

GROUP-WORK: DOES IT HAVE TO BE THAT BAD?

A. Williams¹, L. Henry², R. Tucker³, N. Abassi³

¹School of Architecture and Built Environment, University of Newcastle and Avondale College

²School of Architecture and Built Environment, University of Newcastle

³School of Architecture and Built Environment, Deakin University

Tony.williams@Avondale.edu.au

ABSTRACT

Many accreditation bodies and universities require the graduate attribute of “an ability to work in teams” or to “effectively collaborate”. Students invariably dislike working in groups maintaining that “malingerers ride on the back” of those students who work hard and contribute effectively to the outcomes of the group or team. This is the context in which an ALTC/OLT project was established, the project is to consider ways of enhancing group-work in Architecture and design related disciplines.

The project has identified the issues associated with group-work, from the perspective of student and lecturer, and has begun to develop strategies to overcome the issues. This paper reports on an assessment intervention made in a subject that involved significant levels of group-work, the initiative gained interesting responses from the students involved. Interestingly the class was multi-disciplinary and with a large percentage of international students. The students articulated during the focus group at the end of the experience were positive about the the experience of having to collaborate.

This paper reports on the assessment initiative as well as providing some insights into the students’ experiences of working in groups.

Keywords: assessment, teamwork.

INTRODUCTION

Teamwork learning is seen as being more representative of work in the real world of professional practice where design is nearly always a collaborative activity so as to meet the demands of project complexity. This is in stark contrast to academic contexts, where the application of teamwork into the curriculum is often seen as “contrived” by students

especially when they have an expectation of being individually assessed. Industry or the professions perceive that not only is a team project seen as more authentic, it can result in ideas and knowledge being combined collaboratively for design outcomes that are superior to those of an individual student designing in isolation (Barber 2004). The desire to include teamwork is due to the belief that it improves student learning, specifically in the area of social behavioural skills, higher order thinking and the promotion of inclusive learning (Cohen 1994). The application of teamwork also develops critical thinking (Gokhale 1995; Dochy, Segers et al. 1999; Sluijsmans, Dochy et al. 1999), active learning (McGourty, Dominick et al. 1998), provides the opportunity to confront more substantial projects (Goldfinch and Raeside 1990), and peer led learning experiences within the team (van den Berg, Admiraal et al. 2006). As well as providing engagement with technical skills it is often the 'generic' skills that are enhanced in this learning experience (McGourty, Dominick et al. 1998; James, McInnis et al. 2002).

Despite the well documented positives of this teaching approach, it has its issues, including; social loafing, free-riding or free-loading, where the combined output of the team is less than would be expected from combining the output of individual team members (Kravitz & Martin, 1986), this may be further contributed to by problems of team discipline or even further exacerbated by assertive team members. Also the issue of team members who are academically weaker or less motivated to contribute who become "passengers" gaining "a free ride" through others in the team (Goldfinch & Raeside, 1990). Solving these issues will go a long way to gaining a more positive teamwork learning experience that encourages active participation by all team members (Cohen, 1994).

Some researchers prefer 'Teacher assignment' of students into groups as the mode for the construct of the teams (e.g. Fiechtner and Davis 1992; Oakley, Felder et al. 2004; Tucker and Rollo 2006). Oakley et al. (2004), for example, suggest that when students are allowed to select their own teammates, stronger students have a tendency to seek one another out, "leaving the weaker ones to shift for themselves, which works to no one's benefit." The authors believe that for the purpose of creating well-functioning diverse groups where "the weak students get the benefit of seeing how good students approach assignments and they may also get some individual tutoring, while the strong students who do the tutoring may benefit even more" (Oakley, Felder et al. 2004) Assigning the students to groups is of greater benefit to the learning experience of the students.

Teamwork training or the learning of team-working skills can clearly influence how effectively teams perform. It has therefore been suggested that the teaching of team development and teamwork skills is an important but often overlooked requirement of students working in teams (Clark 2006; Hansen 2006; Chakraborti, Boonyasai et al. 2008). Hamlyn-

Harris et al. (2006) identified that students who experienced teamwork training prior to the experience had a significantly higher level of satisfaction with teamwork and suggests that the failure to provide students with appropriate training in and preparation for collaborative learning is the main reason why many students dislike team or group work. If teamwork is taught using a well-designed, structured, supportive and interactive framework in which students can design collaboratively there will be a greater likelihood that students will understand the importance of teamwork to the practice of design, will experience better learning outcomes, and enjoy designing with their peers.

The Trialled Initiative

The initiative implemented at the School of Architecture and Built Environment, University of Newcastle, involved a second year subject which is a core subject in a Design and Technology teacher education program, however since the subject's introduction it has proved popular with students from a wide variety of disciplines, students like the design/construct focus of the subject and the opportunity to develop their "design-build" skills. It is often the case that the students for which the subject is a core component of their program of study are a minority in the class as students are predominantly from engineering, construction management, architecture and industrial design as well as other disciplines. Interestingly the subject attracts a large number of international students also because of its workshop base being different from the international students' learning experiences in their own country. One of the primary focuses of the subject is the introduction of teamwork, the assessment weighting of the team project is 50% of the overall subject assessment.

The subject procedure involves teams being formed by the lecturer, this done to ensure students within each team were from multiple disciplines and that the cohort of international students was evenly dispersed among the teams.

At the introduction of the subject and the teamwork assignment the benefit of working in teams and the possible positive benefits of the learning experience were highlighted. The rationale for lecturer assigned groups was outlined presenting the benefits of diverse teams drawn from a range of disciplines, skills, attitudes and experience. It was also related to the students that this diversity could potentially be the source of conflict within the group. Students were given a range of strategies to use in managing the issue of conflict within the group.

The introduction to the project involved relating the design team roles individuals may have and defining the tasks and responsibilities of each of these roles. The allocation of roles and tasks within each team was self-

directed by the teams after they had time to appreciate the skills and experiences of the team members within the group.

The construct of the teams also ensured that each team had one strong team member the selection of which was based on previous assessment outcomes. In addition care was also taken to safeguard that there was even placement of weaker students within the teams and that the placement of these students would potentially provide exposure to skills and attributes in which they generally performed poorly.

As there was no previous contact with the international students or access to their previous academic record the placement of these students was based purely upon even distribution amongst groups with consideration only to their discipline background. Teams were generally made up of four students.

The importance of the team working together cohesively was outlined. The students were made aware that the team would receive a grade for their overall performance, however their performance as a team member is also critical and they will receive an evaluation for that component. Students learned that each individual student would be accountable for their contribution to the team, this was achieved through the assessment strategies applied that included a "project multiplier" aspect for each student and peer review. Great care was taken to fully communicate these strategies would have on the individual student's final mark, the details of the assessment strategy are outlined below.

The Assessment Procedure

Core skills such as communication, teamwork and conflict resolution were provided to the students in lecture type sessions, so students appreciated what the responsibility as a team member involved. The assessment of the project was based on a multiple perspective approach consisting multiple assessment strategies including, self and peer assessment, journal/log and product assessment.

The subject assessment included a Teamwork Peer and Self-Assessment, which was performed twice during the project. Each student assessed themselves and the other students within their group on the defined criteria. The assessment was strictly anonymous with the forms being completed electronically and uploaded to a predefined portal by the student. The criteria for Peer and Self-Assessment included:

- Participation in team meetings/discussion
- Degree of preparation for team meetings/discussions
- Fulfils responsibilities allocated at team meetings
- Communicates well with the team
- Makes a positive contribution to the team dynamics

This process involved the evidence of each skill being ranked from 1 to 5, as demonstrated in the evaluation sheet, Figure 1 below.

Please fill in the following assessment sheet using the key below: - 0 never - 1 occasionally - 2 moderately - 3 most of the time - 4 fulfils task completely Assessment for: _____ (Student Name) Team Name / No _____ For the person under consideration circle the number that is most appropriate:						
<i>Participation in team meetings/discussion.</i>	0	1	2	3	4	
<i>Degree of preparation for team meetings/discussions.</i>	0	1	2	3	4	
<i>Fulfils responsibilities allocated at team meetings.</i>	0	1	2	3	4	
<i>Communicates well with the team.</i>	0	1	2	3	4	
<i>Makes a positive contribution to team dynamics.</i>	0	1	2	3	4	

Figure 1: Teamwork Peer and Self-Assessment Sheet

The assessment also required the groups to complete Project Meeting Logs, see Figure 2 below. The logs provide a record of the team meetings and the group's activities. The groups were required to meet weekly and complete and submit records by the end of each week outlining decision and actions.

The individual student obtains a mark for their contribution to the design and construct activity which is documented in the weekly 'logs' this contribution is given a mark out of "1". This mark is then used as a multiplier where each student's mark is established by marking the project by the multiplier mark, this rewarding the student on the extent to which they contributed to the team exceeding the baseline competency requirements. For example if the group project mark was 80% and a student received "0.95" for their contribution, the multiplier mark, then the individual student would receive a mark of "76" for that component of the assessment item.

PROJECT MEETING LOG	
Meeting Date:	Time:
Team Members Present:	
<i>Report on Carried Over Actions or Items</i>	<i>Member Reporting</i>
Issues Discussed	Participating Member

Decisions	
Meeting Date:	Time:
<i>New Actions</i>	<i>Member to Action</i>
<u>Members in Attendance Sign-off</u>	

Figure 2: Meeting Log

The Students' Response to the Experience

After students received their feedback and marks for the assessment item, a review of the subject was conducted. The review involved a survey of the student satisfaction with their learning experience and a focus group conducted with all students of the class. Interestingly the survey showed a greater level of acceptance for the teamwork activity that had been achieved in previous offerings of the unit, this was encouraging but did not reveal the reasons for the improved satisfaction. It was the student responses during the focus groups were analysed that the reasons for the students' positiveness to the experience became apparent.

The focus group asked students question relating their experience in working in teams. The paper will report on the students' responses to the following questions:

- Issues Experienced with Working in Teams
- Confidence in the Assessment Strategy
- Benefits of Teamwork
- Means of Obtaining Consensus
- Most Significant things Learned

What was surprising about the students' response to the experience was how positive they were about the teamwork experience, this differed to the usual negativity toward teamwork assessment received in the past. Students were unanimous in their acknowledgement of the fact that they had learned a lot about working in teams, but more interestingly they felt they had been challenged by the experience to extend not only their teamwork skills but they had taken on a range of technical skills, not usually acknowledged by students working in teams. Listed below are the skills identified by the students that they had developed as a result of their experience:

- CAD
- Improved language
- Computing

- Crisis management
- New machining skills
- Folio generation/folio development
- Better organised
- Communication skills
- Brain storing ideas
- Organising time
- Organising facilities
- Time management
- Diversity of approaches
- Improvisation
- Incorporating others' ideas
- Alternate approaches

The teamwork skills would have been expected but the technical skills were not. When asked to relate why students had identified the development of technical skills had occurred, the response was that it was because of the multi-discipline construct of the groups, with students had different skill sets, as a result of being involved in the teamwork there was the opportunity for skill exchange between students from different disciplines, for example an engineering student was more skilled in electronics than an architecture student but in the team setting shared these skills. Students articulated:

"....we did not want to be showed up by the other members of the group"

The students' positive response to the challenge of taking on new technical skills in a peer led situation rather than a teacher directed situation was an interesting outcome.

Students identified the most positive about the teamwork experience was the multi-disciplinarity of the team, the different skills that they learned from their team-mates, diversity of ideas generated in the team setting and the overall social aspect of the experience, even if many related the sense of competitiveness that existed between the disciplines.

What became evident in the focus groups, when discussing the assessment strategy was that the assessment strategy used to assess individual students in the teams, was the positiveness of the students were about the strategy. Students stated they were confident that their work would be identifiable from those of their teammates and their contribution would mean something when the marking was done. Student statements included:

"....the people who did the most received the higher marks"

" I felt confident that all the work I did was rewarded in the marks, I was not held back by those who did not want to participate to the same level..."

The issues experienced by the students whilst undertaking the assessment task were also of interest. The most significant issues expressed was that it was difficult to organise team meetings, though the ability to conduct virtual meetings using the *Learning Management System*, was appreciated. Students were able to exchange ideas and images without being physically located. The second issue noted was that even though they had learned a lot, they still had difficulty in achieving shared understanding when they were working collaboratively with others in the team, they felt that they needed to develop better skills in communication as well as the ability to gain consensus among the team during decision making. The usual issue associated with teamwork was mentioned, but not in its usual prominent status, the ability to distribute work evenly. Students felt that with further experience this may be achieved but for a first time experience they felt that this was something they still needed to develop and they requested better preparation to participate in teamwork so as to be better able to participate more fully.

Of importance to the evaluation of this initiative was that the students related that they had confidence in the assessment strategy applied to the learning experience. Students related that it allowed them to focus more on the learning experience than on how to motivate the "social loafers" in the teams. For the next implementation of the initiative greater focus will be placed on scaffolding the learning experience with attention given to developing the students knowledge of strategies to achieve consensus and shared understanding. These aspects will be given greater prominence raising them to the same level as the technical skills conveyed to the students.

REFERENCES

- Barber, P. (2004). Developing and assessing group design work: a case study. International Engineering and Product Design Education Conference, DELFT. Netherlands.
- Chakraborti, C., R. T. Boonyasai, et al. (2008). "A systematic review of teamwork training interventions in medical student and resident education." Journal of general internal medicine **23**(6): 846-853.
- Clark, P. G. (2006). "What would a theory of interprofessional education look like? Some suggestions for developing a theoretical framework for teamwork training 1." Journal of Interprofessional Care **20**(6): 577-589.

- Cohen, E. G. (1994). "Restructuring the Classroom: Conditions for Productive Small Groups." Review of Educational Research **64**(1): pp. 1-35.
- Dochy, F., M. Segers, et al. (1999). "The Use of Self-, Peer and Co-assessment in Higher Education: a review." Studies in Higher Education **24**(3): 331-350.
- Fiechtner, S. B. and E. A. Davis (1992). Why some groups fail: A survey of students' experiences with learning groups. Collaborative Learning: A Sourcebook for Higher Education. A. S. Goodsell, M. R. Maher and V. Tinto, National Center on Postsecondary Teaching, Learning, & Assessment, Syracuse University.
- Gokhale, A. (1995). "Collaborative Learning Enhances Critical Thinking." Journal of Technology Education **7**(1): pp. 22-30.
- Goldfinch, J. and R. Raeside (1990). "Development of a Peer Assessment Technique for Obtaining Individual Marks on a Group Project." Assessment and Evaluation in Higher Education **15**(3): 210-231.
- Hamlyn-Harris, B. J., B. J. Hurst, et al. (2006). "Predictors of team work satisfaction." Journal of Information Technology Education **5**: 299-315.
- Hansen, R. S. (2006). "Benefits and problems with student teams: Suggestions for improving team projects." Journal of Education for Business **82**(1): 11-19.
- James, R., C. McInnis, et al. (2002). Assessing Learning in Australian Universities. Melbourne, Centre for the Study of Higher Education and The Australian Universities Teaching Committee.
- Kravitz, D. and Martin, B. (1986). Ringelmann rediscovered: The original article, Journal of Personality and Social Psychology, Vol 50(5), 936-941
- McGourty, J., P. Dominick, et al. (1998). Incorporating Student Peer Review and Feedback into the Assessment Process. 28th Annual Frontiers in Education Conference, Tempe, Arizona, American Society for Engineering Education and Institute of Electrical and Electronic Engineers.
- Oakley, B., R. M. Felder, et al. (2004). "Turning Student Groups into Effective Teams." Journal of Student Centered Learning **2**(1): 9-34.
- Salas, E., D. Rozell, et al. (1999). "The effect of team building on performance, an integration." Small Group Research **30**(309-329).
- Sluijsmans, D. M. A., F. Dochy, et al. (1999). "Creating a Learning Environment by Using Self-, Peer- and Co-Assessment." Learning Environments Research **1**(3): 293-319.
- Tucker, R. and J. Rollo (2006). "Teaching and Learning in Collaborative Group Design Projects." Journal of Architectural Engineering & Design

Management **2**(Teaching and Learning in the Built Environment): pp. 19-30.

van den Berg, I., W. Admiraal, et al. (2006). "Peer assessment in university teaching: evaluating seven course designs." Assessment & Evaluation in Higher Education **31**(1): 19-36.