Helping first year students think like psychologists: supporting information literacy and teamwork skill development

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The current research implemented and evaluated (a) a programme targeting the development of information literacy skills (ILS) (Study 1) and (b) a team skills development programme (Study 2), with first year psychology students in Psychology 1A and Psychology 1B, respectively. In Study 1, five online ILS modules were developed. Students completed pre and post measures of learning and evaluative measures and applied these skills in the completion of several other assessment tasks. There was an improvement in all pre to post measures and students reported liking the modules and evaluated them as useful. In Study 2, students were required to complete a group research project. Ratings of group processes (e.g. productivity and cohesiveness), were obtained early and late in the programme, as well as summative evaluative ratings. The objective (mean final group mark) and subjective (evaluative) measures indicated that the groups functioned effectively. Focus group data obtained for both studies corroborated the quantitative findings. Both programmes appeared to be effective and the findings are discussed in light of their relevance to 'thinking like a psychologist'.

What does it mean to think like a psychologist? What are the essential skills that students need to equip them to think in this way? Supporting students to think like psychologists involves facilitating their acquisition of relevant graduate attributes, defined as: "the qualities, skills and understandings a university community agrees its students should develop during their time with the institution. These attributes include, but go beyond, the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses. They are qualities that also prepare graduates as agents for social good in an unknown future". (Bowden, Hart, King, Trigwell and Watts, 2000, p. 1).

What are the critical graduate attributes associated with a four-year undergraduate psychology programme? As yet there is no universal set of such attributes (but see American Psychological Association Task Force on Undergraduate Psychology Major Competencies Project, 2002; EuroPsy, 2001), although there is a common emphasis on the scientific nature of psychology. That is, instilling the skills and attitudes of scientific enquiry in students, against the background of common misconceptions that first year students bring to their study of psychology (e.g. Vaughan, 1977), has been the main, although possibly implicit, goal of teaching in the undergraduate programme.

A further consideration not unique to psychology relates to the transition issues that first year students face on entering university. The most vital challenges for students in their first year of study are to grasp the expectations of university and to experience a sense of belonging (McInnis, James and McNaught, 1995). Effective transition also requires students to develop the skills that they will need to engage successfully in university study. Large first year class sizes do not naturally facilitate this academic and social integration. In contrast to later year students, first year students prefer the greater interaction possible in small classes, compared to the relative anonymity and depersonalisation of larger classes (Feigenbaum and Friend, 1992). As Benjamin (1991) stated, "the introductory course is the most important in the… curriculum. It is also the most difficult course to teach well" (p. 69).

Our approach to the first year psychology courses has been to gradually introduce innovative learning and teaching programmes that scaffold student learning and assist students to become more independent and lifelong learners. Two components of our strategy are: (a) targeting the development of essential enabling skills that are 'assumed knowledge' in all beginning students (i.e. basic computer and information technology skills, academic literacy, academic English language skills and fundamental information literacy; Starfield, Tran and Scoufis, 2004), but which are sometimes lacking given the heterogeneous academic and personal backgrounds of students in large introductory classes; and (b) creating explicit programmes for the development of graduate attributes that have strong generic as well as discipline-specific components (e.g. teamwork skills), so that students not only engage with the discipline of psychology, but are also encouraged to generalise

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aspects of those attributes to other courses and contexts. Two programmes are described briefly here: information literacy skills (Study 1) and teamwork skills (Study 2). Although these two programmes are contextualised within psychology, they include generic components that allow generalisation beyond the specific psychology course and beyond the university context. Such programmes naturally increase students' appreciation of the relevance of psychology to all aspects of their lives.

Study 1: Information literacy skills

Information literacy is a key graduate attribute for most universities and involves the capacity to locate relevant information, evaluate resource quality and usefulness, and incorporate information appropriately. Such skills are central to the research process, as they highlight the principle of connectivity in the development of scientific knowledge (Stanovich, 2007) and so are essential to training in psychology. Although the standard laboratory report that students are required to write in first year psychology courses presupposes that students are equipped with these basic skills, pilot data (Morris and Cranney, 2003) suggest that deficits exists in students' information literacy abilities and few courses have adequately structured or embedded support for the development of these skills. The objectives of this programme have been to identify the information literacy skills that are essential at a first year level, to develop online WebCT modules to assist students in gaining these information literacy skills, to embed literacy skill development into the course through diverse assessment tasks and to evaluate the effectiveness of the exercise.

METHOD

This project was conducted within the Psychology 1A course at the University of New South Wales (UNSW) (N = 752; 205 males and 547 females), which comprises four one-hour lectures and one hour-long practical each week. The Queensland University of Technology (QUT) Information Literacy Framework (QUT, 2001) comprises a set of principles, plans and standards for the provision of effective information literacy skills at the higher education level. Informed by this framework, the authors constructed five information literacy skills (ILS) WebCT modules that addressed the standards that were considered appropriate for first year students. These standalone modules allowed for self-directed learning in the students' own time. The modules covered the basic components of information literacy knowledge and skills (enabling skills domain) and emphasised psychology search engines and materials (graduate attribute domain).
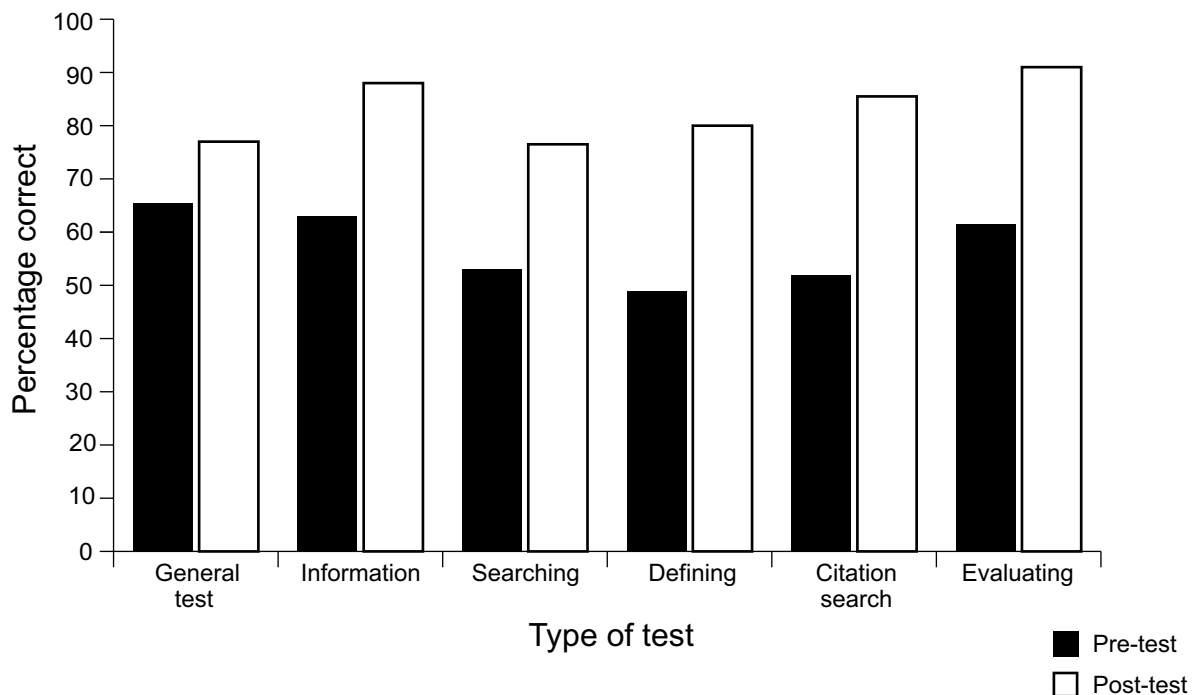
Module 1, Available information resources covered sources of information (e.g. monographs and serials) and how to choose from these sources. Module 2, Searching and locating references in the library, introduced students to the UNSW Library Resources Database and how to find

a reference. Module 3, Defining your topic and searching databases, showed students how to plan their search, including identifying key concepts and relevant search terms. Module 4, Citation searching using Web of Science (WoS), provided exercises on searching effectively for citations using the WoS database. Finally, Module 5, Evaluating information and using it appropriately, showed students how to critically review, appraise and organise the information obtained. The key learning outcomes include comparing and contrasting information sources and identifying their optimal use, identifying key research concepts to enable database search (including a citation search), evaluating the relevance and suitability of search results, incorporating references appropriately and applying all these skills in conducting background research for a psychology research report. Underpinning the development of ILS skills was support for the development of critical thinking abilities and dispositions (Ennis, 1987).

The learning and teaching strategies in the first year of implementation included: (a) a lecture and a tutorial class introducing students to the ILS modules, (b) a percentage grade allocation for completion of the online modules prior to subsequent assessments and (c) a series of scaffolded and aligned assessment tasks (i.e. two field studies, a research report and an experimental methodology assignment), to ensure that these learning outcomes were successfully met. The field studies incorporated tasks such as (a) finding a reference that had been cited within a target paper relevant to the research project, and (b) providing a *PsycInfo* printout of references pertaining to the same topic. The research report was based upon an experiment that used the Implicit Association Test (IAT; Greenwald, McGhee and Schwartz, 1998) as a measure of automatic negative prejudice towards elderly people. Students were required to write up the introduction, method and results section for this experiment. The experimental methodology assignment consisted of eight short-answer questions that tested students' understanding of hypotheses, independent and dependent variables, research methods, the operationalisation of constructs and an additional ILS search task.

In order to measure declarative (content) knowledge acquisition, each ILS module included a pre and post-test (each five items) that provided an index of short-term learning as a result of engaging with the module (each of which took approximately 20 to 40 minutes to complete). There was also a prior test of information literacy (10 items) in Week 2 of the course and a final test (Week 16) consisting of 10 items on the final examination to gauge cross-semester (longer-term) learning. Student evaluation of the ILS modules was measured in a course evaluation during the last week of classes (Week 14). For example, on a five-point scale students were asked, "Overall, how useful have you found the following components of WebCT: ILS modules (1 = *least*, 5 = *most*).

Figure 1 Percentage correct on each of the five modules' pre and post-test, as well as the general pre and post-test (a non-assessable pre-test in Week 2 of classes, and questions on the final exam, respectively)

Note. 'Information' = *Module 1 Available information resources*, 'Searching' = *Module 2 Searching and locating references in the library*, 'Defining' = *Module 3 Defining your topic and searching databases*, 'Citation Search' = *Module 4 Citation searching using Web of Science*, 'Evaluating' = *Module 5 Evaluating information and using it*

In order to obtain student feedback on the effectiveness of the programme, several focus groups were run by independent facilitators from the UNSW Learning and Teaching Unit and the Learning Centre at the end of the session. In order to provide a representative sample, student names were randomly selected from the Psychology 1A course lists and these students were invited to participate in the focus groups. The interview questions were open-ended and were designed to assess the educational effectiveness and usefulness of the ILS modules. Sample questions included: "What did you learn from the ILS module?", "What was most useful? Least useful?", "How have these modules helped you in defining information needs and identifying useful resources? Evaluating and using information?". Permission was obtained from each participating student for the interview to be taped and transcribed.

RESULTS AND DISCUSSION

Figure 1 presents the percentage correct on the pre and post-tests for each of the five modules, as well as on the prior and final (general pre and post-) tests. There was significant improvement from pre to post-test for all modules and across the semester (all $p < .05$). Although the pre versus post-test module comparisons may reflect short-term memory effects, the gain across the semester

suggests a longer-term benefit for students by engaging with the embedded information literacy exercises. The absence of a comparison group, however, means that these students may have improved regardless of having engaged with the modules. Nevertheless, subsequent focus groups held with these students in their fourth year yielded spontaneous comments about the usefulness of these modules throughout their programme of study.

Higher average post-test performance on the modules was significantly associated with higher grades on the two field studies ($r = .60$, $p < .01$), the experimental methodology assignment ($r = .23$, $p < .01$) and the research report ($r = .27$, $p < .01$). Whether these associations are due to a third factor, such as overall educational attainment or general intelligence, needs to be examined in future research. An analysis of 'hit' data (i.e. number of student visits to specific Web pages) enabled by the WebCT platform showed that each individual module received an average of 1400 hits. This means that, on average, each module was visited by each student approximately one and a half times. Given that in order to complete the pre and post-tests students needed to complete the module in one sitting, it is assumed that the extra visits were due to false starts or revisiting the modules at a later time. In addition, more than one-third of students in the subsequent psychology

course (Psychology 1B) revisited these ILS modules, even though it was not required of them to do so.

Importantly, students also demonstrated more positive dispositions towards information literacy skill development, a key enabling condition for effective lifelong learning (QUT, 2001; Starfield et al., 2004). Specifically, students were generally positive in their evaluations of the usefulness of the ILS modules. For example, in the course evaluation, students rated the programme as one they found to be useful (M = 3.73, SD = 0.34) and one they liked (M = 3.25, SD = 0.31). Online ILS modules were not available to students in the previous year (2002). In the 2002 course evaluation, 52% of students reported that the printed *Library Resource Book for Psychology* was moderately to extremely useful. In contrast, a larger proportion of students (64%) on the 2003 course evaluation gave the online ILS modules a usefulness rating of 3 or greater (on a scale ranging from 1 = *least useful* to 5 = *most useful*). Also, in both of the focus groups and in their course evaluation comments, students rated the information literacy skills programme as highly valuable; furnishing them with skills that were generalisable to other courses. For example:

> I think that people who do psychology must have an advantage on getting the referencing, because it is almost as good as a full subject in research.

> After doing these modules, it is like Wow! Is that how you do it! And I have been doing it ever since… I think they are great.

> I never knew there were this many ways of getting information before.

> I may have been bored out of my brain, but now I know how to use the library properly!

We continue to work closely with library staff to customise the modules to enhance usability, incorporate ongoing student feedback, reflect technological advancements and identify and address issues that students find particularly challenging. In addition, learning and teaching strategies continue to be modified in order to enhance integration of the skill development within assessable activities. For example, in Study 2, ILS and teamwork skills were integrated by having students undertake a group assignment, which included an information literacy component, with the expectation that their collaborative effort would lead to a higher quality output.

Study 2: Teamwork skills
The ability to work well in a team is one of the top three attributes desired by employers (Job Outlook, 2006). Working together in small groups on assessable tasks has multiple positive learning outcomes, including exposing students to different perspectives, development

of interpersonal skills and enabling the design of more complex and deeper learning tasks (Johnston and Miles, 2004). In the discipline of psychology, collaboration commonly forms an integral part of research and clinical practice, and thus is of significant practical relevance to our graduates. Although tertiary educators often ask students to complete course activities in groups, there is usually little formal training or support for students in the recognition and development of team-work skills and a pilot survey obtained from first year students in their first tutorial (Morris and Cranney, 2003) suggests that a substantial proportion of our students' past group work experience was negative. As an introductory psychology course entails at least an overview of key social psychological concepts, a natural progression was to apply knowledge of group dynamics in a practical sense, enabling an integration of theory with practice.

An additional objective of this study was to adopt an experiential learning approach by incorporating feedback and reflection into the process (Kolb, 1984; Kolb and Fry, 1975). The specific objectives of the current study were thus to (a) explicitly assist students in the practical development of teamwork skills, (b) embed the learning and teaching strategy in the contextualised task of a research training exercise, (c) potentially test theories of group dynamics and team productivity (e.g. Tuckman, 1965) and (d) evaluate the effectiveness of the team-work exercise. A highly structured and progressive programme was designed on the basis of relevant educational and psychological research and theory, such as the differentiation of task output and team processes (Crawley, 1978). The project was intended to model the process of collaborative research design, incorporating both the information literacy skills acquired in the first semester course as well as developing collaborative learning abilities. An ancillary benefit of this programme was that it provided a peer-support group for students, in what can otherwise be a large and impersonal course. The findings reported here are primarily from the initial implementation of this program. Preliminary comparative evaluation data from the second implementation, one year later, is reported in Table 1.

METHOD

Psychology 1B students participated in this programme (first implementation: N = 533; 168 males and 365 females; second implementation: N = 561; 180 males and 381 females). The data analyses for the first implementation, however, were conducted using only the data of students who completed both the early and late measures of the group process (N = 383, 110 males and 273 females).

A preliminary lecture outlined the fundamentals of group structure and dynamics, and the importance of task focus as well as group maintenance. The students were then

semi randomly allocated to groups of four to five (each tutor attempted to construct groups with mixed gender and culture) and were required to work together on the design and implementation of a study. Given preselected experimental materials, including ethics-approved generalised consent forms, students designed a study pertaining to judgements of body shape. They selected dependent and independent variables and used their ILS skills to identify background research in the chosen area. Once a design had been determined by the group, students gave a five-minute oral presentation to their tutorial class and were provided with written feedback from their tutor and peers (peers were students from another group; this feedback was checked and extreme comments and scores were modulated by the tutor prior to feedback). Groups then collected and analysed data, on the basis of which they gave a second oral presentation describing the results and implications of their findings. Again, these presentations received a whole-group mark from the tutor and student peers. Although group members could select their presenter(s) in the first presentation, in the second stage the presenter was selected just prior to the presentation, to facilitate preparation and engagement by all group members.

Specific strategies to support the experience were implemented and students were encouraged to engage in continual reflection on their experience (Gibbs, 1998). As part of this process students were expected to complete a number of forms, for example, a Meeting Report Form (What are we doing?), a Task Management Form (Who is doing what?), a Teamwork Checklist (How well are we doing things?), a Team Member Contribution Form (How well is the team working together?) and a Reflection Form (what did we do well; what can we do differently; what have we learned?), on five separate occasions. In addition, a number of measures of group process were taken at an early (Week 5) and late stage (Week 9) of the programme. Each student was asked to rate the productivity and cohesiveness of their group on a 5-point scale ranging from 1 = *very unproductive* (*not at all cohesive*) to 5 = *very productive* (*very cohesive*). Students were also asked to rate "How satisfied are you with your experience in this group?", 1 = *very dissatisfied* to 5 = *very satisfied*.

The group work comprised 10% of the course grade and was assessed along a number of dimensions, incorporating both the product and process of the collaborative effort. Satisfactory completion of the forms (most members completing most forms) earned a group mark of up to 2%. The oral presentations constituted a significant part of the group work assessment, with the second presentation (5%) being weighted more than the first presentation (2%). Group members were asked to provide peer assessment ratings of group members' contribution to the project after each presentation and these ratings were used to weight each student's group

presentation mark. Previous research has indicated a high level of agreement between peers' assessments of members' contributions to a group project (see Lejk and Wyvill, 2001). Tutors rated each group according to their general performance (1%) and could also give bonus marks in rare circumstances.

To evaluate the effectiveness of the project, student evaluations of the team project were derived during a course evaluation administered in the final tutorial (i.e. students were asked to rate how much they agreed with statements such as "Overall, the group work was a worthwhile experience"). In addition, focus groups were held to evaluate students' attitudes toward the team skills programme at the end of the session. Sample interview questions included "What helped you the most in the group?" and "How did you use the forms that you were required to fill out?".

A number of issues arose during the first implementation which informed specific changes that were made for the second implementation (all other aspects were identical). First, there were insufficient constraints placed upon the research question and design in the first implementation. This may have been too challenging for first year students and it sometimes resulted in intractable design issues which confounded performance on the oral presentations. Therefore, in the second iteration, additional guidance was provided; first by having students complete a spatial learning task as participants and then providing them with a limited number of potential design options for their own spatial learning experiment. Hence, students could feel some ownership in their design choice, but not get 'lost' in seemingly endless possibilities.

A second issue raised by both students and tutors was the number of ongoing reflection forms and ratings that students were required to complete. This was substantially reduced in the second implementation and structured WebCT online discussion postings were utilised as an efficient means of monitoring and assessing group processes in real time. For example, marks were given for successful posting of group rules and weekly meeting notes which tutors regularly read to check for any signs of group dysfunction. A third issue was that the tutors were perhaps not adequately prepared to support students in their group work. In the second implementation, therefore, a more targeted tutor training programme was developed which involved an initial workshop, ongoing discussions in weekly tutorial meetings and specific resources in the tutor's manual.

A fourth issue related to late entry of group members and subsequent negative group dynamics with undertones of gender and cultural conflict. For example, the dominant leadership of a female student was disrupted by the late entry of a male student of a different cultural background.

Therefore, in the second implementation we introduced (a) specific strategies for the successful integration of a late member, (b) in-class conflict resolution exercises and (c) an increased emphasis on and support for, groups to attempt to problem solve prior to consulting with the tutor, all in a timely and assessable fashion. In addition, all group members received the same mark, which made it more critical for members to actively address issues of social loafing and group cohesion than in the first implementation in which they could simply mark their peers poorly, as punishment for failure to engage with the group.

The final issue related to method of group membership assignment, which in the first implementation had been predetermined to simulate real-world employment situations. An intervening study (Morris and Cranney, 2003) provided evidence of superior task output and group cohesion in self-selected groups compared to that of compulsorily assigned groups. Thus, the second implementation allowed self-selection into groups.

RESULTS AND DISCUSSION

In the first implementation, the mean final groupwork mark was 8.7 (SD = 1.09) out of 10, suggesting that overall, groups worked very well together. Higher marks were predicted by higher group cohesiveness at the early stage of groupwork (β = .159, p < .05). Interestingly, tutor and peer ratings of both the first (Week 5, r = .48) and second (Week 9, r = .46) oral presentations were significantly correlated (p < .01). This supports the validity of the peer assessments because they covaried in the appropriate direction with the tutor ratings. From the early to the late stage in the team-work programme, there was a significant improvement in rated team cohesion (Early M = 3.68, SD = 0.85; Late M = 3.85, SD = 0.94; t (df) = 3.23, p < .01) and productivity (Early M = 3.57, SD = 0.82; Late M = 3.94, SD = 0.87; t (df) = 7.68, p < .001). These data provide some support for Tuckman's (1965) theory of group formation, which suggests that some early interpersonal turbulence ('storming') is followed by the establishment of group norms that facilitate productivity and allow task completion ('norming' and 'performing').

To evaluate students' perception of the group work experience, they were asked to rate the extent to which they agreed with the statement 'Overall, the group work was a worthwhile experience'. They gave a mean agreement rating of 3.2 out of 5. It was expected that group process variables would predict global group outcomes, including final ratings of the worthwhile nature (or otherwise) of the collaborative experience. To test this prediction, two regression analyses were conducted for the Early (Week 5) and Late (Week 9) times with students' 'worthwhile' rating from the final course evaluation entered as the criterion variable. The predictors that were entered simultaneously (for each time period) included ratings of group productivity and cohesiveness, as well as ratings of how rewarding the group experience was perceived to be and of personal satisfaction with the experience. The 'worthwhile' rating was predicted by rated personal satisfaction at both Early (β = .42, p < .05) and Late (β = .37, p < .01) stages. Higher personal satisfaction at the Early and Late stages of the group programme predicted higher ratings of the worthwhile nature of the group experience. This finding highlights the positive link between experiential aspects of the group process and group evaluation outcomes.

Student comments, derived from focus groups, endorsed their team-work ratings and reflected their positive attitudes toward their group experiences:

I went into the group with quite a negative view… but four of us ended up doing all the work and sharing and it was a real group.

(The forms) made us aware of what was happening, what needed to be done.

Working in groups can be rewarding, regardless of the final result.

Table 1

Mean student ratings (5-point scale; extent of agreement) and (standard deviations) for team-work items at the end of the first and second implementations of the team-work skill development programme

Questionnaire item	First	Second
The course helped me develop my ability to work as a member of a team	3.23 *(1.04)*	3.67 *(0.88)*
The group work was useful to my learning	2.64 *(1.14)*	3.17 *(1.10)*
The group work was a worthwhile experience	3.14 *(1.12)*	3.52 *(1.05)*
The WebCT postings were useful in the group work process	2.92 *(1.08)*	3.27 *(1.11)*
I was happy with how the groups were selected	3.46 *(1.09)*	3.69 *(0.96)*

Note. T-test comparisons of First and Second implementation means were all significant; p < .05.

I really liked how they forced us to say what do you like about the group.

The best thing about working in groups is drawing upon different styles of thought and expertise to achieve a better solution.

Taken together, the data suggest that the groups were dynamic (Tyson, 1989), such that they became more productive and integrated as the project progressed and that they functioned effectively. The teamwork skills development programme was evaluated as worthwhile by students and these evaluations significantly improved following the revision of strategies made in the second implementation (see Table 1). Crawley (1978) distinguishes between group output and team processes. Ratings of personal satisfaction and group cohesion predicted later evaluations and an objective index of group output. This suggests that process variables contribute significantly to the effective achievement of group goals.

CONCLUSION

In Study 1, there was a reliable improvement in pre to post-test scores for all ILS modules and also across the semester as indicated by a pre (Week 2) to post (Week 16) improvement on the general test scores. Higher post-test performance on the ILS modules was associated with higher grades on the other course assessments (i.e. the field studies, the research report and the experimental methodology assignment). Moreover, evaluations obtained at the end of the session revealed that students, on average, had positive attitudes towards the ILS programme. Students reported liking the modules and found the modules valuable. Specifically, students reported that the modules provided them with skills that could be applied to other subjects. In Study 2, the high mean groupwork mark suggested that the groups were effective in completing the designated tasks. Group dynamics, including ratings of group cohesion and productivity, improved from early (Week 5) to late (Week 9) in the programme. As expected, personal satisfaction with the group process was predictive of end-of-session student ratings of the 'worthwhileness' of the collaborative project.

There are inherent difficulties in effectively assessing improvements in information literacy (Meldrum and Tootell, 2004), particularly because existing definitions of information competencies "lack concrete variables that can be cleanly assessed" (Dunn, 2002, p. 34). Nevertheless, developing and evaluating information literacy skills programmes is critical in order to enhance students' ability to access and to use information, so that they become successful lifelong learners (Dunn, 2002; QUT, 2001). Essentially, the objectives of Study 1 were achieved. Academic staff and librarians collaborated to develop a comprehensive series of five online ILS

modules which a significant proportion of the students reported to be useful, including developing generic skills that could be applied to other courses. The pre to post increases in scores for all of the ILS modules and on the general test suggest that completion of the ILS programme produced both short-term and longer-term benefits in information literacy competencies. This finding, however, must be interpreted with caution in the absence of a comparison group who did not complete the modules. It is important to note, however, that a larger proportion of students in the current study reported the ILS modules to be useful compared to the proportion of students in the previous year who reported the paper-based *Library Resources Book for Psychology* to be useful.

The positive attitudes expressed toward the ILS modules are promising because higher liking could promote greater engagement and participation in future ILS modules, although this association requires examination in further studies. Higher scores on the ILS post tests were associated with better performance on the formal assessment tasks. Although this is suggestive of the effectiveness of the ILS programme, future research needs to examine potential third variables such as general intelligence, baseline levels of information literacy and individual 'hit' data, in order to draw stronger conclusions from this correlation. An overriding strength of this study was that the ILS modules were successfully integrated into the first year programme and were also embedded into the various assessment tasks, as recommended in the literature (e.g. Colvin and Keene, 2004). This facilitated the practical application of the skills learned from the ILS modules. Together, this highlighted to students the relevance and benefits of completing the modules, as reflected in the overall hit data obtained.

The findings of Study 2 are consistent with the literature which highlights the benefits of collaborative learning and group processes (e.g. Miyake and Shirouzu, 2006). The team work skills programme was effective in producing strong overall group outcomes, as indicated by the high mean total groupwork mark. This is consistent with the literature reporting the benefits of group projects (e.g. Jaques, 1984). The increase in ratings of productivity and cohesiveness across time is consistent with Tuckman's (1965) model of the stages of group development. That is, as group norms, rules and roles become established (e.g. in the 'norming' phase), the group is able to move relatively smoothly toward achieving its task (called 'performing'). In order to provide more definitive support for Tuckman's model, future research needs to obtain earlier measures of group processes, including measures of group conflict, in order to more adequately capture the 'forming' and 'storming' phases of the cycle.

Individual satisfaction with the group process was a predictor of final evaluations of the group experience as 'worthwhile' and greater group cohesiveness at the Early

stage of group work (Week 5) was predictive of a higher mean final group mark. Both of these findings highlight the importance of optimising group processes, including individual experiential factors, in order to maximise group outcomes. It remains unclear why the Late stage (Week 9) ratings of group cohesiveness were not predictive of the mean final group mark. It is possible, however, that other (unmeasured) aspects of group processes became more important in predicting the group outcome at this later and possibly more stable, stage in the groups' cycle (e.g. during the 'performing' phase). It appears that having students reflect upon their group dynamics and processes (Gibbs, 1998) kept students engaged in the experience despite the cumbersome nature of the forms (addressed in the second implementation).

This paper has briefly described the development, implementation and initial evaluation of two graduate attribute development programmes, information literacy and team-work skills. In both studies, the skills programmes were meaningfully integrated into relevant assessment tasks that counted toward the students' final grade. A range of delivery styles, in the form of lectures, tutorials, field studies and Web-based exercises, was also used to address the diverse learning preferences of first year students. Initial evaluation of these programmes indicates their successful implementation. In Study 1, students reported positive attitudes toward the online ILS modules and information competencies appeared to improve across the semester. In Study 2, the team skills programme produced an excellent overall group outcome and favourable experiences of group processes were predictive of higher objective and subjective measures of group outcomes.

The current findings are encouraging, first, because of the importance of information literacy skills as a key enabling skill which promotes students' effective use and acquisition of knowledge (Dunn, 2002), and, second, because the development of effective teamwork skills, including leadership and time management, are highly sought after by future employers (Cacioppo, 2007; Harvey and Green, 1994, cited in Johnston and Miles, 2004). More systematic integration and assessment of these key graduate attributes could in the future be enhanced by the use of portfolio exercises (e.g. Cranney et al., 2005). These are reflective exercises in which students are required to demonstrate using concrete examples, that they have acquired a specific graduate attribute. These exercises, used in conjunction with the current programmes, will assist students to develop metacognitive awareness of how well they are progressing toward gaining the foundational knowledge, skills and attitudes that constitute 'thinking like a psychologist'.

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