

Cooperative Learning in an Interior Architecture Studio

Jo Dane, Monash University, Australia

Abstract: *Design studio in interior architecture education is rarely conducted as a group learning activity, despite the benefits of preparing students for team-based industry work environments. Students have learnt to be protective of their design ideas and are not always encouraged to share resources, although theories on social learning indicate a deeper learning experience is achieved through collaboration. The theoretical framework for cooperative learning, as a form of collaboration, is extensive and positively supports the virtues of group work as an effective learning activity. This paper describes an action research cycle of preparation, implementation and reflection of a cooperative learning project with third year interior architecture students. For the purposes of this research, cooperative learning is defined as a structured group work activity, with participants working together towards a series of common objectives. The main objectives were for students to experience a typical interior architecture work environment, to promote deeper learning and foster a culture of sharing ideas and resources.*

Keywords: *cooperative learning, design studio, interior architecture education, design pedagogy*

Engaging in group work

Students have learnt to protect their work, particularly in secondary school where they are required to demonstrate their individual learning capacity. Collaborative learning blurs the ability to define each person's contribution, yet in many prevailing industries, teamwork is an everyday occurrence requiring considerable human resources and skills. Interior architecture is no different: teamwork pervades the culture of most mid to large sized design companies. Regardless of this, tertiary design students seldom learn how to work effectively in groups, or are encouraged to appreciate the benefits and relevance of collaborative activities.

As an initial experiment, I facilitated a group work activity for part of a third year interior architecture design project. Students were asked to collaborate throughout the design analysis, research and conceptual phases of a semester long project contemplating an eating experience of the future. Initially sceptical as to how the groups (comprising four students) would cope with the creative aspects of this assignment, I was able to observe each group effectively absorb abundant design research and enthusiastically embrace the conceptual phase. Through sharing their ideas, students were completely engaged in the design process; their conceptual presentations exceeded expectations in terms of research,

theoretical framework, innovation, visual and oral presentation. The structure of the project enabled students to divide tasks; their attentive diligence in completing designated tasks far outweighed any perceived disadvantage of not participating in every part of the process. The success of this experience led me to further research on group work pedagogy, in particular theories of cooperative learning, with the view of implementing a six week group project as an 'action research' activity.

This more recent project involved groups of four third year students conceptualising and developing a contemplation space, contextually set within a city laneway: grungy by day, although on the fringe of corporate activity, and the locale of numerous niche clubs by night. I devised this project to encourage students to step out of their comfort zone and consider design from an alternative perspective; working in groups would compel students to listen to each other and engage in critical analysis to justify their individual design ideas.

My broad objectives for implementing cooperative learning into an interior architecture design project were to:

- promote deeper learning for students;
- encourage students to take more responsibility for their own learning;
- simulate aspects of a typical interior architectural work environment;
- enable students to experience design from other perspectives, other than their own individual viewpoint;
- develop critical analysis skills;
- enable students to learn to study with each other, fostering a culture of sharing resources, helping and supporting each other.

Literature

Extensive research has been published on the benefits of collaborative and cooperative learning. From late in the nineteenth century, John Dewey emerged as one of the pioneering philosophers to expound the value of social learning in children.

I believe that the only true education comes through the stimulation of the child's powers by the demands of the social situations in which he [sic] finds himself [sic]. Through these demands he [sic] is stimulated to act as a member of a unity, to emerge from his [sic] original narrowness of action and feeling, and to conceive of himself [sic] from the

standpoint of the welfare of the group to which he [sic] belongs. Through the responses which others make to his own activities he [sic] comes to know what these mean in social terms. The value which they have is reflected back into them (Dewey, 1897, pp. 77–80).

Similarly, Piaget illuminated social theories of learning throughout the early twentieth century. In Flavel (1963), Jean Piaget asserts ‘...without interchange or thought and co-operation with others the individual would never come to group his [sic] operations into a coherent whole: in this sense, therefore, operational grouping presupposes social life’ (p. 201).

More recently, Gergen (1999), Bruffee (1994), Biggs (1999) and Ramsden (1992), have prolifically published and shared their research on learning through collaboration, supporting the relevance and effectiveness of student-centred learning in higher education. For example, Bruffee (1994) examines research concerning collaborative learning in primary and secondary schools and supports the general trend of evidence confirming the positive effects of collaborative learning in higher education. He claims: ‘students learn better through non-competitive collaborative group work than in classrooms that are highly individualized and competitive’ (Bruffee 1994, p. 40).

There is significant debate regarding the distinction between the terms collaborative learning and cooperative learning as highlighted by Panitz (1996) and Cooper et al (2002). Despite the two words having similar meanings and both strategies acknowledging the influence of John Dewey, the theoretical base of the two terms comes from disparate sources. Where early theorists of cooperative learning were educationalists and sociologists targeting application at the K-12 level, collaborative learning theorists were more likely to have come from humanities and social sciences, exploring political and philosophical issues (Matthews et al., 2002). Various definitions have been attempted and contested over decades of research, but the fundamental difference appears to be in the level of structure applied to the learning experience. Matthews et al., (2002) defines the respective terms as follows:

Cooperative learning tends to be more structured in its approach to small-group instruction, to be more detailed in advice to practitioners, and to advocate more direct training of students to function in groups than does collaborative learning (URL cover page).

Collaborative learning practitioners are inclined to assume students are responsible participants who already use social skills in undertaking and completing tasks. Therefore students receive less instruction in group skills and roles and perform less structured reflection on group interaction than in cooperative-learning classrooms (URL cover page).

Some differences as described by Matthews et al., (2002) include:

- degree of involvement with and function of the teacher;
- resemblance of authority between student and teacher;
- the necessity for students to need to be trained to work in groups;
- the importance of students in groups being considered for their personal, social and/or cognitive growth;
- implementation concerns, such as group formation, task breakdown, and the degree of accountability within the group to ensure fair distribution of work and assessment.

Matthews et al., (2002) also articulate some similarities:

- recognition that active learning is more effective than passive forms of teaching and learning activities;
- the teacher is a facilitator or guide, rather than centre of attention;
- teaching and learning are shared experiences between teacher and students;
- higher order thinking skills are enhanced when participating in small-group activities;
- students take more responsibility for their learning.

While collaborative learning encourages higher cognitive learning through greater student autonomy and less teacher interaction, it was crucial to reinforce the importance of students firstly learning to work with each other. This led to the implementation of a cooperative learning structure rather than one of collaborative learning. The cooperative learning structure enabled students to set their own framework for progress, with monitoring and supervision by teaching staff as required.

Preparing for cooperative learning

Planning the introduction of group work was a critical component of the teaching cycle, particularly recognising the importance of assisting students to learn to work in groups; assuming students do not have the necessary skills.

Introduction of the unit and design project was synonymous with standard design education practice, that is, students were issued with a unit guide outlining resources and conditions, as well as a design brief outlining the functional and conceptual requirements of the project. A site was identified, visited and analysed during the first week.

Cooperative learning kit

I conducted an informal lecture on the objectives of cooperative learning; its relevance as an interior architecture learning activity and the research base of the methodology. A 'cooperative learning kit' (CL kit) was provided to all students outlining these issues giving useful information on 'good and bad group behaviour' (Race, 2000; Tiberius, 1999). Some excerpts of research material were included for further validity, with the intention that students would respond positively to a new type of learning activity if they understood the pedagogical framework.

Group selection

While there are many alternative ways of forming a group (UTS, 2003; Gibbs, 1995); groups of three or four students were determined to be ideal. Torn between imposing group selection and allowing students to form their own groups, I adopted a combination by firstly allowing each person to nominate a 'study buddy', then grouping pairs together. This way each person had someone they were comfortable with and another two people with whom they would get to know better. Assembling groups involved selecting diverse pairs based on their previous performances in design (that is, mixing weaker and stronger students together), as well as on gender and cultural sensitivities (Tinzmann et al., 1990).

Team charter

The first activity for each group was to develop a team charter (UTS, 2003). This was intended to clarify the ground rules for working together, that is, acceptable behaviour, unacceptable behaviour and the consequences of both. Talking about these issues brought them to the forefront and brought about clear communication between all participants. Issues such as attendance at group meetings, what happens if someone is running late, when is it acceptable to not attend a meeting, what happens if group deadlines are missed, were defined and tabled in the team charter.

Group process

Each group was encouraged to establish a process of communication, division of tasks and record of meetings through completion of a team report (UTS, 2003). This was included in the CL kit for recording design decisions, actions and deadlines and was to be submitted to me on a weekly basis for monitoring. Each group member was directed to take turns in recording the meeting decisions and objectives.

As part of the group structure, students were recommended to adopt specific roles during their meetings (Gibbs, 1998): One person to chair the meeting, ensuring meeting objectives are set and

met (the 'leader'); another to generate innovative ideas (the 'innovator'); another to challenge the innovative ideas (the 'devil's advocate'); the fourth person to record the outcomes (the 'reporter'). Roles were rotated at each meeting. Rather than having four people simultaneously offering their design ideas, these roles encouraged critical analysis of each contribution, enabling worthwhile ideas to be explored and developed. Performance of individuals in their respective roles was open to scrutiny by group members in the peer review survey.

Monitoring progress

Within the single four-hour studio session per week, monitoring of each group's progress was essential. Students were encouraged to contact staff directly with any significant problems. Weekly submission of team reports enabled me to check the degree of activity outside of contact hours, group progress from week to week, and monitor the general effectiveness of each group. Group presentations were scheduled for the third and fourth weeks of the semester, with the final presentation in the sixth week. Interim presentations were a useful gauge of how well groups were working together; slow progress was identified enabling appropriate staff intervention.

Assessment

Assessment is typically the most contentious part of facilitating a group work project, evidenced in the amount of variation documented in research. Pros and cons of various types of assessment – from providing a standard group mark to individual assessment and variations thereof – are documented by Gibbs (1995), UTS (2003), and Jaques (2000), amongst others. A hybrid assessment method was adopted in this case to incorporate an assessment of each person's performance, enabling each student to be graded on their merits. The approach I employed here was to:

- (a) assess the project response as a group mark;
- (b) assess each student's log book for evidence of their design process and progress;
- (c) have students review each other's performance by completing a survey relating to their effort and effectiveness as a group participant (Gibbs, 1995). In their groups, students were asked to openly discuss and agree to a response to the specific criteria for each group member. This involved a tick in a box against a rating of 'excellent', 'more than acceptable', 'acceptable', 'less than acceptable' and 'unacceptable' requiring a high degree of maturity, honesty and diplomacy (see Table 1).

Criteria	Excellent	More than acceptable	Acceptable	Less than acceptable	Unacceptable
How well did the person contribute to research?					
How well did the person contribute to analysis?					
How would you rate the person's ability to generate a concept?					
How well did the person respond to criticism, advice and/or instructions?					

Table 1: Extract of peer review survey

Criteria for the peer review survey were selected based on the range of skills and activities that were required to be undertaken by each group member. Criteria were also constructed to investigate group and individual design process. Twenty two questions were framed to capture each person's effectiveness at specific tasks, enabling individuals to reflect on their group contribution, as well as recognise aspects of their design process that need to improve. A separate matrix was also completed by students to rank the degree of contribution each person made to each part of the design process, that is, research and analysis, concept development, design development, decision making, model making, visual presentation and oral presentation. This proved to be useful, as group members who shared the activities ranked themselves equal, whereas individuals who had not pulled their weight in certain areas were ranked low compared to their group members.

Essay

Students were encouraged to reflect on cooperative learning as a design activity as well as investigate the relevance of team-based activities to the professional career they were studying for. Each student was required to interview or research two architectural companies that actively utilise team-based work, then relate those responses to their own experience of working in groups, and translate their analysis into an essay describing the variant professional and experiential models they observed.

Reflections

There were many positive experiences to emulate from this studio experiment. Studio time was more enjoyable for staff as there was time to thoroughly engage in the discourse of each group's design. The studio environment was dynamic, noisy and vibrant with constant design dialogue taking place. Students immersed themselves in each other's design processes and were subject to rigorous scrutiny of their own design process. Conflict was expected and handled constructively; this was recognised in many essay responses as a crucial aspect of the overall learning experience. The essays presented an opportunity for students to comment on the positive and negative aspects of working in groups. While many students experienced some degree of frustration due to the group process, most students expressed a sense of fulfilment in being able to share design ideas, share research and discuss the implications of specific research to the project. A number of students conveyed satisfaction from the outcomes of debating design issues and having to justify their design decisions. The following anonymous excerpts from the reflective essays represent a typical range of responses, reinforcing the notion that group work and cooperative learning in particular is an appropriate and effective teaching and learning activity for interior architecture students.

...we found ourselves striving to justify why the group should incorporate our own individual ideas. These discussions and justifications alone were the most time consuming and trying parts of our process. However, these conflicts and compromises became the most valuable learning experiences of our entire design project.

As we had never worked in a team situation before we found it difficult to define our objectives. Some obstacles were fulfilling the roles of leader, devil's advocate, scribe etc. Although these roles were allocated they were not fulfilled as the participants all wanted to contribute to the creative process.

If the team then works to resolve conflict there is the potential for the members to better understand one another and bring the group closer together....we became more aware of our breaking points, learnt the need to control our emotions and listen to opinions with an open mind.

What I observed...was that others were often able to see what I had missed or had failed to recognise because the problem had become too familiar. In this way, problems which I had harboured on for hours were quickly and effectively resolved.

Group work to me was (previously) presented as a challenge – an unnecessary challenge. I found that exploring ideas as a group became tedious due to the restrictions of politeness. Diplomacy always seems to conquer production. However, from my most recent experience, 'stepping on toes' did not seem to hurt but instead helped make decisions.

The most difficult aspect of implementing the cooperative learning design project was assessment. As evidenced in the range and breadth of published research on group work assessment, there was no apparent formula for getting it right. By establishing a range of assessable criteria (that is, the group product, the individual's log book and the peer performance review) there was semblance of an equitable and transparent process. Students were unlikely to be rewarded either for slothful behaviour or resting on the laurels of stronger students.

Peer performance review is a valid form of group work assessment, but there were inherent difficulties in each group responding to the criteria consistently. Students were required to respond openly to each other on each person's performance, requiring a mature and honest approach; in many cases students erred on the side of conservatism and rated each other kindly to avoid conflict. As students will be continuing to study together in a competitive environment for at least a further eighteen months, this exercise may have been too confronting. Having to openly criticise a group member for their poor performance in a particular criteria has the potential to be interpreted by the recipient as destructive rather than constructive, unless handled diplomatically. Some students voiced their difficulty in allocating criticism to their peers, but recognised this as a skill to be developed as part of their industry experience. In the next cycle of cooperative learning implementation, students may benefit from receiving more guidance on how to openly dispense criticism for the peer performance review component of assessment. Development of a performance rubric will potentially relieve the issue of inconsistency of responses between groups.

I will continue to advocate the virtues of working collaboratively and cooperatively; the benefits to students are potentially extraordinary. Students who have previously received mediocre design results seem likely to improve their design process; group work gives them the confidence to better communicate their design ideas. Stronger design students appear to struggle with issues of having their ideas subjected to peer criticism, as well as having to conform to the group structure; but this too achieves important learning objectives, such as experiencing design from alternative perspectives and practicing critical analysis, rehearsing listening skills and performing compromise.

Students have developed greater insight into typical working practices of interior architecture. Through participation in this project they have benefited from stepping outside their comfort zones, viewing design from their group members' perspectives and forging relationships with their fellow students. I anticipate continuing encouragement of sharing ideas and resources, both formally through cooperative learning, and informally through fostering a culture of collaborative activities.

References

- Biggs, J. (1999). *Teaching for Quality Learning at University: What the Student Does*. Buckingham: Society for Research into Higher Education: Open Uni Press.
- Bruffee, K. (1994). The art of collaborative learning: making the most of knowledgeable peers. *Change*, 26(3), 39–44.
- California State University Dominguez Hills (2002). *Network for Cooperative Learning in Higher Education*. URL: http://www.csudh.edu/SOE/cl_network/WhatisCL.html (accessed 2 February, 2004).
- Cooper, J. L., Robinson, P., & McKinney, M. (2002). Cooperative learning in the classroom. *Network for Cooperative Learning in Higher Education*. URL: http://www.csudh.edu/SOE/cl_network/WhatisCL.html (accessed 2 February, 2004).
- Dewey, J. (1897). My Pedagogic Creed. *The School Journal*. LIV(3), 77-80. URL: <http://www.infed.org/archives/e-texts/e-dew-pc.htm> (accessed 30 May, 2004).
- Flavel, J. (1963). *The Developmental Psychology of Jean Piaget*. Princeton, N.J.: Van Nostrand Reinhold.
- Gergen, K. (1999). *An Invitation to Social Construction*. London: Sage Publications.
- Gibbs, G. (1995). *Learning in Teams: A Tutor Guide*. Oxford: Oxford Centre for Staff Development.
- Gibbs, G. (1998). *Learning in Teams: A Student Guide* (3rd Ed.). Oxford: Oxford Centre for Staff Development.
- Jaques, D. (2000). *Learning in Groups* (3rd Ed.). London: Kogan Page Limited.
- The Educational Technology Training Centre Georgia Department of Education. Cooperative learning. Kennesaw State University. URL: <http://www.edtech.kennesaw.edu/intech/cooperativelearning.htm> (accessed 1 March, 2004).
- Matthews, R. S., Cooper J. L., Davidson, N., & Hawkes, P. Building bridges between cooperative and collaborative learning. URL: http://www.csudh.edu/SOE/cl_network/RTinCL.html (accessed 4 April, 2004).
- Panitz, T. (1996). A definition of collaborative vs cooperative learning. URL: <http://www.city.londonmet.ac.uk/deliberations/collab.learning/panitz2.html> (accessed 15 March, 2004).
- Race, P. (2000). *500 Tips on Group Learning*. London: Kogan Page Ltd.
- Ramsden, P. (1992). *Learning to Teach in Higher Education*. London: Routledge.
- Tiberius, R. (1999). *Small Group Teaching: A Trouble-Shooting Guide* (2nd Ed.). London: Kogan Page Ltd.

Tinzmann, M. B., Jones, B. F., Fennimore, T. F. Bakker, J., Fine, C., & Pierce, J. (1990). What is the collaborative classroom? Oak Brook: North Central Regional Educational Laboratory. URL: http://www.ncrel.org/sdrs/areas/rpl_esys/collab.htm (accessed 2 February, 2004).

Institute for Interactive Media & Learning (2003). *Student Group Work Resource Kit*. University of Technology Sydney. URL: <http://www.iml.uts.edu.au/learnteach/groupwork/intro.html> (accessed 29 August, 2003).