.

As a result of the library's marketing efforts, librarians were invited to teach a number of IL modules in various schools throughout DIT in the 2007-8 academic year. The author was appointed course coordinator for an IL component to be embedded into the marketing theory module offered to all first year marketing degree students. The course coordinator role entailed liaising with the marketing lecturer to select the appropriate classes from the IL menu, agreeing the marks allocation for the IL component and the manner in which it would be assessed, coordinating the number, timing and staffing of the IL classes, and reviewing the course following its completion. The course was delivered and assessed by a library team comprised of the author and two fellow assistant librarians during hours timetabled for the marketing theory module.

The library team was keen to take a reflective approach to the delivery of the course, as advocated by Peacock (2000) and Lupton (2002). We therefore sought feedback from the students at the end of the pilot course in 2007-8 and made a number of amendments to the course design in response to this feedback before the library team delivered it again in 2008-9. The library team repeated the cycle of seeking student feedback and making corresponding amendments to the course in each subsequent year. The study therefore consisted of three stages: 2007-8, 2008-9 and 2009-10. The total number of students examined in each stage was 81, 79, and 78 respectively.

2. Year 1 of the information literacy module (2007-8)

At the suggestion of the marketing lecturer, the decision was taken to integrate the IL component into a group marketing plan project, where each group developed a marketing plan for the introduction of a new product to the Irish market. Integrating an IL component into this practical assignment would allow the library team to deliver a "reality based" IL programme, as advocated by Lantz and Brage (2006, p. 4), thereby enabling students to "develop and practice applied information literacy skills" (Lantz and Brage 2006, p. 5).

Using the menu of classes developed during the summer of 2007, the following classes were selected as being directly relevant to foster the skills the students required to research and reference the group marketing plan project:

1. Finding Journal Articles from a Citation.
2. Beginning Your Research: Using Library Databases for Secondary Market Research.
3. Articles Databases and the Internet.
4. Evaluating Information. Citing and Referencing.

In terms of learning outcomes, by the end of the IL sessions students were expected to be able to:

- Find the full text of journal articles, whether in print or electronic format.
- Formulate a search strategy and apply it in a range of business and marketing databases.
- Use library databases to find secondary market research information in relation to a company, its competitors, and the related industry.
- Use Google effectively to find marketing information on the Internet.
- Distinguish between appropriate and inappropriate (for the assignment at hand) sources of information.
- Avoid plagiarism by citing sources using the Harvard (Name, Date) system.

The classes were delivered by a library team of three assistant librarians (including the author), with approximately 20 students in each session. Classes were held either in a library training room (equipped with 25 student computers, an instructor's computer, and a projector) or a similarly equipped computer laboratory. All four classes adopted the same format, beginning with a brief lecture using PowerPoint slides, followed by a live demonstration of the relevant resources (e.g. databases, or the electronic journals portal), followed by individual or group worksheets in which the students put the skills they had learned into practice. The library team collected the worksheets at the end of class and returned them, with feedback, to the students in their next IL class. The first three classes were delivered in October and November 2007 and the last class was delivered in February 2008, two weeks before the marketing plan was due for submission.

2.1 Assessing the course

Assessment "defines what students regard as important, how they spend their time and how they come to see themselves as students and then as graduates" (Brown et al. 1997, p. 7). Similarly, Gibbs (1992, p.10) states that "assessment systems dominate what students are oriented towards in their learning". How and what we assess therefore affects what students learn. Indeed, not only does assessment influence what students learn, it also affects the approach they take to their learning. Students may take either a deep or a surface approach to their learning. Students taking a deep approach to learning seek to understand and to integrate concepts into their existing knowledge and experience, while students taking a surface approach to learning learn pieces of information by rote and do not attempt to integrate them into their existing knowledge (Fry, Ketteridge & Marshall 2003). Rust (2002, p.150) argues that the use of "real-world" tasks in assessment increases the likelihood that students will take a deep approach to their learning. The marketing lecturer and library team therefore agreed that the marketing plan project should form

the basis of the assessment of the IL component because of its applicability to real world conditions.

As Long and Shrikhande (2010) observe, there is a long history of the use of citation analysis in assessing IL and the library team decided to adopt this method by using the following criteria to assess the students' marketing plans based on:

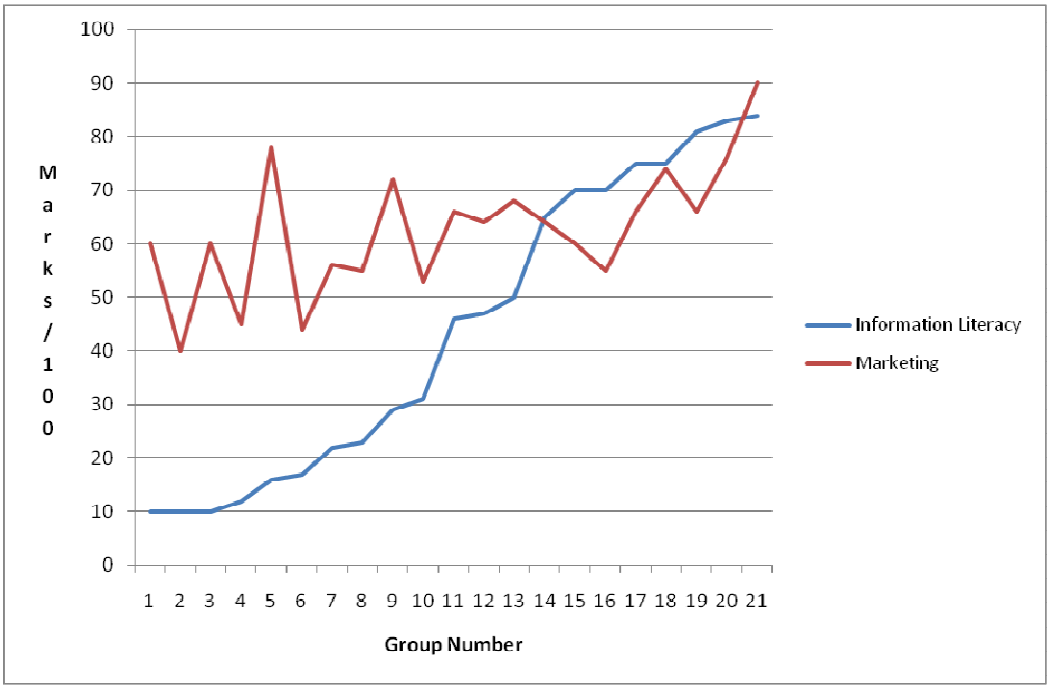
- The range of resources that students used in completing the plan (i.e. whether they used library databases to find the relevant market research and journal articles to complete the plan).
- Correct citation (in-text and a complete reference list) of the resources used to complete the plan.

The library team was concerned, however, that using citation analysis as the sole means of assessment would disadvantage those project groups who chose to do their marketing plan on a product for which a ready-made market research report or similar information source was not available. As a result, each group was asked to keep a research strategy log in which it documented the library resources the group members had used to conduct secondary market research and to find academic articles for their marketing plan. This allowed the library team to assess each group's research *process* rather than its *results*, thereby ensuring that those groups who chose a product for which market research information was not readily available were not penalised for the unavoidable absence of market research reports from their reference list. 30% of the total marks for the marketing plan project were allocated to the IL component of the plan. The library team then allocated 70% of the IL marks to the research strategy log, and 30% to the correct citation of the sources used (see Appendices 1 and 2). This weighting was designed to emphasise to students that adopting good IL practices in the research process was the most important part of the IL assignment. At the beginning of the IL course, the library team briefly explained to the students how they would be assessed. The students were also encouraged to retain their worksheets (together with feedback from the library team) to assist them in completing their research strategy log. In the final IL class, the library team gave each student a handout detailing the assessment of the IL component and the points the research strategy log should cover (see Appendix 2). The handout was also uploaded to the class intranet.

2.2 Library team and marketing lecturer's expectations versus results

The importance of being an information literate graduate is well documented. Candy (1994), for example, states that "no graduate . . . can be judged educated unless he or she is 'information literate' " (p. xii). Furthermore, information literate employees lead to improved company performance for their employers (Cheuk 2008; Kirton and Barham 2005). In planning this embedded IL component, the marketing lecturer and the library team expected the students' IL skills to improve, resulting in better performance in their marketing assessments and leading to fully fledged information literate graduates. In the short term, the marketing lecturer and library team expected that those project groups that performed well in the IL component of the course would also perform well in the marketing component. A close correlation between the marks each project group received for the IL component of the assessment task and those received for the marketing component was therefore expected. In fact, there was a surprisingly large range of marks awarded to the project groups for the IL component of the marketing plan, the highest mark achieved was 84% and the lowest was 10%. In addition, the IL and marketing marks did not correlate as closely as the library team and marketing lecturer had expected (Figure 1), with a correlation coefficient of just 0.578.

Figure 1: 2007-8 Marks for Information Literacy and Marketing Components



An analysis of the marketing plans indicated that those groups that earned the lowest marks had not included a research strategy section in their marketing plan. Since the library team allocated 70% of the IL marks to the research strategy section of the assessment task, failure to complete this section of the assignment consequently had a highly negative impact on a group's IL marks, and therefore on their combined marketing and IL marks for the marketing plan overall. The library team attempted to mitigate this by inferring as much as possible from the bibliographies. This entailed reviewing each group's bibliography to see whether it contained any references to market research reports and journal articles which had been retrieved from the library's databases. Nevertheless, just over half of the project groups (52%) passed the IL component of the assignment, with a mean mark of just 44%. This was mainly due to the fact that a significant number of groups had omitted to complete the research strategy section of the assignment.

Before marking the assessment task the library team conducted a survey of the students to solicit their feedback in relation to the IL course. The survey was in paper format and consisted of 11 questions. Questions one to five and questions seven to eleven used a four point Likert Scale (Strongly Agree, Agree, Disagree and Strongly Disagree), while question six was a Yes/No question asking whether students would use what they had learned in other courses too. 34 students completed the survey, representing a 42% response rate. 91% (29 out of 32 respondents to this question) either "Strongly Agreed" or "Agreed" that, having completed the course, they now knew about the range of information available in the library and via the library website.

87.5% of respondents (28 out of 32 students who answered this question) either "Strongly Agreed" or "Agreed" with the statement "I feel more confident about using the library's resources (i.e. the physical library and the information available via the library website) than I did before the sessions". This appears to indicate positive feedback in relation to the IL classes, but it is difficult to know what the term "more confident" meant in practice to the students. This represents a limitation of the study, since we could not follow up with the students to clarify this point with them.

In addition, 81% of students (25 out of 31 respondents to this question) either "Strongly Agreed" or "Agreed" with the statement "I would recommend these sessions to other students", and, significantly, 97% of students (31 out of 32 respondents to this question) believed that they would use what they had learned in the IL component of the course in other courses too. The survey did not provide students with an opportunity to provide examples of use after completion of the IL

classes. Anecdotal evidence from the marketing theory and other course lecturers, however, indicated that the students demonstrated a higher level of IL skills subsequent to completion of the IL component.

Thus, both the students and their lecturers believed that their information literacy skills had improved as a result of the embedded IL course component. The library team held a similar view. The low pass rate and mean mark achieved in the IL assessment, however, did not reflect this, leading the library team to believe that the assessment had not accurately measured the true level of each groups' IL skills. The library team therefore resolved to change the course the following year in an attempt to address this discrepancy and, following consultation with the marketing lecturer, a student focus group was set up to gain further student feedback to assist us with the planned changes.

Three main issues were raised by students in the focus group. Firstly, the students felt the IL classes had been held too early in the academic year, and too long before the deadline for submission of the marketing plan project. Secondly, some students perceived the IL classes as irrelevant, mistakenly believing that these "library classes" were "free classes" in which they were expected to go to the library to study as they had done in secondary school. They only realised the possible benefits of attending the IL classes after they were over. Since 30% of the total marks for the marketing plan project were allocated to the IL component of the project, this lack of awareness of the relevance of the IL classes had a noticeable negative impact on the students' marks for the project.

Finally, the students reported finding the concept of the research strategy log difficult to understand. When reminded that they had been given a handout detailing the required content of the research strategy log, stating that the log should be included in the marketing plan project, one student (whose group had omitted to include a log in its marketing plan) commented that this was one more handout in the midst of many others, and had therefore been overlooked.

3. Year 2 of the project (2008-9): using the research literature to respond to student feedback

When planning the course for the subsequent year (2008-9), the marketing lecturer and the library team addressed the issue of the timing of the IL classes which had been raised by the focus group by moving three of the four IL classes to the second semester so that they were held closer to the deadline for submission of the marketing plan. In addition, the marketing lecturer arranged for one of the second year students who had misunderstood the purpose of the "library classes" the previous year to have a ten minute (unsupervised) discussion with the first year class, during which she emphasised the importance and relevance of the IL classes. The marketing lecturer also made a point of referring to all classes taught by the library team as "lectures" rather than "classes in the library" to ensure that their purpose was not misunderstood.

The library team believed that the problems experienced in relation to the research strategy log, however, indicated the need to reconsider the way in which the IL course was delivered, and to re-examine our pedagogical approach. Biggs and Tang (2007) consider theories of teaching and learning to fall into three broad levels through which teachers tend to evolve during their career: Level 1, a "blame-the-student" approach, Level 2, a "blame-the-teacher" approach, and Level 3, a "student-centred" approach.

Teachers at Level 1 are unreflective and ascribe the success or failure of students to learn to whether or not they are "good students". Teachers at Level 2 are more reflective than those at Level 1, and consider deficits in student learning to be attributable to a lack of certain competencies on the part of the teacher. Level 3 teachers, on the other hand, consider which teaching and learning activities need to take place in order for students to achieve the desired learning outcomes, and facilitate the students' learning accordingly (Biggs and Tang 2007).

Upon reflection, the library team felt that the theory of teaching and learning underpinning the first delivery of the embedded IL component in 2007-8 had tended more towards Level 2 than the ideal Level 3 approach. We therefore resolved to take a more student-centred approach to the embedded IL course component. Cannon and Newble (2000, p.17) consider student "activity in learning" to be an essential component of student-centred learning, while Gibbs (1995, p.1) argues that student-centred courses also emphasise the students' experience before the course and outside of the academic institution.

Jacklin and Pfaff (2010) have found that using active learning in IL skills classes "can improve students' learning experiences" (p. 14). In the first year of the embedded IL component, the library team had used worksheets in class, thereby incorporating learning activity into the classes. Students completed the worksheets at the end of the class, however, once they had been 'taught' how to use library databases, etc. In the second year of the course, the library team decided to draw on the students' existing knowledge and experience, as advocated by Gibbs (1995), by using worksheets at the start of class instead. Students were tasked with conducting research on topics such as the potential size of the Irish market for a new brand of herbal tea, without having yet received any instruction from the library team.

This had several advantages. Firstly, it allowed the library team to gauge the students' existing knowledge and skills in relation to finding market research information, or to plagiarism (for example), and to tailor the session accordingly. Secondly, it piqued the students' interest in the topic to be covered in that day's class, and thirdly, it allowed students to see for themselves that the type of information available through the library's databases was different and generally superior in quality to that available for free on the Internet.

3.1 Changes made to feedback and formative assessment

The final change made in the second year of the course was in relation to feedback and assessment of the IL component. As Race (1999) argues, feedback is critical for successful learning, and needs to be "timely . . . . intimate and individual . . . . positive . . . . constructive when critical . . . . [and] efficient and manageable" (p.27). However, due to the timing and spacing of the IL classes during the 2007-8 academic year several weeks sometimes passed before the students received feedback for the work they completed during the IL class. Feedback was therefore possibly not timely enough and this may account for the fact that some project groups did not seem to incorporate the feedback from the worksheets into their final marketing plan.

The change in the timing of the IL classes in 2008-9 helped to address the lack of timeliness of feedback. Nevertheless, the library team decided to completely re-think the use of worksheets in the first year BSc in Marketing IL classes to integrate some formative assessment into the course. As discussed above, we had already decided to ask the students to complete worksheets at the start of class, which gave the library team a useful measure of students' existing levels of knowledge. We felt, however, that we also needed some way of giving and receiving feedback in relation to how students' knowledge of a topic covered in class had changed as a result of that day's IL class.

While, as Yorke (2003, p.478) observes, defining formative assessment is not entirely straightforward, generally speaking it is intended to "contribute to student learning through the provision of information about performance" and to "provide a focus for the student by highlighting their learning gaps and areas that they can develop" (O'Neill and McMahon 2005, p.31). The library team's use of worksheets at the end of each of the IL classes in 2007-8 had provided that cohort of students with some formative assessment, but we felt this could be improved.

As a result, we introduced a new assignment in 2008-9. Each project group was asked to submit two discussion board postings to the class intranet on their research activities, with each posting due one week after the related class. The questions to be answered by each group in the discussion board postings were identical to those to be addressed in the research strategy log due

for submission as part of the marketing plan at the end of the course. In other words, the discussion board postings were a 'practice run' for the final assessment task. Since the previous year's cohort had difficulties with the research strategy log, the library team posted a list of specific questions which each project group was required to answer in its discussion board posting. For example, in the discussion board posting after the class on using market research databases, each group was asked to answer the following questions:

1. What product has your group chosen for the Marketing Plan project?
2. Which database did you try? You must try at least one database, but you can try more.
3. What keywords did you use to search for information on the market in Ireland for your product?
4. What search(es) did you use in the database that you tried?
5. Did you find a report on your product/industry?

    - If yes, what is the name of it? What date was it published on? Which database was it in?
    - If no, can you find a relevant report on a slightly broader market (e.g. "Tea in Ireland" rather than "Herbal Tea in Ireland")?
    - If you still can't find a relevant report, where else would you try to find information on the market in Ireland for your product?

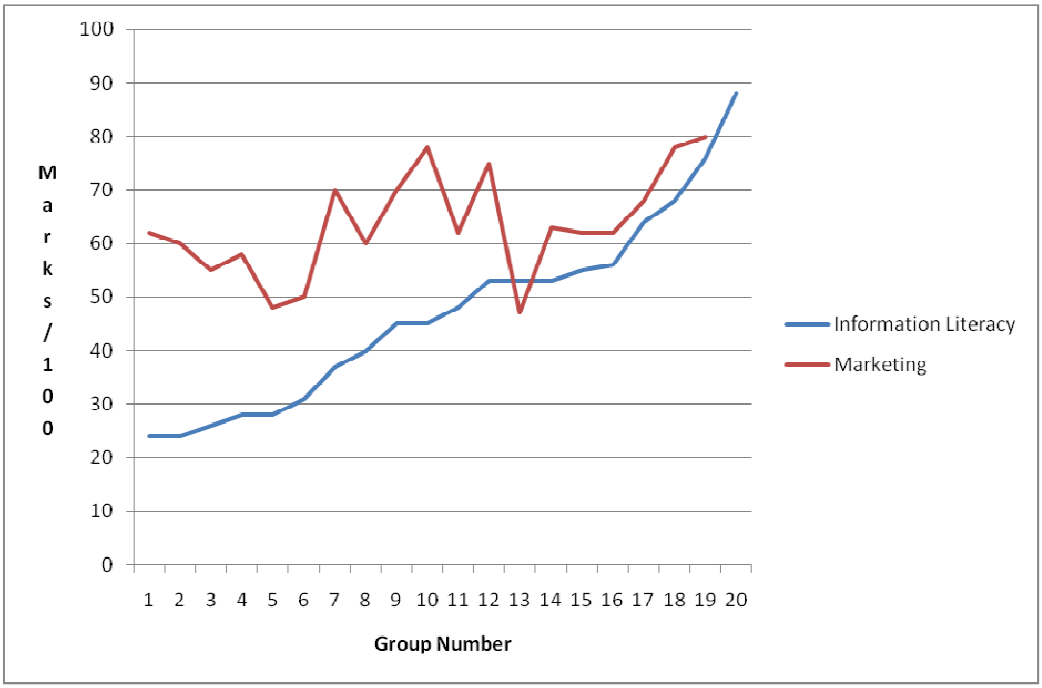
As Yorke (2003) observes, it is possible for an assessment to be both formative and summative so, in order to ensure submission of the discussion board postings by each project group, the library team assigned 20% of the IL marks to the discussion board postings. The breakdown of IL marks in 2008-9 was therefore 20% for the discussion board postings, 50% for the research strategy log, and 30% for referencing and citing. Each project group received its feedback and marks within one week of submission of the discussion board posting.

To address the fact that the majority of project groups in the 2007-8 cohort had not included a research strategy log in their marketing plan, the library team and the marketing lecturer both reminded the 2008-9 cohort of this requirement. The library team also updated the handout detailing how the research strategy log should be structured and what it should cover, and prepared a checklist of items each project group should include in their submission. Both handouts were distributed in class and posted on the class intranet.

3.2 Impact of changes

As discussed in section 2.3, in 2007-8 there was a wide range of marks for the IL component of the marketing plan assessment task. The range of marks for the 2008-9 cohort was somewhat narrower: from 24% to 88%. In addition, the 2008-9 cohort's mean mark for the IL component was 47%, representing a 3% increase on the previous year, and 65% of project groups achieved a passing grade, which was a 13% increase on 2007-8, although non-submission of the research strategy log continued to be a problem in 2008-9. Finally, the correlation between the marks for the IL and marketing components was again lower than expected by the library team and the marketing lecturer (see Figure 2), with a correlation coefficient of 0.5865.

Figure 2: 2008-9 marks for information literacy and marketing components



In an effort to determine whether the students felt their IL skills improved as a result of the IL component of the marketing theory course, in 2008-9 the library team conducted two student surveys intended to measure the students' confidence in their IL skills, one before and one after the IL classes. Identical questions were posed in both surveys. The survey was in paper format and consisted of six questions, all of which used a four point Likert Scale (Strongly Agree, Agree, Disagree, and Strongly Disagree). The paper surveys were completed in class by the students. There were 66 survey respondents for the pre-IL classes' survey and 58 respondents for the post-IL classes' survey, representing response rates of 83.5% and 73% respectively.

The students' confidence in their IL skills increased substantially following the IL classes, particularly in the area of using market research databases. Prior to the IL classes, just 13.6% of students (9 respondents) either strongly agreed or agreed with the statement "I am confident using market research databases to research a market for a product" but this increased to 91.4% students (53 respondents) after the IL classes. The statement "I am confident using…" is a subjective one, however, and it is difficult to know what it meant in practice to the students. This represents a limitation of the study, since we could not follow up with the students subsequently to clarify this point with them.

Similar improvements in students' confidence levels occurred in relation to finding journal articles. Just 24.2% of students (16 respondents) either strongly agreed or agreed with the statement "I am confident using the library's databases to find journal articles on a topic" before the IL classes, while 94.9% of students (55 respondents) either strongly agreed or agreed with the statement after the IL classes. Again, it is difficult to know what the practical implications for students were as a result of this apparent increase in confidence in their ability to find journal articles, and this represents another limitation of the study.

Discussions with students from the 2008-9 cohort suggested that they found the concept of the research strategy log difficult, and, as in the previous year, most groups (65% as compared to 71% of groups in 2007-8) did not submit this part of the assignment. This was despite the detailed handouts and reminders about including a research strategy log in the submitted marketing plan. While disappointing, this does reflect Rust's (2002) observation that "giving students explicit assessment criteria alone is unlikely to result in them producing better work" (p. 151). Rust's ideal solution to this issue is to have the students themselves mark pieces of work using the proposed

assessment criteria. However, he anticipates that this would take between 90 minutes and 2 hours. This would represent half of the library team's contact hours with the first year BSc in Marketing students, and the library team therefore did not consider it practicable for the IL component of this course. Nevertheless, the improvement in the mean mark and pass rate, and the positive feedback from the students in relation to the course suggest that the changes introduced in an effort to make it more student centred had a positive impact on the students' learning.

4. Year 3 of the project (2009-10): minor changes improve results

Feedback from the library team and from the marketing lecturer suggested that the IL course was "almost there". The library team's primary concern for 2009-10 was to address the continuing issue in relation to the research strategy log.

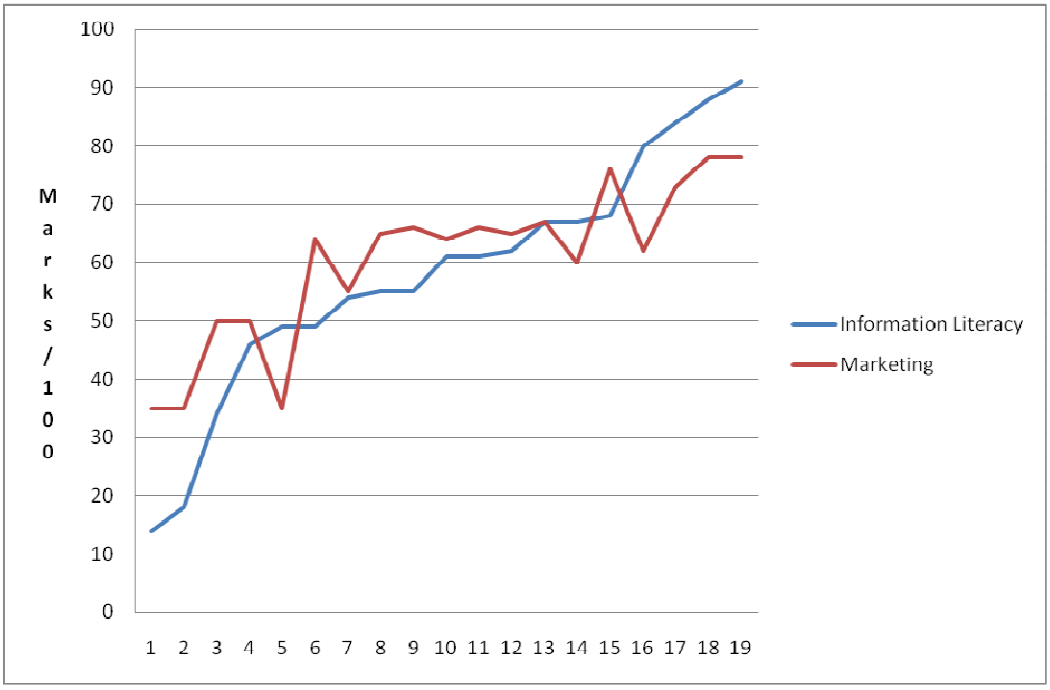
To assist the project groups' understanding of the research strategy log the library team developed a research strategy template which gave step-by-step instructions on how to construct the research strategy log (see Appendix 3). The library team distributed the research strategy log's template in class and referred to it periodically throughout the IL component of the course, reminding students of its purpose. We also posted it on the class intranet and included a link to it in the reminder emails about the project which were sent to the project groups. In addition, rather than asking the project groups to include a research strategy log in the marketing plan itself, the 2009-10 cohort was instructed to submit these as two separate pieces of work. This change was introduced by the library team in the hope that asking the students to submit two documents would ensure that both elements of the assignment (i.e., both the research strategy log and the marketing plan) would be completed.

When marking the previous year's marketing plans, the library team had also observed that several of the project groups did not appear to see the relevance of using articles retrieved from the library databases to assist them in writing their plan. In some cases project groups had described the retrieval of relevant articles in their discussion board postings, but did not integrate those articles into the marketing plan they subsequently submitted. In other words, some students did not seem to see a connection between the class on using databases to find academic articles and the practical assignment of writing a marketing plan. For 2009-10, therefore, the marketing lecturer introduced a 500 word "marketing plan literature overview" section to be included at the start of the marketing plan. Each group of students was required to draw on at least two articles retrieved from library databases. This was intended to clarify for the project groups the relevance of journal articles to the completion of a good quality marketing plan.

Apart from these two changes, the timing and format of the IL classes for 2009-10 was the same as in the previous year. The library team and marketing lecturer were optimistic, however, that these changes would help the project groups to perform well in the assessment task and would increase the chances of a close correlation between the IL and marketing marks.

The changes during 2009-10 in relation to the research strategy log appeared to be successful as only one project group omitted to submit this element of the assignment. As a result, the mean mark in the IL assessed component increased from 47% in 2008-9 to 58% in 2009-10, and the pass rate increased to 84%. In addition, there was a markedly greater correlation in 2009-10 between each group's IL marks and their marketing marks in the marketing plan assessment task (see Figure 3). The correlation coefficient for 2009-10 was 0.8566; a closer correlation than in the previous two years of the course.

Figure 3: 2009-10 marks for information literacy and marketing components



The library team repeated the 'before' and 'after' surveys of the students in 2009-10, but used the online survey tool Survey Monkey[1] instead of paper. Unfortunately, the response rate fell to 63% (49 students) for the 'before' survey and 49% (38 students) to the 'after' survey.

The survey results were similar to those of the previous year. 14.3% of students (7 respondents) either strongly agreed or agreed with the statement "I am confident using market research databases to research a market for a product" before the IL classes, compared to 86.9% of respondents (33 students) after the IL classes. More students in the 2009-10 cohort felt confident in their ability to use the library's databases to find journal articles on a topic before they had any IL classes than in previous cohorts, however: 53% of respondents (26 students) either strongly agreed or agreed with the statement "I am confident using the library's databases to find journal articles on a topic" before the IL classes, but this increased to 94.7% (36 respondents) either strongly agreeing or agreeing with this statement after the IL classes. Since the 2009-10 survey consisted of identical questions to the 2008-9 survey, the third stage of the study has the same limitations as those described in section 3.2. Thus, while the above responses represent a significant increase in the students' perceptions of their IL skills, they do not necessarily indicate an actual change in their practice. Possible methods to tackle these limitations in future delivery of the IL module include modifying the survey questions posed, and using focus groups or interviews to probe student responses.

5. Conclusion

Reviewing the development of this course over the three years of the study indicates that a reflective process of seeking student feedback, reviewing the research literature, and making amendments is worthwhile for librarians involved in delivering and assessing IL modules. In DIT, student feedback helped the library team to identify problem areas in the IL course, while the research literature assisted in the development of a variety of solutions to the problems.

Student feedback following the 2007-8 course indicated that the timing of the IL classes relative to the deadline for submission of the marketing plan project was problematic. The library team and marketing lecturer addressed this issue by moving the IL classes closer to the project deadline,

[1] Available at http://www.surveymonkey.com/ (Accessed 6 August 2010)

thereby taking more of a ‘just in time’ approach to the IL classes. In addition, the students’ lack of understanding of the relevance of the IL classes was addressed by having a second year student explain the importance of the IL classes to the first year class, and by the marketing lecturer referring to the IL classes as ‘lectures’ rather than ‘classes in the library’. The fact that these issues did not arise in student feedback in subsequent years indicates that these problems were fully addressed.

The difficulty the students in the 2007-8 cohort had understanding the concept of the research strategy log was more difficult to solve. To address the problem, in 2008-9 (the second year of the course), the library team introduced discussion board postings which were designed to provide the project groups with formative feedback on the reflective process of compiling a research strategy log. The library team also provided a checklist in 2008-9 of the items each project group should include in their IL assignment, and updated the handout detailing the desired structure of the research strategy log. Despite these changes, student feedback from the 2008-9 cohort indicated that many groups still found the research strategy log difficult to understand. Only in 2009-10, when the library team provided the class with a research strategy template, step-by-step instructions, and asked each group to submit the log as a separate piece of work, was this problem finally solved. The study has therefore raised the issue of whether the research strategy log is a suitable tool to use to assess students’ IL skills, given the high level of assistance required by the project groups from the library team and the marketing lecturer in understanding and completing the log. This warrants consideration for future years of the programme.

When the IL module was first delivered in 2007-8, the library team and the marketing lecturer expected those groups which performed well in the IL component to also perform well in the marketing component of the assignment. This was not the case in reality as the marks for the IL and marketing components did not correlate closely. The low mean IL mark and the number of groups achieving a passing grade also fell short of the library team’s expectations. This was mainly due to the large weighting for the IL component and to the failure of the majority of project groups to submit the research strategy section of the assignment.

However, it was believed that the weighting emphasised to students the importance of adopting good research and IL practices and this practice was continued in the second year of the programme (2008-9). In addition, the library team took a more student focused approach in 2008-9 to the feedback and formative assessment for the programme, and consequently expected an improvement in the mean IL mark and an increase in the number of groups achieving a passing grade. These improvements did occur, but the change in the correlation between the marks for the IL and the marketing components of the assignment were unfortunately minimal.

By contrast, during 2009-10, the project groups’ IL results correlated closely with their marketing results, and the students’ perceptions of the changes and improvement in their IL skills compared closely with their IL marks. The learning and assessment approaches used in 2009-10 were the most successful to date, although further improvement could be introduced by increasing the level of engagement by the project groups with the feedback they receive in relation to their discussion board postings. The library team found that some groups repeated mistakes they made in discussion board postings in the marketing plan they subsequently submitted; quite a common occurrence, according to Rust (2002). This is an area we hope to address in future years of the programme.

It is important to stress that a number of limitations emerged during the course of this study. While a large majority of the 2007-8 cohort felt “more confident” using the library resources than they had before the IL classes and stated that they would apply the IL skills they had learned in other courses, the library team only has anecdotal evidence that the students actually displayed improved IL skills in a number of other courses after completion of the IL module. Similarly, while ‘before and after’ surveys in 2008-9 indicated that the students’ confidence in their IL skills increased significantly following the IL module, the library team could not verify this with evidence showing actual change in behaviour. Since the same surveys were used with the 2009-10 cohort,

this limitation applies to the results of that stage of the study as well. The library team aims to address these limitations in the future by modifying the survey questions and by introducing focus groups or interviews to further probe the responses to the survey.

The main point that needs to be stressed here is that the findings of this study indicate that librarians adopting a reflective approach to the design and delivery of embedded IL modules can lead to an increase in students' confidence in their IL skills and generate improved academic performance as illustrated by the findings from the third stage of this study.

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Appendix 1

2007-8 Marking Sheet

BSc Marketing Marking Sheet 2007/08

Research Strategy & Range of Resources	**Max. Marks**	**Actual Marks**
Market Research		
Database 1	**5**	
Database 2	**5**	
Database 3	**5**	
Date Sources accessed	**5**	
Searches used	**10**	
Details of report(s) found, or not	**5**	
Articles Research: Must use at least 2 articles other than assigned reading		
Article 1	**5**	
Article 2	**5**	
Date Sources accessed	**5**	
Searches used	**15**	
Details of article(s) found, or not	**5**	
Referencing & Citing		
At least 6 references	**5**	
In-Text Referencing	**7**	
Full Reference List entry for each In-Text Reference	**5**	
Reference List Entries – correct components	**5**	
Reference List Entries – correct formatting	**8**	

Overall Total (100 marks)

Appendix 2
2007-8 Student Handout re Assessment of IL Component

Assessment of Information Literacy Component

Research Strategy & Range of Resources Used

70 Marks

The Research Strategy section of your Marketing Plan should answer the following questions:

1. List the library databases in which your group searched to find information for the SWOT analysis and Competition section of the marketing plan. It is important that you list the databases in which you **searched**, not just the ones in which you **found** relevant information.

   You should have tried **at least three** different market research databases from the Library's Databases (http://dit.ie/library/databases/), including Global Market Information Database. You should include all library market research databases that you searched, whether or not you found a report relevant to your product.

2. For each source you searched:
   a. What date did you access the source?
   b. What search did you use? (i.e., what did you type into the search box?)
   c. Did you find information relevant to your product? If "Yes", provide the *title* and *date of publication* of the report(s) you found, and the *database(s)* in which you found it/them. If "No", make sure you list the source you tried and the search you tried.

3. List the resources in which your group searched to find **articles** to support the other headings in your Marketing Plan. Your Marketing Plan must draw on **at least two** articles, other than the assigned readings. These articles must come from **at least one** of the Library's Databases (Insert URL here).

   Again, it is important that you list the resources in which you **searched**, not just the ones in which you **found** relevant information.

4. For each source you searched:
   a. What date did you access the source?
   b. What search(es) did you use?(i.e., what did you type into the search box(es)?)
   c. Did you find articles relevant to your Marketing Plan? If "Yes", provide the *title, date of publication¸* and the *name of the journal* in which the article was published, in addition to database(s) in which you found it/them. If "No", make sure you list the source you tried and the search you tried.

Referencing and Citing

30 Marks

Your Reference List should be formatted in accordance with the Faculty of Business Style Guide (available on your class website).

Your list should contain **at least six** sources.

Your list may include Web sites, but no marks will be given for Wikipedia.

Appendix 3

2009-10 Research Strategy Template

Research Strategy Template

Section A – Market Research

Library Databases searched for information on size of market, details of competitors, etc.

1. _____
2. _____
3. _____

It is important that you list the databases in which you **searched**, not just the ones in which you **found** relevant information.

You should have tried **three** different market research databases from the Library's Databases. This can include the one(s) you posted to the Discussion Board about.

Database 1:

1. What date did you access this database?
2. What search did you use? (i.e., what did you type into the search box(es)?)
3. Did you find information relevant to your product?

   If "Yes", provide the *title* and *date of publication* of the report(s) you found, and the *database(s)* in which you found it/them.

   If "No", make sure you provide the name of the database you tried and the search you tried.

Database 2:

1. What date did you access this database?
2. What search did you use? (i.e., what did you type into the search box?)
3. Did you find information relevant to your product?

   If "Yes", provide the *title* and *date of publication* of the report(s) you found, and the *database(s)* in which you found it/them.

   If "No", make sure you provide the name of the database you tried and the search you tried.

Database 3:

1. What date did you access this database?
2. What search did you use? (i.e., what did you type into the search box?)
3. Did you find information relevant to your product?

   If "Yes", provide the *title* and *date of publication* of the report(s) you found, and the *database(s)* in which you found it/them.

   If "No", make sure you provide the name of the database you tried and the search you tried.

Section B – Articles

Library database(s) used to search for **articles** for the Marketing Plan Literature Overview (MPLO) section of your Marketing Plan: _____

_____

Your MPLO must draw on **at least two** articles and **at least three** textbooks, other than the assigned readings. The two articles must come from one (or more) of the Library Databases.

Again, it is important that you list the resources in which you **searched**, not just the ones in which you **found** relevant information.

For **each** database you searched:

1. What date did you access the source?
2. What search(es) did you use?(i.e., what did you type into the search box(es)?)
3. Did you find articles relevant to your MPLO?

If "Yes", provide the *author's name, title of the article, date of publication*¸ and the *name of the journal* in which the article was published, in addition to database(s) in which you found it/them.

If "No", make sure you list the source you tried and the search you tried.

N.B. You also need to reference each of the sources you use throughout your Marketing Plan, and in the Reference List.