Manual on Teamwork in Design

For TEACHERS

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www.teaching-teamwork-in-design.com/index.html
Acknowledgments

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About this Manual

This Manual provides an informative and succinct overview of the study, *Enhancing and Assessing Teamwork Learning in Architecture and Related Design Disciplines*, funded by Australian Government Office for Learning and Teaching, including a synopsis of the literature on teamwork, a summary of the project key findings, a new model for team effectiveness in student design teams, guidance on teaching and learning of teamwork skills in architecture and design-related disciplines and strategies for fair assessment of teamwork, and a useful annotated list of related resources. The Manual captures, in a practical way, the rigour of the project and the forward thinking of the project team. The project identified student teamwork in design theory and practice used in the past and built on these to develop an accessible and practical framework for teaching and assessing teamwork in design.

The document aims to provide teachers with a brief guide on how to support students to learn the team skills and knowledge required for effective teamworking. This Manual for Teachers is complemented by a Manual for Students. Teachers are encouraged to use in parallel with this guide the “Manual on Teamwork for Students” accessible from the project website ([http://www.teaching-teamwork-in-design.com/manual-on-teamwork-in-design-for-students.html](http://www.teaching-teamwork-in-design.com/manual-on-teamwork-in-design-for-students.html)), as it includes materials to be used during teamwork training workshops.

These two manuals are most effective for student teams that will be working together for a long period of time e.g. the whole or a significant part of a semester.

If you require any further information about this manual and the team learning project, please do not hesitate to contact the project leader and principal investigator:

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Effective team learning in a unit/subject requires three important changes:

(1) a shift in the primary learning objectives of the unit/subject;
(2) a change in the role and function of the teacher; and
(3) a change in the role and function of students.

To facilitate changes of this magnitude, teachers need to implement four essential principles of team learning [1]:

- Groups must be properly formed and managed;
- Students must be made accountable for their individual and group work;
- Group assignments must promote both learning and team development; and
- Students must have frequent and timely feedback.

Instead of being primarily focused on familiarizing students with key concepts, the course goals will also include ensuring that students learn how to use those concepts … Instead of just being someone who dispenses information and concepts, the teacher will need to design and manage the overall instructional process … Instead of being passive recipients of information and content, students will need to be responsible for the initial acquisition of the content and for working collaboratively with other students to learn how to use the content [2].

Drawing upon a review of literature on teaching and learning teamwork in higher education contexts, four Teaching Modules are presented in this manual:

**Module 1: Design and Prepare**
**Module 2: Train and Engage Students**
**Module 3: Monitor and Support Teams**
**Module 4: Assess and Reflect**

Each module includes issues, tips, procedures and recommendations. Coloured boxes on the sides of pages highlight “TIPS” in relation to the specific teaching module. “RECOMMENDATION” boxes are also included throughout the document that address the practical implementation of teaching and assessing teamwork effectively and supporting student teams.

The first project output is a theoretical framework, informed by an extensive literature review, for understanding team effectiveness in student design teams. The Framework of Effectiveness in Student Design Teams includes three key interrelated categories of input: (1) task design variables; (2) individual level factors; and (3) team level factors. The task design variables provide the grounds for enactment of individual and team level factors. The three categories of Input influence Outcome, both directly and indirectly through Team Processes. The framework consists of three categories of Outcome: (1) task performance i.e. the quality of the submissions and students’ knowledge and skills of the content; (2) teamwork skills i.e. generic teamwork skills and collaborative design skills; and (3) attitudinal outcomes i.e. attitudes to teamwork and motivation for future collaboration. The broader educational system and curricula structure are considered as the context within which the student team effectiveness cycle performs. Drawing upon the framework, we have identified 22 factors or challenges impacting on team effectiveness, and 22 corresponding teaching responses and strategies to meet these teamwork challenges. These 22 factors and corresponding teaching strategies are listed at the end of this Manual. The significance of the 22 factors was evidenced by the national surveys, focus groups and case studies.

Figure 1. Framework of Effectiveness in Student Design Teams
As part of the project, nearly 700 students and 70 teachers from design schools across Australia answered surveys about their experiences of teamwork learning and teaching. From the analysis of this significant amount of feedback, four key recommendations were made:

**Recommendation 1: Teaching Team Skills**

- Teachers and students agree that the learning of – (1) Coordination of tasks and responsibilities; (2) Communication via speaking, writing, drawing, modelling; (3) Idea generation, evaluation & selection; (4) Decision making; (5) Leadership; and (6) Conflict management – lead to consistent and measurable outcomes in relation to successful teamwork, good design outcomes, improved teamwork abilities and positive attitudes to future teamwork. Students therefore need to be taught these six skills. Teachers need also to carefully design assessment and assignments to facilitate and encourage effective teamwork.

**Recommendation 2: Diversity in Teams**

- i) While student need to be made aware of different learning styles and how they may influence how they themselves and their teammates engage with team assignments, a student’s learning style has little impact on a student’s satisfaction with their team learning experience. However, an awareness in students of how different learning styles can be reflected by teammates’ engagement in different aspects of teamwork, and by the types of task they are best suited to, can prevent conflict by facilitating understanding and better communication. Students might also be made aware that their learning style, and thus aptitude for teamwork, can affect the attitude they bring to teamwork. Negative attitudes to teamwork can have detrimental effects on team processes and on student’s satisfaction with design outcomes unless students are mindful of differences between teammates. We recommend asking students to complete a simple learning style test and discussing the results at the outset of teamwork.

- ii) International students should not be isolated in culturally different groups, unless they are comfortable with this. Moreover, both the teachers and teammates of international, and especially non-English speaking, students should be encouraged to acknowledge and compensate for the difficulties these students might have with communication and integration.
Recommendation 3: Pedagogic Structure

- Task assessment, team-formation methods, the use of self-and-peer-assessment, the teaching of team skills, and teaching students how to design in collaboration all significantly impact learning outcomes in team contexts. Thus, these pedagogical factors require careful design in both design and non-design units.

Recommendation 4: Attending to the 22 Factors of Effective Teamworking

- Broad strategies are offered for how to attend to each of the 22 factors of teamwork identified in our Framework of Effectiveness in Student Design Teams (Figure 1). These are expanded upon in the project report and forthcoming book Teaching Teamwork in Design.

TIP 1.
The Most Important Team Skills

Teachers in our survey identified the following three skills as the most important to achieving good design outcomes for teams:

1<sup>st</sup>. Communication;
2<sup>nd</sup>. Decision Making;
3<sup>rd</sup>. Coordination.

Students in our survey identified the following three skills as the most important to achieving good design outcomes for teams:

1<sup>st</sup>. Communication;
2<sup>nd</sup>. Idea Evaluation;
3<sup>rd</sup>. Coordination.
How to integrate teamwork into your course/unit?

Four key elements of team assignments should be considered:

1. Task structure
2. Team size
3. Task Type & Complexity
4. Task Assessment Criteria

1.1 TASK STRUCTURE

Closely examine the duration, sequence and interrelationship of tasks that student teams should be engaged in, as they have a considerable influence on team processes. A number of questions to answer include:

1. Are tasks designed to facilitate both groupwork (individual/piecemeal contributions) and teamwork (collaboration)?
2. How long does the team assignment last, and is this appropriate for the expected learning outcomes?

RECOMMENDATION:
Maximize team longevity.

Team longevity was found to be linked with best team experiences and with better team processes. We recommend that teams be assigned as early as possible and that they be given team tasks as soon as possible, perhaps with early assignments to be submitted. It then becomes imperative to provide timely feedback about the quality of the work and recommendations for how the team can improve team processes. To gain the most from the team experience, team tasks should be designed so that the team continues to work together until the end of the term [1].

Module 1.

DESIGN & PREPARE

1.2 TEAM SIZE

Optimum team size is closely linked to the type of task or team project, so team size should be considered in relation to the design brief.

1.3 TASK TYPE & COMPLEXITY

Table 1 provides a summary of characteristics of effective team assignments. Use them as a guide to set up your team assignments.

RECOMMENDATION:

Set team size by pedagogical objectives.

For some projects a group size of five is too small, whereas for others a size of three is too many … The instructor should also ask, “Is one goal of the team project to develop team skills, and if so, which team skills?” We have heard of teams involving as many as 12 students, and these students are asked to produce a business plan in 48 hours. Clearly, one goal of this experience is to develop skills in coordinating a large group of people. Once the pedagogical objectives of the team are identified, the team size should be set at the smallest number reasonable for accomplishing these objectives [1].

Provide teams with adequate descriptions of outcomes and processes.

Give students a good description of what you want. An adequate description of outcomes (exactly what the student is required to submit or present) is strongly associated with best team experiences, whereas an adequate description of process is strongly associated with improved team processes [2].

Ensure team assignment generate team INTERACTION.

The most fundamental aspect of designing effective team assignments is ensuring that they truly require group interaction. Assignments that require groups to make decisions and enable them to report their decisions in a simple form, will usually generate high levels of group interaction. However, assignments that involve complex output such as a lengthy document or an oral presentation are likely to lead to groups dividing up the work and having individuals complete their part of the total task. Such assignments therefore limit intra-group interaction and limit interaction among groups by making it difficult to compare performance amongst teams [3].

Table 1.
Attributes of Effective Team Assignments [1]

<table>
<thead>
<tr>
<th>Team assignments must…</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead to a tangible Team output</td>
<td>require the submission of a tangible team produced output. Otherwise, neither the instructor nor the students can evaluate the effectiveness of the groups.</td>
</tr>
<tr>
<td>Require student understanding of the course concepts</td>
<td>be impossible to complete unless students understand the chief course concepts. Otherwise, students are likely to see team assignments as irrelevant &quot;make work&quot; projects, and neither the instructor nor students will be able to evaluate how well the concepts are understood.</td>
</tr>
<tr>
<td>Be difficult and challenging</td>
<td>be difficult enough that very few, if any, of the students can successfully complete the assignments working alone. Otherwise, the majority of group members will sit back and watch the better students do the work.</td>
</tr>
<tr>
<td>Require engagement in activities that teams do well</td>
<td>allow the groups to spend the majority of their time engaged in the kinds of activities that groups do well (e.g., identifying problems, formulating strategies, processing information, making decisions) and a minimum of time engaged in activities that individuals could do more efficiently working alone (e.g., creating a polished written document).</td>
</tr>
<tr>
<td>Address real-life problems and situations</td>
<td>give students the opportunity to practice dealing with the same kind of issues and problem situations they will encounter in later course work or in future jobs. Being able to see how the concepts apply to realistic problems is a tremendous asset to both motivation and learning.</td>
</tr>
<tr>
<td>Be interesting, enjoyable</td>
<td></td>
</tr>
</tbody>
</table>

1.4 TASK ASSESSMENT CRITERIA

Assessment should differentiate between two types of output:
- Task Performance, which should be assessed by teachers through an evaluation of the learning of course-specific knowledge represented by the submitted product – usually a designed artefact; and
- Team Processes or Teamwork Skills i.e. generic teamwork and collaborative design skills.

A number of questions that should be addressed include:
1. Are individual contributions assessed?
2. Do students perceive the assessment as fair?
3. Does assessment evaluate both product and process?

How to train and engage students in teamwork?

When you engage students in team learning, you must closely examine and address three issues:

2.1 Team Formation
2.2 Training on Generic Teamwork Skills
2.3 Teaching of Collaborative Design Skills

2.1 TEAM FORMATION

It is important that you adopt an appropriate team formation approach. Two main approaches to allocating students to teams are “teacher-assignment” and “self-selection”.

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-assigned</td>
<td>- Replicates the usual procedure for forming teams in “real world” organizations.</td>
<td></td>
</tr>
<tr>
<td>teams</td>
<td>- Can ensure a mix of students in the team in terms of gender, different majors, ability levels, experience, and/or ethnic/cultural origins.</td>
<td>- Prone to relationship/interpersonal conflicts [1].</td>
</tr>
<tr>
<td>Self-selected</td>
<td>- May usually perform better as students are able to select individuals with whom they are familiar, feel they can work constructively and who have similar schedules and commitments.</td>
<td>- Lack team diversity, which is a contributing factor to team problem solving &amp; performance. - Does not reflect practice/real-life. - Can lead to teams of high and teams of low ability students.</td>
</tr>
<tr>
<td>teams</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Two team formation approaches and their pros and cons

TEACHER ASSIGNED TEAMS:
How to assign students to teams?

In line with research [1], we recommend teacher assigned teams:

*In well-functioning diverse groups, 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 [2].*

If you decide to assign students to teams, ensure that you follow these steps:

**STEP 1.** Decide upon some team formation criteria and collect necessary information from students.

**STEP 2.** Prepare your students for your team formation strategy, and explain clearly your strategy and the reasons for it.

**STEP 3.** Provide appropriate guidance and support for student teams to perform well and manage conflicts (See Module 3, pp. 30-35, for further details).

**STEP 1. Decide upon some team formation criteria and collect necessary information from students**

Three general criteria for the formation of student teams are [3]:

- Diversity in the ability or experience levels of team members;
- Having common blocks of time to meet outside class; and
- Avoiding the isolation of at-risk minority students on teams in the first two years of a curriculum.

---

**TIP 5.**

- If a team cannot have at least two members of one sex, consider forming single-sex teams.
- For culturally diverse teams, try not to isolate single members of a cultural/ethnic background.
- If students live in diverse locations, form teams around location to facilitate out-of-class meetings.

---

STEP2. Prepare your students for your team formation strategy

If teams are to be selected by tutors or teachers, take some time to explain to students why they are put in teams in a certain way, what are your selection or composition criteria and what are the rationales behind these team formation criteria.

Develop a Team Formation Questionnaire / “Getting to Know You” Form [1]

A form/questionnaire that collects data from students can assist you in assigning students to teams based on your criteria.

Apart from issues and factors specific to your unit/subject and the approach you adopt to assign students to teams, some basic components of such a form/questionnaire include:

1. Introductory Notes
   You can include statements about the purpose of the form. If you ask questions which may be considered somewhat sensitive, you can inform students that there is no obligation in responding to all the questions.

2. Questions about Previous Knowledge and Skills
   Diverse abilities are desirable in teams, but we do not recommending forming teams according to academic ability as indicated by previous grades. Instead, try to achieve diverse levels of knowledge that directly relate the assignment – which can be determined via a quiz (see example, page 14).

3. Questions about “location” and “time availability”
   “Location” or where every student lives is a factor which should be considered when assigning students to teams. Student teams with members who live relatively close to each other tend to have less constraints in getting together and collaborating.

4. Questions about Preference for Teammates

# TEAM FORMATION QUESTIONNAIRE (Sample)

This questionnaire was developed to assist us in assigning you to the team which functions effectively and best supports your learning and leads to positive teamwork experiences.

Please ensure that you answer all the questions marked by * (answers required). There is no obligation in answering other questions (optional questions), If you feel uncomfortable answering them.

<table>
<thead>
<tr>
<th>Student No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender *</td>
<td></td>
</tr>
<tr>
<td>Are you ...</td>
<td></td>
</tr>
<tr>
<td>Nationality *</td>
<td></td>
</tr>
<tr>
<td>Address *</td>
<td></td>
</tr>
<tr>
<td>Your Grade in prerequisite *</td>
<td></td>
</tr>
<tr>
<td>Academic Major</td>
<td>Year of Study</td>
</tr>
<tr>
<td>If returning for 2nd degree, what was first degree in?</td>
<td></td>
</tr>
</tbody>
</table>

### Questions related to LEARNING EXPERIENCES can be included in here which are specific to your unit/subject

**Preference for Teammate**

If you have any preference for teammates, specify here. While this is taken into consideration, your preference may not be necessarily achieved.

1. 
2. 

**TIME AVAILABILITY**

Please tick out boxes/ the times when you will NOT be able for teamwork outside the formal class/studio/lecture times on assignments (Due to family, study or work commitments).

<table>
<thead>
<tr>
<th></th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 am - 10 am</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 am - 12 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 pm - 2 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 pm - 4 pm</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>4 pm - 6 pm</td>
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<td></td>
<td></td>
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<tr>
<td>6 pm - 8 pm</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>8 pm - 10 pm</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 pm - ?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## LEARNING EXPERIENCES

Questions (Sample)

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I have a lot of prior knowledge about the design and construction of energy efficient housing</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I have a lot of prior knowledge of active and passive services systems for thermal comfort, lighting and acoustics and their relationship to natural systems.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I have good ability to gather information and apply analysis and critical judgment.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I have a good understanding of the processes of working within a team and how to collaborate with others in the development of a design solution.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I have a good understanding of issues of ecological sustainability.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I have a lot of experience of utilizing graphics and model making to explore, develop, define and communicate a design proposal.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I have had a lot of experience of reading and preparing construction drawings and visual presentations using manual and/or electronic means.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I understand what good passive solar design is.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I have good understanding of the construction process involved in building houses.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I have had a lot of experience of using formulas and other quantitative techniques of measuring building performance.</td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
</tbody>
</table>
Self-selection

How to guide students?

Generally, we do not recommend self-selection approach to team formation:

Left to their own devices, the stronger students in the class will tend to seek one another out, leaving the weaker ones to shift for themselves, which works to no one’s benefit. Groups containing all weak students are likely to flounder aimlessly or reinforce one another’s misconceptions, while groups composed entirely of strong students often adopt a divide and conquer policy, parcelling out and completing different parts of the assignment individually and putting the products together without discussion. The depth of understanding and development of teamwork skills that result from generating and comparing alternative solutions and resolving conflicts is thereby lost [1].

However, If you allow students to select their teammates, you may adopt some form of “constrained self-selection”. For example, students may be permitted to form their teams as long as every team has at least one international student and one domestic student [2]. Or you may allow student to choose teammates from limited pools, which at least gives them the opportunity to avoid students they may have had conflict with in the past.

2.2 TRAINING ON GENERIC TEAMWORK SKILLS

Do not fall into the assumption that once you put students into groups, they instantly start working as a team. Student groups need instructions and support to evolve into effective teams. Ensure that students are provided with some training on teamwork skills, processes and challenges, and how to design together collaboratively.

TIP 6.

Prepare students before implementing your team formation approach.

Ensure that students understand your team formation criteria, with appropriate reasoning:

- Address situations in real world by explaining that in the workplace, their preferences for the teammates or who to work with may not be sought.
- Encourage them to think about the situation where they have to design with a group of people who are selected by their practice manager.
- Help them realise that the experience of designing in teams selected by their instructors will prepare them for the real workplace.

TIP 7.

Training on teamwork can be most beneficial to student, and contribute meaningfully and effectively to their team experiences, when it is reinforced and scaffolded through the entire program/course in different units/subjects, as effective team building can take up to 5 years to learn [1] [2].

Whilst team skills should be taught in diverse contexts in subjects throughout curricula, the design stream is the ideal context for developing, reinforcing and building upon collaborative skills. This is because design is an activity that is enhanced by collaboration.

TEAMWORK WORKSHOP

In doing so, you may need to include teamwork sessions/workshops at different phases of a unit/subject with teamwork assignments. We recommend running:

- A Teamwork Workshop in the beginning of the unit/subject and
- A Conflict Resolution Session a few weeks after student teams started working together and when conflicts and problems begin to surface.

Help students become engaged in teamwork through running teamwork workshops. In your teamwork workshop:

- Explain why teamwork matters and encourage discussion on benefits and challenges of teamwork.
- Describe characteristics of effective teams.
- Provide instructions on team processes and generic teamwork skills e.g. team meetings, leadership, rules of conduct/team contract and effective communication.
- Describe your team formation approach and strategies and state the rationale behind them.
- Explain your assessment criteria and the rationale behind them.
- Guide students in establishing team goals, assigning roles & responsibilities and developing team contracts.

---

➢ Explain why teamwork matters and encourage discussion on benefits and challenges of teamwork.

In the beginning of Teamwork Workshop, explain to students the reasons that you included teamwork in this unit/subject i.e. by highlighting the relevance of teamwork to the specific discipline, context and content of the unit.

Engage students by encouraging them to reflect upon their previous experience of teamwork.

➢ Describe characteristics of effective teams.

Students need to have an understanding of what leads to team success and what constitutes a highly functioning team. Provide some descriptions of attributes of effective teams and present some examples in real-world situations.

Invite a guest speaker from a design firm that acknowledges and embraces designing in teams. Students are then able to better appreciate the importance of teamwork and its relevance to their course and understand team effectiveness elements.

A summary of basic attributes of effective teams are presented in Table 2, which can be applicable to different contexts regardless of disciplines and content areas.

TIP 8.

Ask students to reflect upon their previous teamwork experience:

➢ Think about your previous POSITIVE teamwork experiences.

List features and factors that made the team function effectively.

➢ Think about your NEGATIVE teamwork experiences.

List the problems and all the things which you would do differently if you get another chance to work as a team.
Table 3.
KEY CHARACTERISTICS OF EFFECTIVE STUDENT TEAMS

<table>
<thead>
<tr>
<th>1. Goals &amp; Objectives</th>
<th>The team has clearly stated goals that are accepted, shared and well-understood by all members. Team members demonstrate commitment to team goals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Structure &amp; Plan</td>
<td>The team has a plan outlining milestones, key decisions and actions and members' roles and responsibilities.</td>
</tr>
<tr>
<td>3. Communication &amp; Information Exchange</td>
<td>There is &quot;a dynamic exchange of information and resources among team members&quot; [1]. Team members communicate regularly and efficiently.</td>
</tr>
<tr>
<td>4. Cooperation &amp; Interdependence</td>
<td>Team members coordinate tasks among themselves and demonstrate a high level of interdependence to each other to achieve the team goals.</td>
</tr>
<tr>
<td>5. Flexibility &amp; Self-management</td>
<td>The team experiences “ongoing adjustments to both the team and individual task demand” [2].</td>
</tr>
<tr>
<td>6. Leadership &amp; Accountability</td>
<td>The team has leader/s managing the team processes and roles in an ongoing discussion and negotiation with all members. There is “a shared authority and mutual accountability for performance” [3].</td>
</tr>
<tr>
<td>7. Evaluation &amp; Reflection</td>
<td>Team members are engaged in ongoing self- and peer-evaluation, monitor the progress of teamwork and establish strategies to assess team performance.</td>
</tr>
<tr>
<td>8. Positive Team Culture</td>
<td>The team reflects an environment of honesty, openness, respect and consistency of performance [4].</td>
</tr>
<tr>
<td>9. External Support</td>
<td>The team makes the most of existing resources and team members' skills.</td>
</tr>
</tbody>
</table>

➢ Provide instructions on team processes and generic teamwork skills.

Instructions on some basic team processes beneficial to student teams include:

- How to establish team goals and purposes
- How to assign team roles and responsibilities
- How to develop a Project Plan
- How to develop a Team Contract
- How to run an effective team meeting
- How to communicate effectively in teams

The Student Manual on Teamwork provides some detailed guides/fact sheets relevant to this session of the teamwork workshop.

➢ Describe your team formation approach and strategies and state the rationale behind them.

As stated earlier in this Module, it is important that you prepare your students for the team formation approach and strategies you adopt. In particular, if teams are to be selected by tutors or teachers, take some time to explain to students why they are put in teams in a certain way (See Note 5, p. 13 for further details)

TIP 9.

Require students to
➢ clearly define team goals and boundaries.
➢ create a vision that is supported by explicit tasks; and
➢ set clear short-term as well as medium- and long-term goals [1].

To support students in establishing team goals and objectives - ask them to consider three key issues:

1. Defining what must be accomplished;
2. At what level; and
3. In what order [2].
Sample Workshop no.1:
Introducing Teamwork (140 minutes)

Explain that the point of this workshop is to enable students to recognise the value of having explicitly agreed ways of working together, rather than leaving this to chance.

Part 1: Project Plans

Stage 1 – Identifying and encouraging positive teamwork experiences (20 mins)

1. Each team to select a team scribe.

2. “Spend a few minutes thinking individually about your last experience of working in teams for subject X (a previous unit/subject name) – whether this has been a positive or negative experience. If the experience was +’ive, why was it positive? If –’ive, why?”

3. Record that experience in a headline form:
   “My experience of teamwork in X was +’ive/–’ive because…”
   “Then add a sentence explaining how you can encourage a similarly positive experience or prevent a similarly negative experience in Y (the current unit/subject name).”

4. Write down one rule for each team member’s experiences based on these descriptions e.g.
   “Encourage positive teamwork by making sure everyone can contribute.”
Sample Workshop no.1: Introducing Teamwork (continued)

Stage 2 – Project Plan (40 mins)

1. Switch scribes.

2. “Each of you state one strength and one weakness – to be recorded by the scribe.”

3. “Discuss whether team mates would like to play to their strengths or improve upon weaknesses when it comes to assigning task.”

4. Circulate the design brief – teams to read through it for 10 minutes.
   “Think about how you as a team will achieve what is asked of you. If anything occurs to you about how you might work effectively as you are reading the brief then record it.”

5. For the next 20 minutes work together to produce a Project Plan for the next 2 weeks. Look at
   ✓ what is required for the next 2 week’s deadlines – e.g. “Analysis of Climate and Site” & “Concept development: The building envelope as a bio-climatic skin.”
   ✓ How might you allocate these tasks?
   ✓ Which team member will produce what?
   ✓ What tasks can only be done together as a team?

   Bear in mind the strengths and weaknesses of team members. Think also about the process of design. How and when are you going to test and advance design solutions?

6. Pin up the Project Plans.
Most team development theory is informed by the Forming – Storming – Norming – Performing model of group development first proposed by Bruce Tuckman in 1965, who maintained that these 4 phases are all necessary and inevitable in order for the team to grow, face up to challenges, tackle problems, find solutions, plan work, and deliver results.

Sample Workshop no.1: Introducing Teamwork (continued)

Stage 3 – Refine Project Plan (20 mins)

1. “Spend 10 minutes inspecting the other teams’ plans and perhaps learn from them to improve upon your own.”

2. “Each of you describe to your scribe any ideas prompted by other teams plans.”

3. “Refine your Project Plan based on what you’ve learned from others. You will need to bring your finalised plans with you to the tutorials next week. These project plans will be updated each week to include the following week’s tasks.”

Part 2: Team Contracts (60 mins)

Stage 1 – Understanding Team Development (10 mins)

1. Switch Scribes.

2. Brief students that they are soon to start work on their team contracts. Explain that the idea of a team contract is informed by Team Development theory.

3. Get the teams to read the summary of Tuckman’s model. Each team elect 1 person to read it to the team.
Sample Workshop no.1: Introducing Teamwork (continued)

4. Explain that writing a Team Contract help teams progress more easily through the first three stages.

5. Read the following on the team contract;

Stage 2 – Making Rules (15 mins)

1. Explain that they will begin to develop their team contracts in three steps:

   Step 1. Discuss the experience you have just had today.
   Write down any more new team rules you can think of relating to the 2 questions:
   • In what ways did your team work well?
   • What would you want to see done differently?

   Step 2. Write down the things that you anticipate might go wrong when working on the project. For each, record steps you could take to prevent these pitfalls? Express these prevention measures as team rules.

   Step 3. Write up all your team rules on a new sheet of paper.

   Advise that one person from each group will be asked to summarise to the large group.

2. Ask each team spokesperson to read out 1 rule (other teams might wish to copy).

“Writing your team contract should accelerate your team’s development by establishing procedures and roles to move the team to the performing stage more quickly. The group members must communicate and negotiate to identify standards for mutually acceptable quality of work and comfortable levels of group participation and individual accountability. Generating a team contract can jumpstart a group’s collaboration by quickly focusing team members on definite tasks.”
Sample Workshop no.1: Introducing Teamwork (continued)

Stage 3 – Writing the Contract (45 mins)

1. Switch scribes.

2. Explain that the team contract will be structured in 3 parts.

Ask the scribe to write a heading for each section at the top of three new sheets of paper. Under the heading they should note down the following:

**Part 1. Team Processes**
Identify strategies that your team will use to ensure effective communications and decision making including:

- what sort of leadership and decision-making structures you will use
- how the team will communicate
- who will set/distribute agendas
- what file keeping methods you will use;
- when/where you will meet; and
- any other logistical details.

**Part 2. Ground Rules/Team Expectations**
Develop a list of ground rules that all team members have agreed to follow. The list should include the ground rules ALL team members have identified and agreed to. Try to be clear and specific about what you mean by these rules; including:

- what standards characterise quality work?
- how active is active participation?
Sample Workshop no.1: Introducing Teamwork (continued)

Part 3. Consequences

Develop a list of consequences appropriate for team members breaking the ground rules. They should be reasonable, enforceable and agreed to by all team members.

3. Hand out “Things to Consider when Developing a Team Contract.” (See Manual on Teamwork for Students, Section on Team Contract for further details)

4. Give the teams 30 further mins to work on their Contract.

5. Pin up draft Team Contracts and take 10 minutes to inspect these and for the scribe take notes on ideas informed by the other teams’ contracts. Team members to tell scribe of any new ideas they have from seeing other contracts.
   Tutor to Pin-up example sheet while students pin up drafts;

6. Explain that it is very important to have a way of reflecting on how well the group is doing – i.e. a simple way of reviewing their performance – as a regular slot at the end of your team meetings. Spend 5 minutes deciding how you will do this and make a note on your contract.

7. Inform the groups that the final version of their Contracts must be brought to their tutorials next week.
TIP 11.

Consider students’ previous experiences with teamwork when structuring teamwork training.

Rentsch et al. (1994) suggest that individuals’ experiences with teams is a critical factor in structuring team training. Team members with less experience may need to be provided with some essential facts, issues and challenges of teamwork. For more experienced team members, experiential training where they can apply their teamwork knowledge to different team situations may be better suited [3].

- **Explain your assessment criteria and the rationale behind them**

Student teams should be quite clear about what they are required to do and on what basis their works will be assessed. If you already developed assessment rubrics, ensure that these rubrics or an outline of assessment criteria and requirements are available to students (See Module 1, Section on Task Assessment Criteria, P.7 for further details). If team skills and knowledge is to be assessed (which they should be), explain how this will be done.

- **Guide students in establishing team goals, assigning roles & responsibilities and developing team contract**

Training on teamwork i.e. theoretical and abstract knowledge can be enhanced by engaging students in some team-building activities [1]. Such team-building activities can highlight a number of critical areas including problem solving, decision making, goal setting, role clarification, and interpersonal relationships [2].

**CONFLICT RESOLUTION SESSION**

In addition to a teamwork skills workshop, you may also run a session on raising awareness about the theoretical issues underpinning strategies to manage and resolve conflicts within teams (See Section Conflict Resolution for further details).

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2.3 Teaching of Collaborative Design Skills

In this section, a sample of the workshop which aims at introducing skills to design in teams.

Sample Workshop 2: BRAINSTORMING (Developing Ideas in Teams)

Stage 1 – Climate Type (10 mins)

1. Explain to the team that you are going to ask a multiple-choice question and that everyone should write down their answers WITHOUT CONFERRING.

For example:

Knowing what you do about your site (temperate, hot-humid, hot-dry), which of the following typologies would you say was best suited to it.

   a. Well-insulated, equatorial facing windows shaded in summer and unshaded in winter, elongated E/W e.g. Passive solar house.

   b. High mass, small shaded windows, courtyard, compact shape, shaded veranda, fountain.

   c. Elevated, lightweight, big roof, single banked, fountain.

   d. Elevated, lightweight, big roof, single banked, elongated

2. Get everyone to share their answer with their team-mates.

3. Now, ask the teams to come up with a team answer. Give them 3 minutes to write their answer down (a,b,c,d) in LARGE font, on a piece of paper and to get one team mate to stand up and hold it up. The last team to hold up their answer must tell the class a joke.
Sample Workshop 2: BRAINSTORMING (continued)

4. Tell the teams the correct answer. Read it out so that every team can write it down.

Stage 2 – Introducing Brainstorming (5 mins)

1. Switch scribes.

2. Explain that the purpose of this afternoon’s session is to rapidly develop a pool of design ideas and then select the ones that the team want to take further. The process will be to:

   Develop a whole list of ideas for Y (the unit/subject) before discussing them, rather than criticising each other’s ideas as they are suggested.

3. Introduce the brainstorming process of idea generation:

   “We tend to look for what is wrong in ideas, whereby censoring many that could have potential. Letting ideas flow un-criticised results in a lot of ideas from which to select later.”

4. Get the scribe to write down the following rules:

   • Everybody contributes;
   • Switch off the censor – no criticism of your own ideas or anyone else’s;
   • Go for quantity;
   • Give ideas as “headlines;”
   • Scribe records verbatim;
Sample Workshop 2: BRAINSTORMING (continued)

5. Remind the students that the whole process does not exclude analysis of ideas; it merely defers it until there are enough ideas to evaluate.

Stage 3 – Warm Up (10 mins)

1. Brief students on the 10 minute warm up exercise – e.g.

Teams have 5 minutes to generate as many ideas to manage and preserve their water as they can. The scribe records the ideas verbatim and numbers them.

2. Ask the teams to write down the idea they consider the most outlandish as a headline. Ask for a spokesperson from each team to read it out.

Stage 4 – Brainstorming Exercise (95 mins)

1. Switch scribes.

2. Remind them of the site climate type and most appropriate typology.

3. Explain “there are 3 elements to climate – sun, rain (water), air (wind, breeze). Identify for your site the key characteristics with regards to each of these 3 elements.

4. For each characteristic name a corresponding building characteristic (i.e. – Kakadu – high sun, overhead (rather than North) overhead shading required).
Choose your favoured ideas from the team’s list using the following method:
Each student is allowed 5 ticks, which can be allocated as he or she chooses, for example he or she can allocate all the ticks to one idea, or one tick to each of the 5 ideas. This quickly shows which ideas are most popular.

Sample Workshop 2: BRAINSTORMING (continued)

Throw as many ideas (headline form) at the scribe as you can. Reinforce the desire for quantity. Each team mate should contribute 3 ideas for each 3 elements. Thus, a 5-person team should have 45 ideas. One person from the team should stand up when they have the required amount of ideas – so we can see who is last. The last team to have 9 ideas/person must tell the class a joke.

5. Introduce the ideas selection technique.

6. Once the top 5 ideas have been identified, ask the teams to draw each idea as a thumb-nail diagram/parti.

7. Brief the students to evaluate the chosen ideas in turn, using the following approach:
   - For each idea, each team mate should say what they like about it – (pro) scribe to record next to the idea;
   - For each idea, each team mate should express the concerns they have about whether it will work – (con) scribe to record next to the idea;
   - So next to each idea should be 5 pros and 5 cons;
   - For each concern – get every team mate to write down a solution;
   - So next to each idea should now be 5 pros, 5 cons and 25 solutions.

Demonstrate this approach by taking the “top idea” from a sample team and asking the team members to respond and develop it as outlined. Go through the process for that idea on a white-board in front of class.
Sample Workshop 2: BRAINSTORMING (continued)

Explain – “On the basis of this process the students should then refine the ideas to the point where the group reaches a consensus on their value, although some may need more work. This should generate more ideas for ways of getting around the problem.”

Give the students an hour to go through the idea refining exercise.

8. Teams to appoint a spokesperson.

9. Ask first the teams to select their favourite of the five ideas (they should use method they decided on for in their Team Contract for making decisions).

10. Invite each team to select one idea and give an account on how it was developed (one student reports from each team), i.e. what was the idea, the 5 pros, the five cons, the 25 solutions.

11. Ask for comments from each team on the value, as a design methodology, of the brainstorming and ideas selection/evaluation process, and on their experiences of trying it out.

12. Remind students of next weeks tasks and suggest they might want to talk about how to prepare for this (urban analysis and precedent study) before they leave.

13. End.
TIP 12.

Consider a part of the formal class time to require students to complete "Ongoing Evaluation of Students’ Team Experiences". This can be done at three to four points throughout the team project.

This form of ongoing evaluation of teamwork experiences has some benefits:

- Encourage students to reflect upon their team experiences
- Assist teachers in reviewing student team processes and identify problems
- Provide a measurable artefact to evaluate the effectiveness of team processes

How to monitor and support student teams?

Once you design and set up your team assignments and train and prepare students to start the team tasks, you need to plan support throughout the assignment. This teamwork support structure should include:

3.1 Ongoing Process Feedback
3.2 Conflict Resolution Support

3.1 ONGOING PROCESS FEEDBACK

Establish strategies to regularly monitor student team processes, identify problems and issues once they start emerging and provide students with necessary feedback and guidance on how to improve team processes. Monitoring team processes is particularly important in relation to preventing team conflict.

Major monitoring strategies include keeping track of student team meetings and their effectiveness, online discussion forums and ongoing Self and Peer Assessment (SAPA) (See Module 4 for further details).

In addition to observing student teams in action during the formal class time and providing face-to-face verbal feedback, a tool which can be used to monitor team processes is the Ongoing Evaluation of Students’ Team Experiences, presented in the Table on the next page.

Module 3.
MONITORING & SUPPORTING TEAMS
<table>
<thead>
<tr>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Somewhat Disagree (3)</th>
<th>Neutral (4)</th>
<th>Somewhat Agree (5)</th>
<th>Agree (6)</th>
<th>Strongly Agree (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The way that the teacher formed our team had POSITIVE impacts on how our team is working together.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>2. The way that the teacher formed our team had NEGATIVE impacts on how our team is working together.</td>
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<td>3. The teaching of teamwork skills was helpful.</td>
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<tr>
<td>4. The training on collaborative design skills/how to design in teams was helpful.</td>
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<td>5. Our team receives regular feedback and comments from the teacher.</td>
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<td>6. The teacher guides our team when we face problem/conflict.</td>
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<td>7. Every member of my team contribute nearly equally to the work.</td>
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<td>8. None of my team members relies on other members to do the work for them.</td>
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<tr>
<td>9. My team members are committed to our Team Contract.</td>
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<tr>
<td>10. My team members are more like me than other students in the class.</td>
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<tr>
<td>11. My team members have skills and abilities that complement each other.</td>
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<td>12. My team members encourage each other to do a good job.</td>
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<td>13. My team members value each other’s contributions.</td>
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<tr>
<td>14. My team members care about each other’s feelings and well-being.</td>
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<tr>
<td>15. My team members are committed to reaching the team’s goal.</td>
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<td>16. I need information/materials from other members of my team to accomplish my tasks.</td>
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<td>17. Other members of my team depend on me for information or materials needed to perform their tasks.</td>
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<tr>
<td>18. My team members work together/collaborate to complete a task.</td>
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<tr>
<td>19. I can get help/advice from my team members when needed.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>20. My team members communicate with each other very well.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>21. I have a real say in the way we carry out our teamwork.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>22. All team members get a chance to participate in decision making.</td>
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<td>23. My Team mostly manages to solve a problem/conflict, when it occurs.</td>
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<td>24. My team submits quality work.</td>
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<td>25. My team is more productive than I could be as an individual.</td>
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<tr>
<td>26. I learn skills to work in teams i.e. communication and collaboration.</td>
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<td>27. I learn skills to design collaboratively.</td>
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<td>28. Teamwork is a useful experience for my future career.</td>
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<tr>
<td>29. I am willing to have team projects in my future units.</td>
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<tr>
<td>30. I am willing to collaborate with all/some of my teammates in future units.</td>
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</tbody>
</table>

Table 4. Ongoing Evaluation of Students’ Team Experiences Tool
Common antecedents of conflicts in student teams are differences in:

- Expected outcomes (grades)
- Deliverables
- Roles
- Style
- Values
- Resources (time)
- Basic personality conflicts [1].

TIP 13.

MONITOR TEAM PROCESSES.

You may require students to keep a Team Log or a Team Diary. This can be used as evidence of where the conflict started and help you to support students in managing and resolving the conflict at the intervention phase.

3.2 MANAGING CONFLICT IN STUDENT TEAMS

Students come from different social, cultural and cognitive backgrounds with different expectations, motives, ideas and opinions, personalities, values and preferences. Any of these differences can result in conflict. Conflict in student teams is not always a negative process. Instead, constructive conflict as reflected in differences in team members’ perspectives, design ideas and opinions can lead to more active and effective decision making and increase the quality of final decisions or design outcomes. While conflict can not be avoided and may even be beneficial to the team performance, it is critical for student teams to develop skills and apply strategies to constructively manage conflict.

Focus your efforts on two major outcomes:

→ Preventing the negative or destructive types of conflict to initiate in student teams; and

→ Making appropriate interventions to help teams resolve the conflict, when the conflict emerged

3.2.1 Preventive Strategies:

How to prevent conflict in Student Teams

Module 1 and 2 of this document examine factors that can reduce the emergence of unhealthy conflict in student teams. In addition to setting up the ground rules for teamwork, monitoring team processes (pp. 30-31) plays an important role in allowing you to detect the emergence of conflict and provides necessary interventions.

What to include in a Conflict Resolution Training Session

The key issues which you need to address in the conflict resolution session are:

- **Help students to understand conflict in student teams and different antecedents to it**
  
  Provide students with information about different types of conflicts and their antecedents. Help them to take steps towards increased cooperativeness and move to adopt a ‘collaborating’ conflict management style. An important issue to be addressed is the problem of ‘free-riding’ (or ‘social loafing’). Students need to become aware of these issues and provided with guidance on how to tackle them.

- **Present some examples of conflict resolution strategies**

- **Assist students to develop and ‘test out’ some of the appropriate conflict resolution strategies**

- **Highlight the value of COMMUNICATION in preventing and managing conflict in teams**
  
  Leave a part of the session time to present some guidelines on effective communication, especially cross-cultural communication, including both verbal and non verbal communication.

- **Increase students’ awareness about CULTURAL DIVERSITY**
  
  Help students to acknowledge the value of cultural diversity and provide them with some instruction on how to manage cultural diversity in learning teams.

---

**TIP 14**

**PREPARING THE GROUND FOR TEAMWORK.**

Conflict in student teams can be significantly prevented by paying attention to a series of preparation tasks before students start working on the team assignment:

- **Adopt an appropriate team formation approach** (See Section “Team Formation”, pp. 8-13)

- **Provide students with instructions on effective teamwork processes** (See Section “Training on Generic Teamwork Skills”, pp. 13-24)
3.2.2 Intervention Strategies: How to support student teams in the time of conflict

In many cases, even when you adopt appropriate preventive strategies – i.e. integrating considerations related to conflict into your course planning and providing necessary preparation and team building training – conflict still emerges in student teams.

In order to support student teams in conflict situations and facilitate resolution, there are two critical issues you need to closely examine and address:

- Clarity about your role in supporting student teams to resolve the conflict, and
- Understanding of the nature of conflict in students teams.

1. Develop a clear idea about your role in facilitating conflict management and resolution in student teams.

When a student team comes to you to help them with a conflict situation, you may decide to adopt one of the four approaches of ‘judging’, ‘counselling’, ‘negotiation’ and ‘mediation’.

In order to effectively support student teams to resolve the conflict, try to adopt the fourth approach; play the role of a "MEDIATOR" [1].

---

In playing the role of MEDIATOR, you need to take the following key step:

**Step 1. Familiarise yourself with the issue/s to be addressed**

Before the session, develop an understanding of who is involved in the conflict and what the conflict is about. You may ask the team to send you an email providing background information on the problem. Respond to this email by asking the team to come to the session with an agenda or a list of topics to be addressed.

**Step 2. Prepare students for the conflict resolution session**

Make sure that students understand the purpose of the session, are clear about your role, understand the issue/s and agree on some ground rules and expectations of the session e.g. ‘be open-minded’, ‘use proper language’ and ‘listen actively’.

**Step 3. Allow team members to share and negotiate solutions**

Make sure that students follow the agenda they sent you. Ask students to suggest their solutions and listen actively. Try to brainstorm the suggestions and how the solutions might work for each team member.

**Step 4. Set up a private meeting**

If the team makes little progress at negotiating the conflict and coming to an agreement, or emotions become intense, give students a break to cool down. You may decide to hold private meetings with each team member.

**Step 5. "Craft agreement" and "monitor follow-through"**

Bring the team together again. Ask them to share the solutions they came up. Start to narrow down the solutions and work out an agreement among team members on the actions to be taken, team members' responsibilities and the deadlines (what to be done, who should do it and when) [1].

How to assess teamwork?

Assessment is a key challenge of teaching teamwork. If teamwork is employed in assessed design activities because it is a desirable skill for students to develop, then we should (1) seek to assess the teamwork process and (2) consider using methods for the fair assessment of teammates’ contributions so that equitable individual marks can be awarded.

Thus, an appropriate assessment for teamwork should “retain the value placed on group cooperation and the submission of a single group product for assessment but also add a dimension of individual assessment [1].” These two challenges – if and how marks should be individualised and how might teamwork processes and skills be effectively assessed – are elaborated in this module. We also consider Self- and Peer-assessment (SAPA) methods and address some of the benefits and challenges associated with their use. In summary, three topics are discussed including:

4.1 Assigning a Team Mark VS Individualising Marks
4.2 Assessment of Team Process or Teamwork Skills
4.3 Self- and Peer-Assessment (SAPA)

TIP 16.
Assessment should differentiate between two types of output:

- 1. Task Performance, which should be assessed by teachers through an evaluation of the learning of course-specific knowledge represented by the submitted product – usually a designed artefact;
- 2. Teamwork process skills – both generic and collaborative design skills.

4.1 ASSIGNING A TEAM MARK VS INDIVIDUALISING MARKS

The first decision to make when assessing designs that are the product of teamwork is whether to individualise marks or award a team mark. A number of issues should be taken into account when making this decision (see Table below):

<table>
<thead>
<tr>
<th>Task (Assignment) Design Variables</th>
<th>Issue</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context (Design or Non-Design subject)</td>
<td>Social-loafing is more common and less easy to detect for design projects</td>
<td>Individualising marks is more important for design assignments</td>
</tr>
<tr>
<td>Value of assignment</td>
<td>The impacts of social-loafing are greater the greater the worth of the assignment.</td>
<td>Some form of individualising marks is appropriate when assignments are worth 30% or more.</td>
</tr>
<tr>
<td>Duration of assignment</td>
<td>Interpersonal conflict due to social-loafing is more likely the longer an assignment lasts.</td>
<td>Some form of individualising marks is appropriate when assignments are longer than 3 weeks in duration.</td>
</tr>
<tr>
<td>Team Size</td>
<td>Social-loafing is less easy to detect the more members there are in a team.</td>
<td>Some form of individualising marks is appropriate when teams have more than 3 members.</td>
</tr>
</tbody>
</table>

Table 5. Issues to be considered when making decisions about assigning a team mark or individualising marks

4.1.1 Assigning a Team Mark: pros and cons

A simple approach to assessing teamwork is assigning every team member the same team mark. Taking this simple path has some pros. It is easy to manage and least time consuming of all other individualized mark approaches. In addition, it may be useful when the assessment does not contribute to summative assessment, “as then learners are unlikely to be too concerned at their respective contributions to the work of the group not being assessed [2].”

TIP 17.
Appropriate methods of evaluating teamwork processes include requiring students to present a written drawn oral or digital account of the design process or asking teammates to complete some form of self-and-peer-assessment (SAPA).

Moreover, it may suit team tasks which are fairly small and last for a short period of time (where assessing team processes may seem unnecessary). Finally, it may suit small cohesive teams which are working well together and have little conflict.

Nevertheless, assigning one team mark to all team members can have negative impacts on team functioning and students’ attitudes and experiences. It is unfair, facilitates social-loafing, and fails to acknowledge the role of group processes. These problems might lead to poor team dynamics as a result of team members not taking the processes seriously. The problems can also result in negative attitudes to future teamwork in team members of social loafers, who “become resentful of them in future assessed group tasks, leading to dysfunctional groups later [1].”

Table 6 below provides a summary of some of the pros and cons of assigning a single team mark to all team members working on a team project.

<table>
<thead>
<tr>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Easy to manage</td>
<td>• Unfair, encouraging social loafing and free riding</td>
</tr>
<tr>
<td>• Least time consuming</td>
<td>• Failing to acknowledge the role of group processes</td>
</tr>
<tr>
<td>• Useful when the assessment does not contribute to summative assessment</td>
<td>• Leading to the development of negative attitudes in team member</td>
</tr>
<tr>
<td>• suit small and short team tasks</td>
<td></td>
</tr>
<tr>
<td>• suit small cohesive teams</td>
<td></td>
</tr>
</tbody>
</table>

Table 6. Pros and cons of assigning a team mark

[1] Race, op. cit., p. 120.
4.1.2 Individualising Marks

Acknowledging individual contributions to teamwork is obviously more complicated; taking further effort and requiring in-depth examination. With this regard, your key role is “establishing the levels of contribution of respective members to both product and process alike [1].” Table 7 below presents a summary of six key approaches and methods to individualising team marks.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DIVIDE &amp; CONCUR</td>
<td>Divide up the assessed team task into components and assess them separately.</td>
</tr>
<tr>
<td>2 DIFFERENTIALS</td>
<td>Assign a mark for the team product, but negotiate differentials between members.</td>
</tr>
<tr>
<td>3 CONTRIBUTION MARKS</td>
<td>Assign a mark for the team product and work out an additional mark for their every member’s contribution through peer assessment.</td>
</tr>
<tr>
<td>4 ADD MORE TASKS</td>
<td>Assign a team mark to every member for the team product, then add individual assessed tasks for each team member.</td>
</tr>
<tr>
<td>5 TEST THEM ORALLY</td>
<td>Assign a team mark to every member for the team product, but add an individual oral exam.</td>
</tr>
<tr>
<td>6 TEST THEM IN WRITING</td>
<td>Assign a team mark to every member for the team product, then “add a separate related assessment component to an exam [2].”</td>
</tr>
</tbody>
</table>

Table 7. Basic approaches to individualising team marks

4.2 Assessment of Team Process or Teamwork Skills

In our survey of nearly 700 design students, fair assessed (acknowledging individual contributions) was the pedagogical factor that had the greatest correlation with their satisfaction with teamwork outcomes. Fair assessment also had the second greatest impact (after good teaching of team skills) on satisfaction with teamwork processes. Other studies have also found that students’ perception of fair assessment of teamwork is aligned to strategies acknowledging individual contributions and fostering individual accountability [1] [2]. Yet many teachers argue that individualising marks is at odds with teamwork for it places individual self interest over team objectives. The decision to individualise is therefore a complex one, and is very much context dependant, but we recommend teachers are guided by the binary decision tree below.

![Decision Tree](figure2.png)

**Figure 2. The binary decision tree which can be used as a guide when making decisions to individualise team marks**

4.2 Assessment of Team Process or Teamwork Skills

A further assessment challenge is evaluating the processes by which teams reach a final team product, especially given the elusiveness of concepts of ‘team processes’. The challenge is “to find specific criteria that will enable us to identify observable behaviour patterns as good group processes [1].” This is an especially important consideration if we wish assess these “behaviour patterns” as teamworking skills.

Another debatable issue has to do with who should assess process. Assessment of student teamwork processes by teachers or tutors is difficult for they may be absent, for the most part, from closely observing or monitoring these processes [2].

Table 8 below outlines some of the criteria for assessing team process, their corresponding measures and references.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description and Measures</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount/frequency of team participation</td>
<td>Attendance at meetings</td>
<td>(Bolton 1999, Sheppard, Dominick et al. 2004)</td>
</tr>
<tr>
<td>Quality of contribution</td>
<td>Participation in team or submissions of assigned tasks</td>
<td>(Bolton 1999)</td>
</tr>
<tr>
<td>Effective Preparation and Time Management</td>
<td>Gathering and processing of information prior to the meeting. Meeting deadlines.</td>
<td>(Bolton 1999, Sheppard, Dominick et al. 2004)</td>
</tr>
<tr>
<td>Effective Communication</td>
<td>Including active listening, appreciating other points of view, showing a positive attitude, positive feedback</td>
<td>(Sheppard, Dominick et al. 2004)</td>
</tr>
</tbody>
</table>

Table 8. Some Criteria and Measures for assessing team processes in student teams


4.3 Self- and Peer-Assessment (SAPA)

Self- and Peer-Assessment is one of the tools which can be used to assess team process and determine individual contributions to process. The essential component of peer assessment is that “group members evaluate each other and this evaluation is incorporated into the individual student’s assessment” [1].

Among the criteria used in different SAPA methods to evaluate contributions to teamwork processes are: individual task and team behaviour contributions such as cooperation, flexibility, dependability, attendance, attitude, respect for team members, preparedness, initiative, leadership, communication, and decision making [2].

Online SAPA systems can improve assessment efficiency. Below is an illustration of the rating page of an online SAPA system developed at Deakin University School of Architecture and Built Environment.

![Rating page of an online SAPA system](image)

**Figure 3.** Snapshot of the rating page of an online SAPA system developed at Deakin University School of Architecture and Built Environment.

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Four main considerations to maximise the benefits of using SAPA in team projects

4.3.1 The practice of SAPA should be ONGOING.
Empirical studies provide evidence suggesting that an end of term self- and peer-assessment may not be as effective of using self- and peer-assessment at multiple points throughout a team project.

4.3.2 SAPA should follow ANONYMOUS procedures.
The effective practice of peer assessment entails supporting students to become confident that “they can provide an honest assessment without fear of repercussions; this is most effectively achieved with anonymous assessments [1].”

4.3.3 SAPA methods should be implemented through Scaffolding.
SAPA methods should be implemented through Scaffolding. Two aspects of the scaffolding for SAPA have to do with (1) training students to undertake self- and peer-assessment prior to engaging them in the practice of SAPA and (2) providing them with feedback on self- and peer-evaluation during the process of teamwork.

4.3.4 The practice of SAPA should include EMBEDDED REWARD for students
Students receive peer evaluation more positively and achieve higher levels of performance not only when peer evaluations are used [2], but also when this form of assessment has impacts on their final grades [3].

TIP 21
To individualise team marks, ask students to regularly evaluate their own and their peer’s individual contributions to teamwork through a SAPA method/model.
The use SAPA promotes independent, reflective, critical learning, enhances in students the motivation for participation and encourages students to take responsibility for their learning.

Recommended Teaching Responses & Strategies

<table>
<thead>
<tr>
<th>TEAMWORK CHALLENGES</th>
<th>DESCRIPTION</th>
<th>RECOMMENDED TEACHING RESPONSES &amp; STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Task Design Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Task Structure and Description</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task structure i.e. duration, sequence and interrelationship of tasks has a considerable influence on team processes. Students should be clear about what is expected with regards to both product (the design artefact) and process (teamwork skills).</td>
<td>- Design task to foster positive interdependence. - Structure design assignments to require both independent individual contributions and collaboration. - Provide teams with an adequate description of outcomes and processes.</td>
<td></td>
</tr>
<tr>
<td><strong>2. Team Size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task structure and assessment need to be considered in relation to the size of team. There can be a relationship between the effectiveness of teamwork processes and team size.</td>
<td>- Explore optimum team size in relation to task type. - Promote Smaller teams in a ‘conjunctive task’, where every team member needs to contribute, to facilitate equal participation (Watkins 2005). - In Design Teams, consider three to five members, unless a large design task can be subdivided into appropriate smaller design packages. - Only expand to larger teams (seven or above) at Masters level, when students have developed teamwork skills.</td>
<td></td>
</tr>
<tr>
<td><strong>3. Task Assessment Criteria</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task assessment criteria need to be determined taking into account issues such as assessment of individual contributions, students’ perception of fair assessment and assessment of both product and process of teamwork.</td>
<td>- Differentiate between (1) Task Performance i.e. submitted product – usually a designed artefact; and (2) teamwork skills. - Adopt appropriate methods of evaluating teamwork processes i.e. students’ reflective statements and self-and-peer-assessment (SAPA). - Apply methods to ensure students’ perceptions of fair assessment i.e. the use SAPA.</td>
<td></td>
</tr>
</tbody>
</table>
### Individual Level Factors

#### 4. Knowledge and Skills

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>RECOMMENDED TEACHING RESPONSES &amp; STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>The differing levels of knowledge and skills in students about the task can influence the team performance and also the comparative performance of teams in cohorts.</td>
<td>- Encourage a variety of students’ skills and prior knowledge in all teams through adopting a teacher-assigned approach to team formation.</td>
</tr>
</tbody>
</table>

#### 5. Learning and Personality Styles

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>RECOMMENDED TEACHING RESPONSES &amp; STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning styles of students can be reflected by student engagement in teamwork and may influence the types of task that teammates choose and how well they are able to complete them. The personality type of teammates can affect team processes with regards to many dimensions of communication.</td>
<td>- Encourage a diversity of personality types and learning styles in design teams. - Ask students to complete a simple learning style test and discuss the results at the outset of teamwork.</td>
</tr>
</tbody>
</table>

#### 6. Attitudes and Motivation

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>RECOMMENDED TEACHING RESPONSES &amp; STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes to teamwork informed by previous experiences can correlate with motivation and thus engagement with team processes.</td>
<td>- Require students to reflect on previous positive and negative experiences of teamwork at the outset of teamwork.</td>
</tr>
</tbody>
</table>
### Recommended Teaching Responses & Strategies

<table>
<thead>
<tr>
<th>TEAMWORK CHALLENGES</th>
<th>DESCRIPTION</th>
<th>RECOMMENDED TEACHING RESPONSES &amp; STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team Level Factors</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **7. Leadership and Role**           | The leadership approach that student teams adopt and the ways that roles are structured and assigned in a team have impacts on the performance of teams.                                                         | - Assist students to assign roles within their teams at regular intervals, and at different stages of the design process.  
- Encourage students to reflect on their roles at the end of each project stage.  
- Require students to discuss appropriate approaches for leadership in their teams.  |
| **8. Team Contract and Climate**     | The team contract which establishes agreed ways of working together can inform the leadership approach, role structure, team climate, shared goals and methods for dealing with conflict. Team climate determines how freely teammates share ideas.   | - Assist students to draw up and sign a team contract.  
- Promote a team climate of inclusiveness, freedom, interpersonal trust and mutual respect through communicating with students and encouraging them to adhere to the team contract. |
| **9. Team Composition**              | Team composition including the range of individual differences in terms of age, gender, cultural background, past experience, personality and learning styles influences team processes and hence the team performance.   | - Ensure diversity in teams with regards to gender, culture and past experiences through adopting appropriate team formation methods.  
- Provide support for students to cope with diversity in teams.  |
| **10. Team Cohesion**                | Team cohesion is defined as “a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its goals and objectives” (Carron 1982, p. 124). | - Ensure team cohesion through positive interdependence. In addition to structuring tasks to allow for independent individual contributions and demand design collaboration, you can:  
  (1) Apply ‘jig-sawing’ team membership (See Frey, Fisher et al. 2009));  
  (2) Promote student-led reciprocal teaching; and  
  (3) Encourage the use by teams of project work plans.  |
### 11. Team Formation

Teachers have two basic ways to form teams: by forming the teams themselves or by allowing students to self-select. Both ways have pros and cons that teachers and students should be aware of.

- Consider forming single-sex teams, if a team cannot have at least two members of one sex.
- For culturally diverse teams, try not to isolate single members of a culture different from the rest of their teammates.
- Consider location or where students live to facilitate out-of-class meetings.
- Closely examine the consequences of team formation methods before adopting one.

### 12. Teaching Teamwork

Students are asked to form teams in a large proportion of built environment courses, but in most cases are taught little if anything about teamwork.

- Teach student both generic teamwork skills and collaborative design skills.
- Provide basic training in teamwork skills for teaching staff.
- Acknowledge the different characteristics of graduate and undergraduate students and determine the teaching style that suits each cohort.

### 13. Process Feedback on Teamwork

Team processes should be monitored continuously so that feedback can be regular and on both the product (the designed artefact) and the team processes that created the product.

- Create interim steps in a team design assignment for discussing individual and team progress.
- Use SAPA or face-to-face discussions regularly as a tool for process feedback encouraging team members to give feedback on their own and their teammates’ performance.

### 14. Conflict Intervention by the teacher

Even when taught conflict resolution skills, students need to be offered intervention strategies for problems that escalate. Teachers can model effective conflict resolution through such strategies.

- Offer teams intervention forums and try to resolve conflict at the team level.
- Consider relocating individuals to other teams as a very last resort e.g. in cases of bullying and harassment.
- Preferably choose a neutral person to resolve the conflict e.g. a teacher who is not assessing the student’s work.
<table>
<thead>
<tr>
<th>TEAMWORK CHALLENGES</th>
<th>DESCRIPTION</th>
<th>RECOMMENDED TEACHING RESPONSES &amp; STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Processes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 15. Coordination    | The use of project plans produced at the beginning of assignments and then updated at regular intervals is one way to encourage coordination of tasks and responsibilities by teams. | - Encourage teams to coordinate tasks and responsibilities through the use of project plans.  
- Require students to submit updated project plans regularly throughout the project. These should be assessed as part of final and interim submissions.  
- Gantt charts are a useful medium for recording work plans due to their common use in the design industries. |
| 16. Communication   | Interpersonal communication and team building skills are necessary for effectively functioning teams. For design, oral and drawing interpersonal communications skills are particularly important. | - Require teams to negotiate and agree on mediums and rules of communication.  
- Encourage students to consider advantages of face-to-face communication for complex design negotiations.  
- Ensure students devise rules for communication via sms that recognise its limits.  
- Teach students how to use thumbnails, diagrams and partis to communicate ideas. |
| 17. Idea Evaluation | Idea evaluation in design teams involves generating, evaluating and developing ideas in a manner that is inclusive of all team members. | - Teach students techniques such as brainstorming for generating ideas in teams.  
- Teach how to evaluate, test and refine ideas.  
- Encourage constructive feedback skills by requiring students to “crit” each other’s work.  
- Encourage collaborative design interpretation by asking teams to present the work of other teams. |
| 18. Decision Making | Decision-making in a team requires an understanding of available strategies and selecting the approach that responds to the team task. | - Teach students common team decision-making models.  
- Encourage students to consider models other than democratic decision-making.  
- Support students to practice consensus-building skills and reflect on these teamwork processes in team/individual design journals. |
| 19. Conflict Management Skills | Conflict management skills include the skills that team members should develop in order to recognise and productively resolve conflict. | - Teach students how to recognise and resolve conflict in a lecture and through a conflict management skills manual.  
- Support students to practice conflict management skills via role-play in workshops that recreate conflict scenarios. |
## Recommended Teaching Responses & Strategies

<table>
<thead>
<tr>
<th>TEAMWORK CHALLENGES</th>
<th>DESCRIPTION</th>
<th>RECOMMENDED TEACHING RESPONSES &amp; STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Output</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 20. Quality of the Submitted Product (Design) and Learning of Unit-Specific Knowledge and Skills

- Task performance is evaluated by the quality of the submitted product (design) and the learning demonstrated of course-specific knowledge i.e. the skills and knowledge taught that are NOT related to teamwork (unless teamwork is the primary focus of the course).
- Ask students to differentiate between individual work and teamwork in interim review submissions.
- Ensure the final submissions are team submissions and do not identify individual contributions. Use SAPA to individualise marks by generating multipliers of team marks.

### 21. Learning of Generic and Collaborative Design Teamwork Skills

- Two broad areas of teamwork skills in design include:
  - Generic teamwork skills which are the skills commonly needed for groupwork and teamwork, irrelevant of field e.g. leadership, management, delegation, consensus seeking and the capacity to effectively handle conflict; and
  - Collaborative design skills e.g. idea selection and development, shared understanding through graphic communication, and reflective practice (Schön 1987).
- Explore forms of artefact that present teamwork skills and ask students to submit these for assessment.
- Allow students time to work together in class to practice and demonstrate teamwork skills.
- Give students feedback on teamwork skills (preferably by teachers trained in teamwork).

### 22. Attitudes to Future Teamwork

- A significant element of team effectiveness is students’ attitude to teamwork which is heavily informed by previous experiences of teamwork.
- Require students to reflect on their experiences of teamwork in a reflective journal at the completion of assignments.
- Encourage students to reflect on positive team experiences and the strategies that might lead again to these, and of negative team experiences and the strategies that might avoid these in future.
- Require students to consider the skills they have learned and what skills they need to improve.


Bibliography (continued)


MICHAELSEN, L. K. 1992. Team learning: A comprehensive approach for harnessing the power of small groups in higher education. To Improve the Academy, Paper 249.


