

Embedding group work in the first year experience

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The ability to work successfully within a team has been identified as an essential graduate attribute by both industry experts and educators. Many students, however, do not arrive at university with the requisite skills. While Orientation activities can raise student awareness of the importance of group work skills, contextualised practice is required to allow for their development. This paper presents a novel approach for embedding the development of group work skills within the Information Systems undergraduate curriculum at ACU National. The authors designed a pair of scaffolded assessment tasks that required students to work both individually and collaboratively to develop a well-reasoned response to a controversial issue. Critical reflection on the learning process was an integral part of the task. While student feedback indicated their appreciation of the deeper purpose of the task, the authors identified a need for an increased focus on reasoning and argument structure.

Introduction

In ‘Striving for Quality: Learning, Teaching and Scholarship’, the Minister for Education, Dr. Brendan Nelson (2002) reiterates the West report’s argument that Australian university graduates should have a general capacity to use information, multifaceted problem solving and critical thinking skills, and the capacity for group work (West, as cited in Nelson, 2002). The need for graduates to possess such attributes has been reinforced by the professions: “Employer groups, professional bodies and universities increasingly demand that our graduates emerge being able to think critically, write, and work effectively in teams” (Gruba and Al-Mahmood, 2004, p.1).

However, students rarely arrive at university fully prepared to develop these skills and attributes. This is often a result of the mismatch between their expectations of university study and the reality they encounter (Krause, Hartley, James, & McInnis, 2005). Of particular relevance for this paper are the unrealistic or negative expectations students might have regarding group work tasks. University orientation and transition activities are an opportunity for students to realign their expectations and to identify the skills they need to develop in order to succeed at university study. These kinds of activities have been shown to be successful in raising student awareness of these necessary skills and in creating a sense of community (Krause et al, 2005). By design, these activities are generally limited to a student’s

first weeks at university, and provide an overview, rather than an in-depth exploration, of the issues raised. At ACU National, many of the information sessions take the form of lectures or brief workshops. They cannot provide students with the sufficient contextualised, authentic practice required for skills mastery. Because attendance at orientation activities is optional, many students do not take part. To ensure that students have the opportunity to engage in practice to develop skills, it is essential to go beyond the Orientation week workshops and into the transition experience to embed the development of these skills in a carefully structured first year experience of higher education.

This paper is an additional component of our progressive reporting on an ongoing broader action research project aimed at enhancing Information Systems (IS) students' reasoning and critical thinking skills, earlier aspects of which have been described elsewhere, (Davis, Thomas & Kazlauskas, 2006; Thomas, Davis & Kazlauskas, 2004). As future IS professionals working in economies where information not only has value but is necessary for effective organisational functioning, during their course IS students need to develop the critical thinking and team work skills that will enable them to design, develop, implement, maintain and evaluate computer systems that address the organisation's information needs. In this paper, we describe that aspect of the project whose focus has been on embedding the development of group work skills into a first year, undergraduate IS unit at ACU National.

When developing this approach, the authors took into consideration:

- * current academic skills programs to develop group work skills;
- * the attitudes of students to group work;
- * the nature of the student population studying the unit; and
- * the unit's current major assignment.

Each of these areas has been discussed below prior to the presentation of the strategies developed and trialled by the authors during early 2006. Other aspects of the broader research project have been described elsewhere.

Student backgrounds and their attitudes to group work

A survey conducted in the first week of their first semester at university in 2004, indicated that Business and Information Systems students' attitudes to group work varied. The vast majority of students had mixed feelings about group work and identified both advantages and disadvantages.

Advantages described by students included the acquisition of interpersonal skills for the workplace, the generation of creative and better solutions to problems, and reduced workload:

“Group work allows for student to learn the skills of communication, leadership and work allocation/delegation. Although group work can create conflicts between team members, it further enhances their abilities and forms active listening skills, conflict resolution and general [problem?] solving.”

“Group work involves various opinions, that all contribute to making a collective decision. It focuses around co-operation, innovative thinking, discussions, problem solving and all aiming for one particular solution or answer.”

Students commented on both positive and negative social aspects of group work. For example, students described the difficulties of organising meetings:

"[It] can also be a disadvantage ... [that] people live in different areas."

"A hassle – organising impossible timetable clashes to get work completed [and] some members of [the] group can be lazy."

Some students commented that group work helped students to get to know each other and reduced some of the pressure of being a student:

"Fun because you're getting to know new people and sharing the load."

"By working within a group, pressures of working alone may be relieved."

Other students referred to the difficult interpersonal challenges, even conflicts, frequently associated with group work:

"It can be bad when there's tension."

"I hate having to argue with prima donnas and find it extremely frustrating when I get stuck with someone who is lazy."

Not surprisingly, one of the students' major concerns was related to the individual contributions (or lack thereof) of all students to the task at hand.

"[Group work] is hard because not all members will do the same amount of work and members may have differing opinions of how they want to do the assignment."

"A lot of people [are] lazy and let others down. ... Sometimes it makes a job easier, if everyone [is] motivated, if not, it is hard work."

Other students expressed a strong dislike for group work:

"I do not like working with other people that I have to rely heavily on. It's quite stressful."

"These are my marks at stake, and I take that fairly seriously so I don't want that placed in jeopardy by other people's behaviour."

These comments indicated that students arriving at university have diverse attitudes to group work and suggest that a successful group work experience would need to ensure that students had the opportunity to make social contacts with other students, to develop their interpersonal and problem solving skills as well as addressing students' concerns about group meeting times, language difficulties, dealing with students who do not complete the task that the group expected them to complete, and being awarded a mark commensurate with their individual ability.

Casual conversations with the 2004 first year students indicated that for some international students, it was their first experience of learning in English and that some students had not experienced group work as part of their previous educational experience. These concerns were also borne out by the following student comments about group work:

"[It] makes me nervous because I'm not native speaker. It's hard to make group mates in second language, so I'll probably work with another international student."

"I strongly prefer to work alone. I feel that I can concentrate a lot easier in isolation. ... I have had a few bad experiences at [another] university with group work. Most of my companions could hardly speak English, let alone write it."

These individual student histories contrasted markedly with those of students who have had years of experience in the Australian educational culture where group work is a commonly used teaching and learning strategy.

The comments in this section highlight the many likes and dislikes that students have about group work. Their perceptions are consistent with the findings of Hansen (2006) and the many other researchers he cites. Consequently, the authors have taken these issues into consideration when designing the process task described below. While the issue of language was and is a concerning one, it is beyond the scope of this paper. The next section begins with a description of the unit in which the assignments were embedded.

Developing an embedded approach to group work

As stated above, the unit's principal aim is to develop students' critical thinking and reasoning abilities in the Information Systems (IS) context and any attempt to develop group work skills had to be in line with this aim. Students in the Reasoning and Critical Thinking for IS Professionals unit are a diverse group, both demographically and in relation to their group work experiences. For example, of the students studying the unit in 2004: more than 55% were younger than 21 years of age, about 30% were between 22 and 25 and less than 15% were over 25 years of age; just under 80% were male, ranging from 18 to 31 years of age, with the remaining female student cohort ranging from 18 to 26 years of age; almost 70% were international students; over 80% were from Non English Speaking Backgrounds; and almost 40% did not speak English most of the time. These statistics point to the diverse cultural, linguistic and educational histories of the student cohort - a diversity that the authors took into consideration when planning the group activity.

In promoting students' critical thinking skills, the unit's existing major assignments had encouraged students to think critically about their work as tertiary students and as future Information Systems professionals. To do this each of the two existing assignments required students to:

- * prepare a draft response for the assignment;
- * submit their draft for anonymous review by their peers;
- * improve their draft assignment on the basis of their peer's comments and their own observations of other students' draft assignments; and
- * write a reflection on the peer review process.

Students submitted both draft and final versions of each assignment for marking, as well as the peer reviews they had received for those assignments. As has been reported elsewhere, (Davis, Thomas, & Kazlauskas, (2006); Thomas, Kazlauskas, & Davis, (2004)), students' comments indicated that they had thought more critically about their work as a result of this process.

The authors chose to build on the success of this assessment strategy by incorporating further opportunities for students to think critically about their own and each others' work as they engaged in a process of scaffolded collaborative writing that addressed the previously described concerns of students about group work. A description of this process approach follows.

The scaffolded assignments

Our aim was that the revised assignments would require students to work both individually and collaboratively to produce their best possible work. The scaffolding guided students through:

- * the individual aspects of the task;
- * the collaborative preparation of a team best answer that combined and built on the best elements of individual students' answers; and
- * a critical reflection on the process.

The steps of this scaffolding have been set out in Table 1. The scaffolding, particularly for the first task, was designed to address students' concerns about group work including lack of interpersonal and communication skills, inconsistencies in the goals and/or efforts of group members, and the lack of time for coordinating group work. To ensure students practised the skills acquired during the heavily scaffolded first task, the amount of scaffolding provided for the second assignment was less than that provided for the first assignment.

By adopting the scaffolded process set out in Table 1, we believe that we have engaged our students in effective group work, something that is particularly important for students who have not been involved in group work before or for students who have had negative experiences of group work. This carefully designed process stimulated our students' critical thinking abilities and was reflected in the improved quality of student assignments. As the opinions of students are critical when evaluating the success or otherwise of such innovation in teaching and learning, the next section uses excerpts from student reflections to give some idea of what the students thought of the approach described above.

Student reflections on the assignment process

The student comments below indicate that students had been engaged by this embedded approach to developing group work skills. Comments demonstrated students' appreciation of the opportunity to critique their own work against set criteria and that of other students. Some expressed the view that the exchange of ideas within a group could result in an improvement in quality, others came to appreciate the difference between "an answer" and what they regarded as "THE best answer":

"At the end where we peer-reviewed everyone's best answer, this was really good, I enjoyed reading what everyone wrote. For me there was only one stand-out from all of the answers given, and it certainly wasn't for the answer they gave, it was more about how their answer was written. It was a terrific effort by that team for assimilating everyone's ideas so effortlessly."

Another student acknowledged that while the task itself contained aspects which he/she did not agree with, the overall benefits of rising to the challenge that is inherent in group work outweighed his/her initial negative impressions.

"The concept of a best answer is something that I have come to accept as a valid task for an assignment. In my last reflection I did not agree with the concept of developing a best answer as I believed that it gave students the opportunity to take advantage of other student's hard work. I have now come to believe that it is part of the challenge of working in a team to make sure everyone works together. ... The challenge is to keep your team working with you as well as making sure everyone has a clear understanding of the subject. In the workplace you will need to [do] both and this is a great assignment to give us the skills we will need in the future."

Table 1: Overview of a scaffolded group task for first year students

Task	Activity
1	<p>Students receive an overview of the assignment process and the issue on which the assignment focused. Students are given the details of the first task which requires them to:</p> <ul style="list-style-type: none"> * read a number of cited articles relating to the assignment topic * locate and read two additional relevant sources of information * write the references and citations appropriate for each of these sources * make two lists of claims about the issue: one for and one against * make a decision regarding their own position with respect to the topic. <p>By the second assignment, students will have participated in:</p> <ul style="list-style-type: none"> * a session about plagiarism, referencing and citation techniques by Academic Skills Advisers * a session about group work by Academic Skills Advisers. * an information literacy session facilitated by library staff and so were expected to demonstrate their abilities to access information from the library's resources.
2	<p>At the beginning of the lecture, individual students submit their answers to Task 1 using a coded ID to create anonymity. Halfway through the two hour lecture, students use a pro-forma to anonymously peer review up to three other students' answers. Students receive the reviews of their own answers to Task 1 in tutorials based on the peer review experience.</p> <p>In Assignment 1, students split into groups according to their opinion (for or against) in tutorials</p> <p>Following the lecture and then form groups of 3-5 students. Students complete a tutorial exercise in their groups, decide on a group name and inform the lecturer of their team's name and membership.</p> <p>For Assignment 2, students separate according to their opinion (for or against) in the last ten minutes of the lecture., Students form groups by selecting no more than 3 of their fellow students with whom they prepare a group "best" answer. Groups decide on a team name and inform the lecturer of their team's membership, name and contact details. The lecturer returns peer reviews to students in tutorials for students to create their personal best answer to Task 1.</p>
3	<p>In Assignment 1, in their tutorials, groups are guided through the collaborative preparation of a "best" answer by being required to:</p> <ul style="list-style-type: none"> * read their group's revised answers to Task 1, noting the strengths and weaknesses of each answer * collaboratively write and submit a "group best" answer by end of tutorial under their group's name <p>In Assignment 2, students are required to:</p> <ul style="list-style-type: none"> * arrange their own time to meet with their team members * prepare and write a "group best" answer in their own time * electronically submit their group's best answer.
4	<p>In both Assignments 1 and 2, individual students:</p> <ul style="list-style-type: none"> * use a (different) pro-forma to assess group "best answers" * submit their personal reviews of the group "best answers" <p>In their groups, students:</p> <ul style="list-style-type: none"> * use a group review pro-forma to rank other teams "best answers" * determine which groups (other than their own) submitted answers that were "THE best", "Nearly the best" and "Up with the best" * submit their group's decision <p>The lecturer assesses and comments on group "best" answers, determining "THE best", "Nearly the best" and "Up with the best" answers.</p>
5	<p>In both Assignments 1 and 2, individual students write then submit a guided reflection about their experiences and learning whilst doing this assignment.</p> <p>The lecturer announces names of teams who have produced "THE best", "Nearly the best answer" and "Up with the best" and, subject to students' consent, makes available commented versions of the group best answers for all students to peruse. The use of team names provides some anonymity for individual students. The lecturer also assesses students' individual submissions.</p>

Finally one student reflected deeply on their experience

“In the first assignment I didn’t fully understand the process of the best answer, and as a result my work was graded poorly. At the time I thought my answer was pretty good. After receiving a pretty poor mark for the task, I realized that although the content of my answer was technically right, there were a lot of things that I had failed to recognize. ... I wrote the Best answer for my group, barely considering the opinions of my fellow team mates. Not only would this prove to be selfish, but also stupid. I found collaborating with fellow students had a negative effect on the whole process. I totally disregarded the process and basically wrote the answer myself. The fact that I had three people that had non-English speaking backgrounds made me concerned that they weren’t understanding what was required of the task – and it turns out I didn’t have a clue! In the second assignment ... I actually discussed and debated issues in the task, and found myself gaining new insights into the matter. The fact that you can have three people’s opinions, concerns and suggestions means that you are basically tripling the productivity. The “best answer” concept helped myself and the group create an answer which allowed reflection, revision and a combined effort on the original answers. The truth is that most students couldn’t be bothered writing a draft copy, and often hand in what is written first.”

Discussion

Prior to the commencement of the 2006 academic year, preparatory work had focussed on developing criteria for effective group work to support collaborative learning and critical thinking. Blunden (n.d.) suggest that cooperation and collaboration differ in that cooperative learning often represents a division of labour rather than collaborative learning where “people actively *engage* one another, challenge each other, the kind of team work which produces something new, a whole greater than the sum of the parts” (par. 17) something that just did not happen with individual learning.

Oakley et al. (2004) point out that the benefits of group work “[are] not automatic ... Students [are] not born with the project management, time management, conflict resolution, and communication skills required for high performance teamwork”. Gokhale (1995, p. 30) advises that:

...for collaborative learning to be effective, the instructor must view teaching as a process of developing and enhancing students’ ability to learn ... to serve as a facilitator for learning. This [involved] creating and managing meaningful learning experiences and stimulating students’ thinking through real world problems.

Salmon (2004) reinforces these ideas when she contends that to achieve effective collaborative learning with its emergent benefits, there was need for careful structuring of the environment and the task by the facilitator. Over time, such scaffolding provides a “way of gradually moving from what we might call directed instruction to a constructivist approach, from short-term needs to the longer term, and from immediate to more holistic learning” (Salmon, 2004, p. 30). Clearly, the design and the focus of a group work assignment impacts on the effectiveness of the learning. Effective group work experiences combines both shared goals and individual accountability, as expressed in the following student comments:

“All members of our group discussed our individual ideas and all the relevant points as well. This discussion showed the way to get suggestions to improve the assignment. Moreover, it taught us about evaluation process of the work and gave us an explicit recommendation for writing the assignment and to submit the proposals.”

Oakley et al.(2004) also describe a number of strategies to support the effective teamwork at the undergraduate level. These include:

- * instructor formation of teams rather than student self-selection;
- * teams with 3-5 members of diverse academic ability levels, with common blocks of time in their timetables based on a student information sheet;
- * avoidance of isolation of at-risk minority students;
- * dissolution and reformation of groups mid-way through a long project
- * preliminary instruction on effective team practices including how to establish expectations about individual and collective functioning;
- * dealing with problem team members; and
- * use of peer ratings at various times throughout the project.

Most of these strategies were incorporated into the process task outlined in Table 1. The short duration of each assignment made it unnecessary for teams to carry out peer ratings during the project and the use of two separate assignments resulted in the formation of different groups for the second assignment. The use of two assignments with an increase in the expectations placed on students for the second assignment presented an opportunity for students to acquire team skills as part of a gradual process. One student wrote:

“This assignment has been an interesting learning experience. ... it has given me the opportunity to employ the skills that I obtained from assignment one which consequently has allowed for the further development of my critical, creative and collaborative writing skills. ... I have thoroughly enjoyed the unusual best answer process because it has given me the opportunity to compare my answer with other answers hence helping me develop an improved piece of writing. ... Hopefully my newly honed skills will assist me in future endeavours.”

Van Aalst (2006) believes that it is time to revisit notions of collaboration, learning how to learn and idea improvement. Van Aalst proposes that the notion of ‘collaboration’ should reflect knowledge building as it was more than just sharing ideas. The process developed for these assignments encouraged students to engage respectfully in the synthesis and improvement of their individual ideas in order to build the best answer they possibly could. The following student comment captures this sentiment:

“These two experiences have been good for me as ever since I had a bad experience of team work during high school I have been apprehensive about working in a group of an assignment. In both cases my fears have been unfounded as the team I have had both times have been as committed to doing well as I am and have worked accordingly. The quality of our best answer was a much better submission as any of our individual answers as it incorporated all of the best ideas of each member of the group.”

By participating in informal conversations, Van Aalst (2006) suggests that, students build “a communal resource for learning” (p. 283). Through revisiting elements of these conversations, students are able to improve their ideas and to become familiar with the idea improvement aspects of group work as “a method for producing new knowledge” (van Aalst, p. 285). Idea improvement is, van Aalst contends, based on treating ideas as “objects of inquiry that can be improved by scrutiny, debate, testing and modification” (van Aalst, p. 285). As such ideas required intensive critical thinking by group members along the lines of knotworking in activity theory and co-configuration (Engeström, 2004).

Conclusion and implications

So, where does that leave us in relation to group work and first year students in Reasoning And Critical Thinking for IS Professionals? At a practical level, this experience of embedding

group work in a first year unit has provided the authors with much to consider before the unit is offered again and we go into the next cycle of our action research.

As a result of this experience we have given serious consideration to two organisational aspects of the assignments. The first relates to the effort and time required by students to review and comment on the group best answers. The second relates to students' comments on the difficulties of organising team meetings associated with the second task, where students were expected to meet in their own time.

A considerable amount of class time was required for students to review each of the team's answers and to determine their list of three best answers. As a result, both students and authors felt that the task where teams peer reviewed the work of the other teams (Task 4 in Table 1) was rushed. Subsequently, more time will need to be made available for students to review the team responses. The authors have decided to trial the use of WebCT for a virtual poster session to address this situation. The second concern relates to students' difficulties in arranging the necessary meetings for group work. In contrast to the workplace where meetings usually occur during work time and on the premises, tertiary students are expected to organise "work" meetings in their own time. Once again, WebCT is being considered as a tool to help address this problem. However, to ensure the effective use of this tool, there may well be a need for a scaffolded approach to developing its effective use!

We believe that we can support our students' development of meta-learning skills through incorporating into our units occasions when students engage in:

- * action learning so that they become "involved in directing their actions, individually and collectively, around shared understandings of their world" (Salmon, 2004, p. 49); and
- * reflective thinking that requires them to think and learn about their own learning.

As a result of our experience with embedding group work in this first year unit, we have also drawn conclusions about the impact of the approach on students' attitudes to group work and the management of a process such as the one described above. 'Gone' were students' complaints about loafers – all students had done the required work before being assigned to a team. 'In' were positive experiences of group work. Only one group's dynamics was of concern to the lecturer because the students' level of engagement seemed to be less than that of the other groups. Interestingly, the students in this group expressed satisfaction with the group work process which suggested that the lecturer's concerns may have been unfounded. 'Gone' was a "mark only mentality", 'in' was a more meaningful experience that allowed students to benchmark their own work against that of other students and to view the lecturer's comments on all teams' best answers. 'Gone' was the lecturer's mountain of marking and students' long wait for the return of marked assignments, 'in' was the almost immediate feedback of peer review.

In the light of the success of this mixed mode embedding of group work skills in this first year unit, the problem has shifted toward how to get students to become more engaged in the process of critically reviewing and improving their arguments. Many students had not improved their work as much as we would have liked. We had hoped that students had gained sufficient knowledge and skills from those aspects of lectures and tutorials which focussed on critical thinking and reasoning to enable them to both recognise and produce a well-structured written argument by the time they attempted Assignment 2. However, we suspect that when groups came together to produce their best answer, many simply tweaked, that is, they

improved that answer regarded as the strongest of all the team members' individual responses by making minor changes or insertions from other students' answers. Whilst, tweaking the best of their group members' answers did demonstrate an ability to critically select the best piece of work from their group, few groups had given consideration to the structure of the argument that should have been at the core of their writing of a "best answer". Beyond adding an extra premise here or there, there was little evidence of the ability to improve the reasoning underlying the structure of their existing arguments. Consequently, we have revised what we want from students: not just "an answer" or even "the best answer", but the appreciation of what makes a "good answer" and an ability to implement that critical appreciation in every piece of work they do. We believe that the scaffolded process outlined in this paper will provide a base for the second (revised) version of this approach where we plan to focus students' attention on the development of a structure for their arguments prior to the group writing task.

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