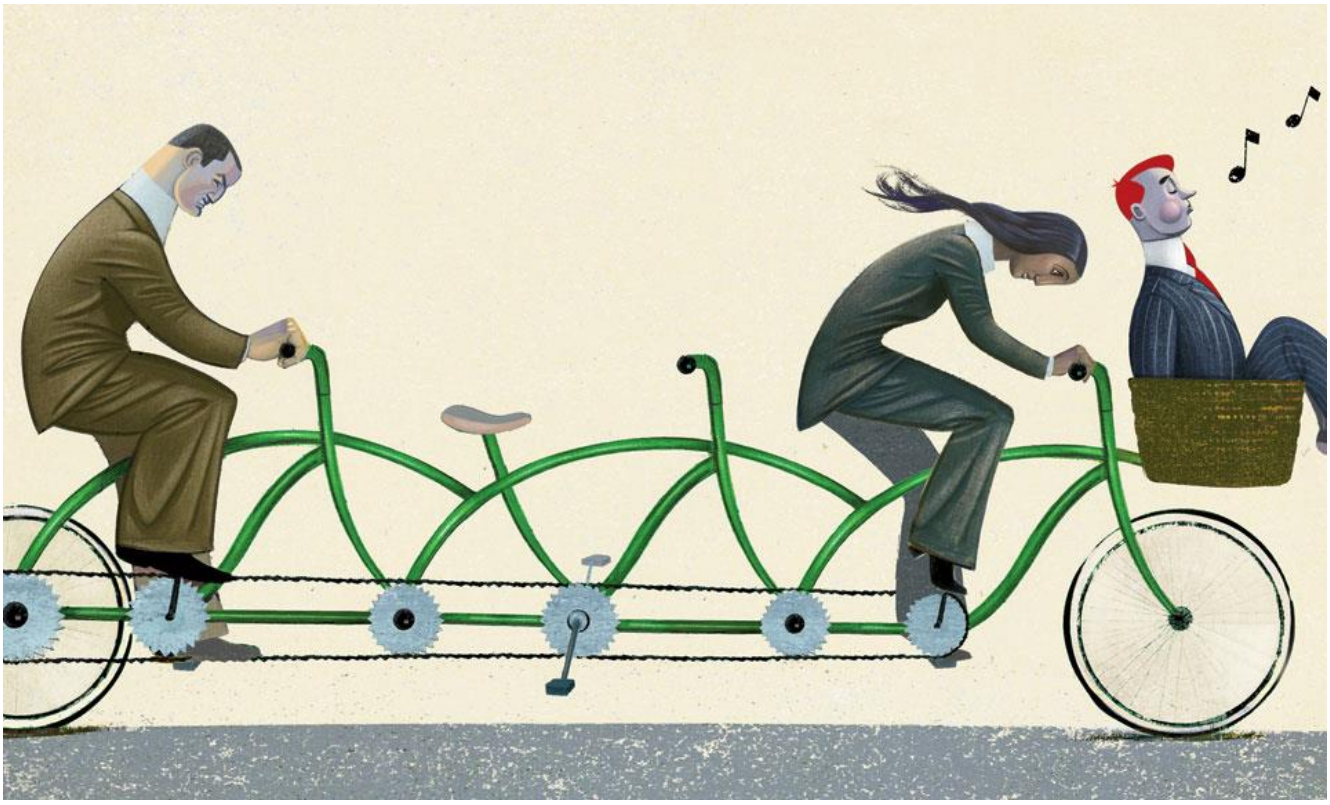
Maastricht University

EDLAB

Assessing the Individual Contribution in Groupwork

A Maastricht University Guide



This guide is a production of the Maastricht University Institute for Education Innovation (EDLAB). Groupwork-experts from all UM faculties have worked together at EDLAB over the course of 2018 to share and write down their knowledge and experiences regarding groupwork and the assessment of the individual contribution in groupwork. This guide gives insight in how to construct and assess groupwork at Maastricht University (UM) and how to monitor the individual contribution in groupwork specifically. Given this focus, the guide offers recommendations based on successful practices with groupwork at all UM faculties. Given the vastness of the topic, this guide does not intend to cover all aspects of groupwork, nor does it provide a comprehensive overview of all current theoretical perspectives on groupwork scenario's in higher education. EDLAB is grateful for all the input it has received and wants to thank the UM colleagues involved in the process. Special thanks go to the following authors: Christine Arnold, Donna Carroll, Wilfred van Dellen, Greet Fastré, Walter Jansen, Gaby Lutgens, Natasja van der Meer, Sjaan Nederkoorn, and Jan Nijhuis.

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Introduction

Groupwork can be a rich learning experience for students, helping them to develop new skills and improve their group performance through related assessments and feedback. For teaching staff however, it often remains a challenge both to keep track of what is happening in a group and how to facilitate the process in the best way. For example, are you always aware of everyone's role and contribution to the group, what should you do when students do not equally contribute (so-called free-riding) and how can you take this into consideration in the assessment? Obviously, it is not fair that students who do not contribute or only minimally contribute, pass on the basis of other group members' work (Van de Veen, 2016).

Groupwork on the one hand means allowing members of the group to make key decisions, such as division of labour or the scheduling of group meetings, and bring out the synergies that emerge from the composition of the group. At the same time assessors often need insight into the individual contribution in order to arrive at a valid and reliable group assessment.

This guide gives insight in how to construct and assess groupwork at Maastricht University (UM) and how to monitor the individual contribution in groupwork specifically. Given this focus, the guide offers recommendations based on successful practices with groupwork at all UM faculties. Given the vastness of the topic, this guide does not intend to cover all aspects of groupwork, nor does it provide a comprehensive overview of all current theoretical perspectives on groupwork scenario's in higher education. This guide:

- serves as a source of information to programme directors, course coordinators, and tutors who (intend to) use groupwork in their course(s) or curriculum;
- is written in such a way that it can be used as a checklist, allowing you to make all the necessary considerations when designing and applying groupwork in your education;
- is ordered with the principles of constructive alignment in mind, taking into consideration Intended Learning Outcomes (ILOs), Teaching and Learning Activities (TLAs) and assessment methods. The following section presents a short summary on how to integrate ILOs, TLAs and assessment methods in your education with a specific focus on groupwork.

When engaging in educational design processes you can keep in mind the straight forward constructive alignment-triangle below (figure 1), showing the interconnection and balance of ILOs, TLAs and assessment methods. For more information on the formulation and relationship between ILOs, TLAs and assessment methods, see the EDLAB website www.constructivealignment.nl.

An introduction of the constructive alignment components in relation to groupwork can be found in the section below: *From theory to practice*.

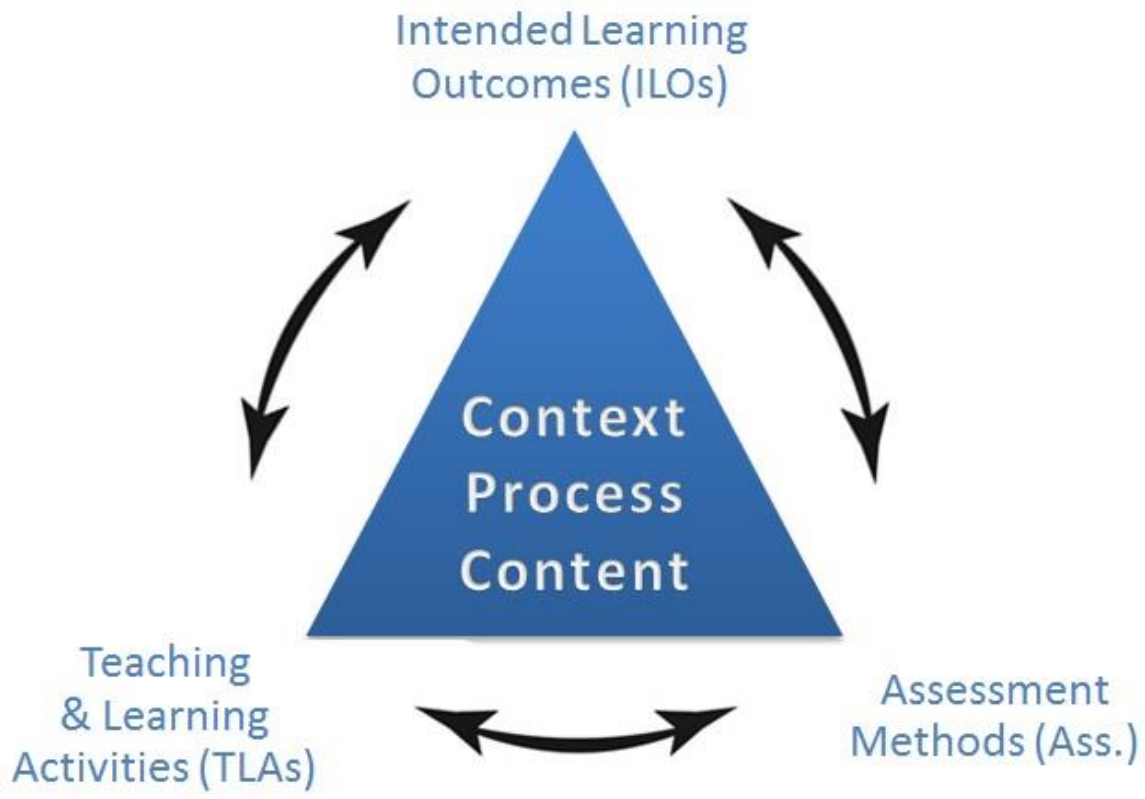


Figure 1. *Constructive Alignment triangle.*

From theory to practice

Intended Learning Outcomes (ILOs) for groupwork

Biggs & Tang (2007) describe course ILOs as "statements, written from the students' perspective, indicating the level of understanding and performance they are expected to achieve as a result of engaging in the teaching and learning experience". ILOs need to be well-formulated. A student reading the ILO should know what to do and how well to do it in order to achieve the ILO.

To derive course ILOs relating to groupwork, you need to clarify what the aim of the groupwork is:

- to acquire competences to be able to learn/work together in a group;
- to work together towards the creation of group product (e.g. paper, presentation, video);
- to actively evaluate the process of their groupwork.

Consider the following questions when preparing ILOs for your groupwork:

- What type of learning or development do you want the students to achieve?
- What level of performance do you expect?
- Are you ILOs 1) specific, 2) measurable, 3) achievable, 4) realistic and 5) time-bound (SMART)?

Examples of groupwork ILOs

By the end of the groupwork module, students will be able to:

- decide on appropriate role and task division which leads to effective team working;
- plan group activities accordingly;
- manage the groupwork within the provided time by;
    - setting deadlines and milestones;
    - choosing if and how to meet and share/store/collaborate on the work;
- communicate, contribute and be receptive to ideas as a group member;
- perform constructive peer review on (part) products or contribution of group members;
- integrate provided feedback into the final product;
- present results clearly, in the form of a presentation or poster*;*
- identify areas for improvement during the process of groupwork.

Groupwork as a Teaching and Learning Activity (TLA)

TLAs refer to the instructional approaches that can be used to facilitate learning and assessment. A TLA is appropriate if it enables students to practice exactly those skills or cognitive processes which they need to achieve the ILOs. Students will be more motivated if they perceive the activities as relevant and meaningful.

Groupwork is a learning activity and implies a process in which students have to collaborate, communicate and work together on a task (for example, towards an end product). Students themselves should be responsible for their progress and final result. If necessary, the group can consult a tutor or expert. In groupwork activities, a distinction can usually be made between two interlinked components: the process and the final product. Whereas both components are part of the same activity, it makes sense to isolate them in your instructional design to make a coherent connection to ILOs and assessment.

Consider the following questions when designing groupwork as part of your course:

- Is groupwork the right method for students to work towards achieving their ILOs?
- Is groupwork practical considering the cohort, facilities and resources you have available?
- Does groupwork evoke the right cognitive processes?
- Is there sufficient time for students to participate successful in a groupwork assignment?

Assessment of groupwork

There are many methods available when assessing the individual contribution in groupwork products and performance. The choice of method(s) implemented should encourage students to engage in the teaching and learning activities, and also allow you measure the extent to which the ILOs are achieved. To promote transparency, your assessment methods (and their alignment to the ILOs) and expectations of the work or performance level should be shared with the students prior to the module.

The underlying motivation for assessments can usually be grouped into the following categories:

Assessment OF learning

Instructors use evidence of student learning to make judgements on student achievement of ILOs.

Assessment AS learning

Students monitor and reflect on their progress to inform their future learning goals.

Assessment FOR learning

Instructors use inferences about student progress to inform and improve teaching and learning.

In a groupwork situation, you might assess the final product (or the individual contribution towards the final product) to evaluate a student's overall achievement of the learning outcomes (assessment OF learning). However, it would be better not just to assess this at the very end of the groupwork process because it gives the students little chance to improve as they go through the module and also provides you with no evidence of their progress until it is too late. As such it would be advisable to implement assessment points at regular moments throughout the module to check on progress. Regular formative assessment such as this creates a mechanism to provide students with feedback to encourage future learning (assessment AS learning) and it provides you as an instructor with information you can use to step in and make changes or suggestions to the group if necessary (assessment FOR learning). Traditionally, the course coordinator (or appointed examiner) assesses the students. However, it is also

possible to incorporate other mechanisms into your assessment process involving peer-review or self-reflection for example, and these are discussed in later sections of this guide.

Generally you could grade students on both or either, the process and product, but do not forget that it is the students' achievement of the formal ILOs and how they demonstrate this, that you should be assessing. As such, grading criteria should clearly reflect the ILOs (or at least some of these). The assessment methods should also be compatible with the actions of students during the groupwork process.

Consider the following questions when designing assessment for groupwork:

- What do you want to assess: the process and/or the product(s) of the groupwork?
- What assessment methods and criteria will you use to assess the student achievement of the ILOs?
- What is the purpose of your assessment?

A guide for groupwork at UM

This guide is the result of a UM-wide effort to gain insight how groupwork at UM can best be designed and assessed with respect to the student's individual contribution. The information collected in this guide is presented in a chronological order in terms of design and execution of groupwork. Please note that some important aspects of the execution and assessment of groupwork need to be considered in the design process and are therefore addressed earlier in the guide.

All information in this guide is evidence informed. To underpin the practical value of the guide and for readability purposes, (academic) source referral is kept to a minimum and the in-text references mainly relate to cases of universal practice such as assessment practises

Based on the collected experiences at UM, the project group has distilled enough information to serve the reader generalised tip & tricks and pro's and con's of crucial choices and scenarios related to groupwork.

Designing groupwork assignments

As with any type of assignment, students need to know exactly what is expected of them when getting involved in a groupwork task. The assignment, including how the assignment will be assessed, needs to be thought through and communicated to students before the start of the groupwork, both in the course manual and in the classroom.

- These are the type of questions to which a course coordinator or tutor needs to have clear answers to when assigning (groupwork) tasks:
    - What are the ILOs for the students participating in this module?
    - What skills should students develop and what knowledge must they acquire?
    - How can a task be created to stimulate this learning and development?
    - How can the students demonstrate their achievement of these ILOs through successful completion of the task?
    - What do the students need to achieve as a group? Are they performing a specific task or producing a product and if so, what should this final product look like?

TIP! Generally groupwork might result in a group presentation, a report/paper, a simulation, a video, a computer programme, a statistical analysis, to name but a few. Of course, multiple assignments may be required from one group.

- What are the students expected to deliver individually and as a team?

Be clear about *the who*, *the how* and *the when*. Students need a clear idea of what a successful final product or performance should look like (or how much freedom they have to choose their own format) and how it will be assessed. Furthermore, it is important to inform students that groupwork does not always progress in a smooth and productive manner. They should be encouraged to monitor their own progress as a group and adapt to potential challenges as they go along. This is a normal part of the process.

- Are there intermediate deadlines or feedback moments?

Depending on the assessment, you may want to include feedback opportunities throughout the module (such as draft-requirements). These can focus on the groupwork process, the final product or both. Intermediate deadlines can facilitate the provision of feedback (supervisor-student or student-student) and could give you and the students' insight into their progress which can lead to improvements in learning and opportunities to intervene if necessary.

TIP! Think about which criteria are important for you to provide feedback to. If a grading rubric is used for the final assessment, you may wish to use the same version of the sheet during intermediate assessment and feedback moments for consistency.

More information regarding feedback and assessment instruments can be found in the section 'assessment of groupwork'.

Example groupwork feedback

In groupwork at UM, students often have the opportunity to hand in early drafts of their group report for feedback and to make adjustments before the final submission. In some third year projects, supervisors provide general advice to students but no longer review drafts as the students should be more self-sufficient at this level.

- How will the students be assessed?

Ensure that it is clear what the assessment scale and weighting of each partial task and the individual criteria are, including which aspects are assessed as a group and which independently.

TIP! The grading criteria should be made available to students early or even just before the course begins. You could use a grading rubric or an assessment sheet for assessing the final product or the student's performance. At this point you can also make decisions about who assesses; do you want to include peer-review, self-assessment and ask other members of staff or tutors to provide input? More information can be found in the section 'assessment of groupwork'.

Example feedback provision

It is valuable to give feedback on drafts and final products. A course coordinator should make it clear to the tutors if and how frequently they should evaluate and provide feedback to the group. If there are clearly defined, individual roles within the group (for example, during a legal pleading session), personal feedback can be provided and progress can be monitored if there is a second evaluation session.

Groups can receive feedback from tutors and specialists (statisticians, clients, professionals) but students can also provide feedback to other students. Again, when providing feedback, the use of 'tips' and 'tops' is advisable.

- Which stakeholders should be aware of the assessment details?

Tutors, learners, assessors, administrators and the Board of Examiners need to know and understand what type of assessment is being implemented, how the assessment tasks represent the ILOs, and how the students' work or performance will be graded and marks awarded.

Example groupwork assessment

In some UM groupwork projects, students receive a shared grade for their final report and presentation but individual grades on their contribution awarded by their peers and supervisor. At the start of the project they are provided with a grading rubric which explains each of the peer grading criteria (academic input, communication, reporting, practical work) and the performance levels (with associated scores) upon which they will assess each other. They have the opportunity to provide peer feedback as they go along and many groups have practice peer-assessment meetings half-way through the period. At the end of the project, students complete the peer assessment using an online form, which makes their scores anonymous to each other. Supervisors see the individual grades submitted and provide students with their average peer grade per category. During a final group meeting, students are invited to provide constructive verbal feedback to each of their peers in justification of the grades awarded. During this meeting, supervisors also provide individual grades to each student based upon their own judgement of each member's contribution.

Group composition

When composing groups, you need to take into account the number of groupmembers, the group diversity and/or division of roles and responsibilities. The following factors can both complicate and be of value during the groupwork process: diversity in cultural or national backgrounds, subject-discipline, learner experience, motivation, learning preferences, prior knowledge or skills and personalities.

- How many students in a group?

Groups can have as few as **two** members but ideally should have no more than **six** (for logistic reasons this could be difficult to achieve). Unless it is not specifically intended in your instructional design, having more than six students in a group could lead to coordination problems and increases the risk of free-riding. Smaller groups of two or three students may be better for less experienced students with smaller-scale tasks (Davis, 1993). Although it is possible to split large groups (>6 members) into smaller sub-groups in order to manage them more effectively, the larger the group, the greater the possibility of free-rider behaviour, issues in group leadership, individual domination and the equity of individual workloads (Race, 2007).

- Is the staff/student ratio suitable?

You have to take into account how many teaching-staff members will assist you (if any), how large the student population is and whether there are other restrictions, for example the use of student tutors who are not allowed to supervise others from their own cohort. The size of a group can also be determined by the roles students have to fulfil. If the groups are too large and some students cannot perform some roles this could be of determent to the overall task.

- Who composes the group?

Group composition can be done either by the students or by the tutor.

Pros and cons if group composition is done by the student themselves:

+ They take better ownership of their choices;
+ They probably look for students with a similar mindset, or work attitude. They may already know each other from previous courses. This may enhance the group harmony and avoid problems later;
- Some students will be or feel excluded;
- Students will not necessarily learn to work with those who may be more dissimilar to themselves and who they would not usually choose to spend time with.

Pros and cons composition by the tutor/course coordinator:

+ Perceived as fair;
+ This creates an on-the-job experience in which you can't select your own team;
+ This creates diverse teams possibly from multiple disciplines;
- Can be time consuming and an administrative burden.

TIP! Think about timing. When the groups are formed at the beginning of the course, students have little time for getting acquainted with each other. If the groupwork starts a few weeks into the course, students and the tutor or supervisor have more time to get a better insight into each other's character traits, learning styles and ambitions before determining the group members.

- Who decides upon the group roles?

Leaving the definition of roles and tasks to the members of the group can give them a better sense of ownership and responsibility as well as allowing the members to work to their strengths. However, this could also lead to certain students always avoiding specific aspects of the work and not having sufficient opportunity to develop certain important skill sets which may be essential in the future.

TIP! Allow the group to decide upon their roles and tasks but provide guidance and make sure the groups make an early decision, which will be fruitful for the functioning of the group. Delaying this decision-making can severely hinder any progress in the first weeks of the groupwork.

Groupwork in an international classroom

UM is the most international university in the Netherlands so it makes sense to consider aspects of the international classroom when it comes to group composition.

Working in tutorial groups with students from different cultural backgrounds is of great added value to our small-scale problem-based learning (PBL) system. Exploring and discussing problems from different perspectives and backgrounds confronts students with different ways of thinking and viewpoints that would remain unexplored if the tutorial group were more homogeneous in composition.

The international classroom provides a unique opportunity for students to get acquainted with other cultures and such diversity should be stimulated. Tutors can foster better understanding between students by asking them to communicate their expectations, concerns and personal goals at the beginning of the project. In addition, the tutor could make his/her expectations and principles of groupwork clear to the group.

TIP! For the sake of inclusivity make sure that all communication is done in English, and emphasize the potential risks of stereotyping.

Monitoring groupwork

Now that the groups have been formed and their activities have begun, a tutor can start to monitor the progress of a group. This can facilitate feedback provision, lead to coaching and in turn help students to work more effectively towards their final assessment.

- How should you balance the level of freedom and oversight in groupwork?

The group should have some freedom to make their own choices and perform their own work, even if this means they make mistakes. It gives them ownership of the final product and is in line with the principles of PBL. Students should have the opportunity to ask for assistance or input (which could also be provided via e-mail or during contact hours) and should be given some encouragement to do so when appropriate. The amount of input may depend upon the skills the students are expected to acquire and the level at which they are expected to work at (depending upon their year group and degree programme).

TIP! You can plan fixed feedback moments or have the groups request feedback by submitting drafts or inviting supervisors via Slack or Kanbanflow.

- How can I check the individual student contribution to the groupwork?

In order to check if all students contribute enough to the work, you could ask them to provide an overview of the hours they invested or the tasks they have completed, both individually and as a group. By letting all students of the group sign this overview, you have more assurance that the administration of the hours is correct. Make sure you explain why such forms are used in this group.

TIP! You could make the provision of feedback on contribution (how many hours did everyone spend, or did everyone contribute as was agreed on beforehand?) part of the course requirement. If done transparently and collaboratively, it gives good insight in these matters. Examples of task-administration forms or feedback tools for logging individual contribution are:

- Individual Timesheet Groupwork (Annex I)
- Collective Timesheet Groupwork (Annex II)

Or groups can make use of a project tool (e.g. Slack or Kanbanflow) in which they can share minutes, products and communicate on the groupwork.

TIP! Keep track of presence/absence. You may want to consider an extra assignment for absent students, or a bonus point for students who were always present.

- How to overcome conflicts or dysfunctional groups?

Conflicts in groups happen. The most common reasons are differences in personal preferences, time-investment, motivation and character (leaders vs. followers). It is wise to address the possibility of conflicts at the start of the course and emphasise that learning how to deal with conflicts in groupwork is actually a learning goal of the course (and should also be reflected in your ILOs). With this in mind it should be easier for students to address problems at an early point when they are often easier to solve.

Examples to facilitate conflict resolution

- Organise frequent group evaluations or peer-review sessions to give students opportunities to share their opinion. It is important to create a safe environment in which the students dare to give and receive feedback;
- Discuss problems openly. Students should learn to work professionally in groups, and put personal likes and dislikes aside. These conversations can be mediated by a tutor or course coordinator;
- It is advisable to make concrete agreements, which can be checked later;
- If necessary, inform the group about possible consequences of non-functioning.

Examples to deal with conflicts related to free-riders

- Make it clear that little or no contribution to the group is unacceptable and explain the possible consequences for less active group members e.g. an extra assignment, a lower or failing grade or even exclusion from the course.
- In cases where conflict arises early in a course, stick to the original assessment plan, even if students wish to be assessed individually rather than as a group. Give them a sense of responsibility to handle the issue themselves.
- In cases where the group only comes forward with a free-rider problem close to the final deadline, the tutor should still stick to the original assessment scheme even if it means that the rest of the group might be penalised by the underperformance of just one group member.
- In case the course is nearing its end and students made repeated claims about a free-riding group member, a tutor could penalize individual students as long as this possibility is outlined in the course manual.

Checklist course logistics

Several elements of the course logistics should be taken into account to allow groupwork to be a successful educational method.

- Where and when do students work on their group assignment?

As with all course related tasks and activities the course coordinator or tutor needs to communicate up front if students are free to decide where and when they work or if there are any restrictions in place. If there are preferences or restrictions, these can be taken into account when choosing where, when and how to meet, work, share and store information.

- What practicalities and facilities should I think of?
    - Meeting rooms or working spaces.
    - Storage of group output, accessible for students and potentially for yourself.
    - Facilitatory devices. Take note that for some educational purposes, special rooms or devices are necessary. Think for example about cameras if you have to record the performance of students, labs for research or facilities to screen audio-visuals.

If the tutor wishes to share information, like instructions or lectures, this can be organized via EleUM. Note that groups often choose to work (and communicate) in several ways (Googledrive, Facebook, WhatsApp or project-tools like Slack). You have to decide in advance if you want to leave the students to decide which programme they use or if you will set the conditions. If you leave it up to the groups, you should at least consider if and how you want to monitor the groups' activities and progress.

TIP! If you (or the students) do not want to keep track of several platforms or communication channels, you can (jointly) set the standard or request to have them use what you use already: you could for instance offer group pages in EleUM to the students. In these, they can make use of (group) mail, discussion boards and file exchange. The fact that every course already makes use of EleUM, saves a lot of administrative time (enrolments, connections with other systems, etc).

Note: When you store individual information, be aware of the General Data Protection Regulation (GDPR). This has an impact on the storage of information about the students (grades, evaluations) but

also on the products the students make. For instance, if the students gather research information from surveys, this needs to be stored properly and with a time restriction. For the exact rules and regulations, please contact your GDPR advisor.

- Should you be able to view all group communication?

If you are a tutor or supervisor you should consider whether you want or need to have access to student communication and work-platforms. An advantage can be that you can more easily follow the process and the individual contributions. If students are not active, clearly misunderstand an assignment or actions are not taken up, you can see this immediately and intervene. However, it can also be a burden on your free time and an intrusion into your private life (e.g. constant messages via social media and having to give out personal contact details to students). It might also hinder free communication between the students who are aware you are monitoring. Again, also consider the GDPR: with whom will sensitive information be shared and is the platform safe?

Assessment of groupwork

During and after the course a variety of assessment methods can be deployed to enhance student learning and measure the quality of their output. This guide makes a distinction between formative and summative assessment in the following sections.

Formative assessment

Besides being an instrument for judging students' overall achievement of their learning outcomes, assessment can also provide instructors and students with information about learning in order for them and their students to make adjustments to the learning process when necessary. To achieve this, is it essential to build in formative assessment and feedback moments into your course. This should be part of the overall course design.

- Feedback: what and why?

Feedback is a very important learning tool. Feedback should be honest, constructive and relate directly to the students' learning outcomes. It is important that students can incorporate the feedback in the next and/or final output and therefore work towards improving their performance.

Note: Studies have shown (e.g. Gibbs and Dunbar-Goddet, 2007) that students find new assessment types that they have not previously encountered as anxiety provoking and unfair when substantial grades are awarded. Do not therefore only provide feedback after the final assessment but also build in regular, intermediate feedback moments for students to learn and get used to assessment. Regular intermediate assignments (graded or ungraded) such as the regular submission of drafts, practice presentations, or peer-review meetings can lead to students' learning during the entire groupwork project. In leaving assessment purely to the end of the project, students have no opportunity to make improvements either to their end product or to their groupwork process.

- Sources or mechanisms for feedback

Incorporating feedback moments into your groupwork module can be time-consuming but you do not need to provide all of the feedback yourself. Think of ideas for encouraging students to give feedback to each other.

TIP! It can be good to use different sources of feedback. For example: academic staff can give feedback on research proposals, students could provide peer feedback on drafts or external clients can provide intermediate feedback on reports or on the group performance/product.

Note: Students performing experiments or programming code may receive immediate feedback from observing their results and can then also make direct inferences about their progress and adapt their approach. Likewise students may test out their products on various target groups or even collect surveys which can provide them with more information and steer their future choices which will hopefully lead to learning.

- Self- and peer-feedback

Allowing students to provide feedback to peers can be very valuable. This way they learn how to provide effective feedback, experience the effort it takes to produce good feedback and learn that it is more useful to give constructive feedback instead of an easier 'it was a good'. One way to balance the feedback they provide is to ask explicitly for 'tips' (what can be improved) and 'tops' (what they liked or thought was good). Make sure the feedback is goal-related. Students could even take different roles (for example client, peer or professional) to experience giving and receiving feedback from different

perspectives. You can also ask students to reflect upon their own progress. This could be achieved through a self-assessment form (maybe a check-box or rating scale of different criteria). This could stimulate them to develop in the areas they have identified where they may be lacking.

TIP! If you use grading sheets or rubrics for providing feedback, make them available at the start of the course so students know which topics they will be evaluated on and how they have to evaluate others.

TIP! You could invite students to provide feedback to everyone's contribution (performance) in the Group Member Evaluation Tool in EleUM.

Good practice: students review each other's work

In many research practicals students are asked to review the first draft report of another group and provide feedback. During this process they learn about the peer-review process in research, how to provide constructive criticism, may be exposed to new concepts or hear different viewpoints. Furthermore, they receive feedback from their peers which can be incorporated into and subsequently improve their work. In reading the work of others and identifying the strengths and weaknesses, they may also come to realise where they could make improvements in their own work by making direct comparisons. In this way peer-feedback leads to self-reflection.

Summative assessment

In addition to providing feedback, assessment can also serve to measure the degree to which students have achieved the learning outcomes of the module, referred to as summative assessment. This part of the guide focuses on assessment which takes place at the end of the groupwork process although many aspects will of course require consideration in the planning and design of your overall module. In this summative form of evaluation, grades are awarded and pass/fail decisions are usually taken.

- What to grade?

Generally it is possible to assess both (or either) the group process and product created by the group and you should have already considered this in the design of your group tasks and assignments (see 'Designing groupwork assignments'). If you assess both, you also need to be clear about how the final grades will be weighted and calculated (and which aspects will be assessed individually or as a group). If

the focus is on the development of groupworking skills, you should review the module learning outcomes and decide how the students can best demonstrate their achievement of these outcomes through their interaction with each other. If the focus is on the production of a final piece of work or product, this can be used to assess aspects such as students' design skills, creativity or mechanical abilities. Once you have decided what to grade, you need to break this down into more specific grading criteria which should also be communicated to students before they start work on their tasks (see 'How will the students be assessed?').

Tip! In assessing the **process** you may want to focus on aspects such as professional conduct, work ethic, communication, contribution to the work or of ideas, integration of feedback, physical skills, use of equipment or other process related activities although these depend upon the types of competences reflected in the module ILOs. In assessing the **product** such as constructed objects, written reports or other academic products such as videos or posters, you need to consider the aspects of the product that can demonstrate the accomplishment of the ILOs outlined during the design of your module. Do not focus merely on grading the characteristics of the product itself (attractiveness, length or size, etc), this may not in itself be a learning outcome. Note that not all ILOs need addressing by each and every assessment point (this topic is covered more in the UM handbook on Constructive Alignment).

Example choice of assessment formats

In many faculties, students are asked to create conference-style posters explaining a specific topic or displaying their own research data and results. These are usually assessed by a group of judges or even peer-assessed using a grading form or rubric. Be careful to choose criteria to grade which reflect the development of the students towards the ILOs rather than a characteristic of the work. Many assessors choose to grade the "presentation" of a poster i.e. does it look good visually? Is this a good reflection of the ILOs? Instead of grading aesthetics, it may be better aligned to your ILOs if you assess the overall ability of the students to present academic information in a clear manner in a variety of different formats. If your ILOs concentrate more upon knowledge content then it is better to assess whether the students can explain various new concepts clearly rather than the pure aesthetic aspects of the assignment.

A few examples of different assessment methods for formative and summative assessment of the group process and products are given in figure 2.

Assessment examples for groupwork

	Process	Product
Formative feedback	Log-books / reflection reports Journals / Portfolios Intervision sessions Group review meetings Observations Self- and Peer assessment	Progress / practice tests Portfolios Proposals Interim product deadlines (drafts) Surveys Self- and Peer assessment
Summative feedback	360° feedback Contribution overviews Assessment interviews Performance observations Journals / Portfolios / Log-books Peer assessment	Essays / reports / portfolios Knowledge / competence tests Oral exams (or presentations) Posters Video assignments Theses Product tests / Product evaluation Peer assessment

Figure 2. *Assessment examples for groupwork (inspired by and translated from Jaspers & Heijmen-Versteegen, 2004)*

- Grading criteria

The assessment criteria (their weighting and whether they are assessed individually or as a group) should be communicated to students before they start working on their group tasks so that they know what outcomes they are expected to demonstrate and what evidence of their work or activities needs to be documented.

When choosing different criteria to grade against, it is first important to define the characteristics of student work that would provide evidence for student learning or of their skills development during this task. Aspects to consider (derived from Stevens & Levi (2005) and Brookhart (2013) are:

- What is the goal of this assignment / task (with the ILOs in mind)?
- What specific learning objectives do you hope will be met in completing the assignment?
- What do you want the students to learn or achieve? What skills will students need to have demonstrated/developed to successfully complete this assignment?
- What evidence can students provide to show they have accomplished what you wanted?
- What are your highest expectations for student performance?
- What is the poorest, but nevertheless acceptable, level of the assignment you can imagine? How would you describe an unacceptable outcome of the assignment?

TIP! Do not use descriptors of the work only but think about how the work demonstrates learning, development or skill sets.

To improve validity (ensuring you are assessing what you should be assessing) make sure your criteria are related to the ILOs. With this in mind, think about selecting the right criteria to reflect on these ILOs, you do not need to list all possible criteria. Sometimes there are aspects of student work which are expected of the students but are not the main focus either of the assignment or of student development within your particular module. For example, a group of students may have to write a report together. Should you award a separate grade grammar or not? Good grammar is something students should have developed elsewhere and the most appropriate assessment criteria should focus more on the academic content, the inquiry process and the effective communication of findings unless grammar was specifically mentioned in the ILOs. Grammar could indeed be a part of the broader criteria of “effective communication of findings” or “academic writing style” but does not need listing separately.

Example students co-constructing grading criteria

In some cases it is possible and advantageous to engage students in the process of designing grading criteria (for example, they might have a very different view on attendance requirements during the groupwork than you, if they are keen to work together remotely or in a digital environment). Agreeing on criteria together can help in better engaging the students and getting them to take more responsibility for the learning outcomes and assessment process. They have the opportunity to give their input regarding the aspects of groupwork that they find the most important and could collaboratively decide the criteria. To ensure good alignment to your ILOs, this should be closely facilitated and agreed by a supervisor. Students should also receive a written copy of the agreed criteria.

- Who to grade?

In groupwork projects specifically, selecting fair assessment criteria can be difficult if students split the tasks up amongst themselves and contribute towards different aspects of the groupwork. These different components of groupwork may not be of equivalent value, may be conducted to varying standards and may require different levels of assistance from other group members. It can be helpful to ask students to write a short reflective report on how they have contributed to the final outcomes (process and product) of groupwork (see grading options, from page 23) (Gibbs, 2009).

- Assigning individual grades

Awarding single shared grade can encourage free-riding (or social loafing). If individual students know that their grade will be dependent upon the effort and achievement of others, there is little incentive to contribute (Gibbs, 2009). This can even cause the more enthusiastic students in a group to contribute less as they do not want others to profit from their efforts. This is known as the 'sucker effect' (Van de Veen, 2016) and can easily lead to conflict and the perception that grades are unfair (Gibbs, 2009). Encouraging students to reflect and provide feedback on the contribution from other group members

can help to overcome potential conflict due to differences in input and effort.

TIP! To avoid demotivating students and reduce the risk of free-riding, rewarding individual students for their contribution is of utmost importance. Differentiation of grades can be done both on process aspects as well as on the quality of work. Ultimately, a joint score combined with individual scores is the best way to grade groupwork. Various options for doing this are provided in the next section.

Assessing the individual contribution in groupwork: 3 options

There are different ways in which the individual contribution in groupwork can be effectively taken into consideration. A group grade should still be awarded, but in combination with recognition of the individual component such that attention is still paid to the whole task as well as their individual components (Gibbs, 2009). Below you will find some options outlining how final grades can be calculated to take both the group grade and the individual contributions into account.

Option 1: Assessing students through individual assignments

During or after the groupwork, separate assessments such as an individual (reflection) report, log-book, journal, portfolio or even an (oral) exam, based upon the groupwork product or process could be completed and these can be used to allocate grades to individuals which contribute to the final, overall grade.

TIP: For this to be effective, the individual assignments have to relate well to the groupwork and clearly reflect the contribution of the individual to the group such that those who contributed well also score well in the individual assignment and vice versa. They must also not negate the groupwork itself otherwise the group will have little motivation to work as a group during the module.

Option 2: Assessing individual students through observations of individual contribution to the process

In this option a grading rubric or set criteria relating to your ILOs could be used to assess the individual contribution of each student.

TIP: Students themselves are in the best position to judge the contribution of their fellow group members (Macquarie University) and as such the individual contribution can be assessed by peer- or

even self-assessment methods (see resp. page 25 and 27 for more information). Students should however be supported in this process by the supervisor while using a form of clear assessment criteria or grading rubric to improve reliability and mutual understanding (see page 28).

Example process evaluation by peers

This is the evaluation of the contribution of each group member. You can evaluate your group member with ++, +, +/-, -, --. In the last column, you can write extra remarks or explain your evaluation.

Your name:

Name peer:	**Effort** Contribution to tasks, initiative, responsibility	**Team work** Collaboration, communication, pleasant atmosphere	**Intellectual input** Creativity, input during discussions, writing for assignments	Remarks or explanation
1				
2				
3				
4				
5				
6				
7				
8				
9				
Yourself:				

Figure 3. *Individual evaluation sheet.*

Option 3: Assessing individual students by dividing tasks and assessing these

If each group member is allocated responsibility for a different task or role, it is possible to award separate grades for the individuals based upon these specific roles. Each role should then have its own performance criteria so that expectations are clear. The allocation of students to particular roles must be fair and can be directed by the supervisor or decided by the students (see section 'group composition').

TIP! This method could be controversial depending on how tasks or roles are allocated and if some roles are perceived as easier or less important than others. Make sure that the criteria for each role are clearly defined to reduce this risk and use this only in combination with a group grade which rewards the group for working effectively to make use of the diverse skills and abilities of all members to maximize the quality of their product (Macquarie University).

Calculating final grades for individuals

If all students receive the same group grade or only individual grades, then no final calculation needs to be made. Using a combination of the two means that the students should still be motivated to work as a group while their individual contribution is still taken into consideration. There are a few different methods you may want to consider:

- Calculating a final grade from the group and individual grades

The most common way to calculate a final grade is to decide upon the weighting of the group and individual components, for example each individual in a group may be allocated 50% of their marks for the quality of their own component and 50% for the entire group product.

- Moderating the group grade for each individual

A group grade could be awarded by the supervisor and this grade could be moderated per student based on the individual contribution as judged either by the supervisor or the peers. More often this is used in peer-assessment as a mechanism for them to adjust the grades based upon their assessment of each other. This is known as the "Knickrehm method" (Maranto & Gresham, 1998).

- Distributing a group grade between individuals

A group grade is awarded, this grade is multiplied by the number of students in the group and this pool of marks is awarded to the students to distribute amongst themselves. Note that this is usually used exclusively for peer-assessment. If implementing this sort of grading, this needs to be clear to the students from the outset so that students understand the likely consequences of appropriate or inappropriate group behaviour. A peer-review meeting may also be required to facilitate this.

TIP! It may be wise to set limits to the extent to which students' marks can vary within a group. High marks for one student reduces the maximum possible marks for the others and the tendency is for groups to allocate the marks equally, regardless of differing contributions (Macquarie University).

- Using sanctions to modify individual grades

A simple method for adapting individual grades is to penalize students for inappropriate group behaviour such as missed attendance or incomplete tasks. The risk of sanctions should be communicated in advance in your course manual. Sanctions could take the form of losing 1/10 points from the final grade if a meeting is missed for example. Sanctions could be made by the supervisor or by the group themselves (in agreement prior to the start of the groupwork). If behaviour improves throughout the duration of the groupwork project the sanction could be rescinded, giving the students the opportunity to learn and reform.

- Who does the grading?

Assessment can be conducted by groups or individual lecturers, tutors, external assessors (experts in the field), groups of peers, through self-assessment or by some combination of these. The advantage of a combination of assessors is that it allows multiple perspectives of the process or work to be judged and it reduces the chance of bias that might be inherent in a single form of assessment and provides greater opportunity for students to learn. For example: in projectwork with different stakeholders, the group can be assessed on different topics by their client, the tutor and/or fellow students.

- Peer grading

Peer assessment can be valuable in groupwork assignments used both formatively and summatively. Examples of peer review for formative assessment have been given earlier in this guide and usually relate to students reviewing a document or product from other students and providing constructive feedback to each other with the emphasis on learning. The other type of peer assessment often (but not always) used summatively, is group member evaluation (usually relating to performance or contribution). The latter is a very powerful form of group work assessment as the group members are the ones who know best the individual contribution of each student.

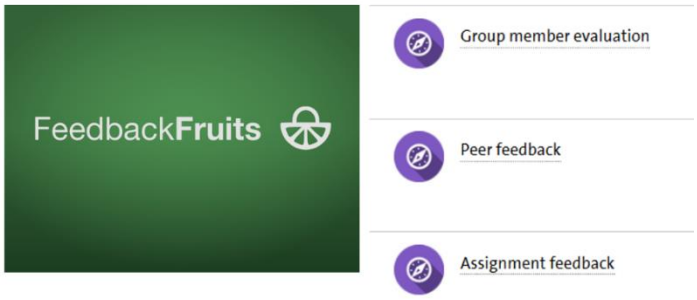
TIP! Peer assessment of groupwork often produces a narrow range of marks given by students to their peers. If grades are given anonymously so that the students only receive their average score, then students will allocate a broader range of scores which are usually more reliable because students do not feel the pressure of disappointing their friends (Van de Veen, 2016, Gibbs, 2009).

Example peer-feedback assessment

Students often need some preparation before they can rate themselves or their peers effectively. This is a skill they need to develop and at first some students may be reluctant to do so (Banta & Palomba, 2015). In one of our UM Bachelor's programmes, students participate in a groupwork project twice each year. At the end of each project they receive a supervisor grade (on the process), a peer grade (on the process) and a shared grade based upon their final report and presentation (the final product). In the first year projects, the peer grade contribution is only worth 15% whereas the supervisor grade is worth 35% (the rest is based upon the final report and presentation). Over the course of the degree programme the students become better equipped in assessing each other and by the final year projects the peer grade is worth 35% and the supervisor grade only 15%. This also reflects the fact that the groups work more autonomously in later years with less direct supervision and input from their instructor.

Tools to facilitate peer assessment

- FeedbackFruits in EleUM supports both document and non-document based scenarios. The first tool can be used for students to peer review written components or other products from another student or group of students. The non-document based tool facilitates the evaluation and assessment of how the student(s) performed in the group, based on predefined set of criteria.



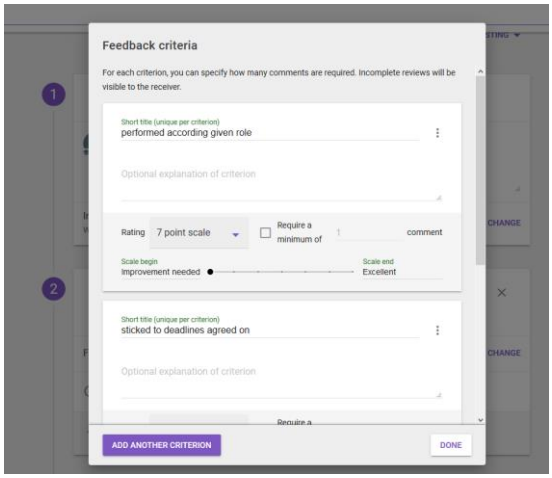


Figure 4 and 5. *FeedbackFruits functionality.*

You could also invite students to peer-assess each other using online forms (such as google forms) or survey software adapted for this purpose (but please be aware of the GDPR). The UM has a campus-wide subscription to Qualtrics which can be set up to allow group members to assess each other on the same criteria as outlined in a rubric. The module coordinator can then open these submitted grades in Excel to calculate the average peer-grade of each student and this can be anonymised if preferred. In large groups this can save a lot of time compared to completing this on paper and calculating manually.

For further advice on tools to facilitate peer assessment, you can contact: blended-pbl@maastrichtuniversity.nl

- Self-assessment

In combination with some form of peer assessment, self-assessment can be very useful to get an insight in the individual contributions of the group members.

TIP! When using self-assessment for summative purposes, the effect of under- and overestimation should be taken into account as the better students have the tendency of underestimating themselves and the weaker students will overestimate themselves more often (Gibbs, 2009). Taking this into consideration, it can be wise to limit self-assessment to formative purposes.

- External input

If external parties (a jury, company, client or (simulation) patient) are involved in the groupwork and are invited to provide input into the assessment of the process or product, it is important to keep in mind that they often use different criteria than academic staff do. They may focus more on the result of the groupwork than on the process. Furthermore, they are not always trained to assess student work and they may have unrealistic expectations of what students are capable of doing. Therefore, it is important to carefully think about how to implement their judgment in the final grade (Van de Veen, 2016). This means also that according to university regulations, external assessors can give input and advice, but it is the course coordinator who is appointed as the formal examiner and will therefore award the final grade taking the external opinion into account.

Example external stakeholders and assessment

Some UM students have the opportunity to work with external companies. We often see that if something goes wrong within the project, for example equipment is delayed or unavailable, the companies feel responsible and reflect this in their assessment of the students by inflating their grades in compensation. This is why it is essential to provide external parties with clear assessment guidelines or grading rubrics and for a UM examiner to oversee this process. The UM examiner may take the external party opinion into consideration but they ultimately decide on and award the final grade themselves.

Assessment instruments

Rubrics

One of the biggest challenges of assessing performance or a product, is developing an objective evaluation instrument which reduces possible subjectivity and increases intra-rater and inter-rater reliability. A good way to tackle this is by creating a rubric where several aspects (criteria) of performance or of a product can be evaluated at several different performance levels. They can be used by any assessors (as listed in the section above) including for peer- or self-assessment.

- Why rubrics?

Rubrics are not just a useful tool for assessors to grade individual contributions and for institutional accountability purposes. They also provide an excellent way to give feedback to students. Rubrics for providing feedback are not just important at intermediate points during a module but also for providing feedback and justification for the final grades awarded at the end of the module. A rubric used to assess an individual's contribution to the groupwork process can help provide feedback highly beneficial for a student's long-term learning if they go on to do groupwork again in the future, whether as part of their formal education, or outside in the workplace or in their extra-curricula activities. 51% of UM students come from overseas and in an international classroom setting with culturally diverse groups, rubrics can also offer clearer guidelines to the work and help to clarify expectations more explicitly.

- How to create a rubric?

When creating a rubric for the first time, you should first determine the assessment criteria (as outlined on page 20) and then choose the possible performance levels for each of these. Leave room for comments and feedback for students and be clear how the final grade is calculated.

Ideally rubrics are created prior to an assignment being allocated to students. Yet many educators dislike the idea of providing the rubric in advance, because this can lead to tactical behaviour from the students (Van de Veen, 2016). The key challenge is to create a rubric that is not too prescriptive but does provide enough guidance to students and clearly communicates your expectations as an assessor. Instead of providing a rubric to students in advance, an assessment sheet could be shared which outlines a more general description of the criteria and the expectations. If you are creating a rubric after

the submission of an assignment (or for a module that has run previously), you can use a sample of real assignments to form the rubric, which allows you to test out your rubric during the design process.

TIP! An excellent resource providing advice and tips for the creation of rubrics, is 'How to Assess Students through Assignments' by Evelyn van de Veen (2016), available in one single book, both in Dutch and English.

Tip! Consulting the students in the rubric creation process can help them take greater ownership and gain a better understanding of expectations. This could be especially helpful in a groupwork environment such that a mutual understanding and sense of responsibility is cultivated between group members.

UM example peer-assessment rubric (usable version in annex III)

	Excellent	Good	Sufficient	Insufficient	(Very) poor
Communication	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
Weighted 2x	Always made clear what he/she was doing to other members of the group/supervisor	Usually made clear what he/she was doing to other members of the group/supervisor	Not always clear what he/she was doing to other members of the group/supervisor	Usually did not make clear what he/she was doing to other members of the group/supervisor	Never made clear what he/she was doing to other members of the group/supervisor
	Took on a very prominent role in organistation	Had a good idea of what should be done and could explain this	Did not exactly know what to do and could not always explain what had to be done	Had little idea about what had to be done and could usually not explain this	Had no idea what had to be done and could never explain anything
	Had a perfect idea of what should be done and made that clear to everyone	Active in discussions about results and progress	Little participation in discussions about results and progress	Hardly praticipation in discussions	No participation in discussions
	Made sure there was discussion between group members about results and progress				
Academic input	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
Weighted 2x	Was present on all required days and worked well	Was present on all required days and worked well	Was present on most days and worked in a satisfactory manner	Was not present on most days and did not work ina satisfactory/adequate manner	Was absent most of the days and spent most time outside of the lab
	Always met deadlines that were set	Usually met deadlines that were set	Was usually working, but also took too many breaks	Was late/left early several times	Did not show up several times
	Made extra effort (extra hours, special trips etc.)	Showed initiative and came up with some ideas to keep the project going	Handed things in late	Handed things in far over deadline	Never handed in anything
	Showed initiative and creativity in discussions to come up with new ideas to bring the project further	Quite interested in the project	Did what was asked from them without showing much initiative	Did not always do what was required and showed little to no initiative	(Almost) never did what was required and showed no initiative whatsoever
	Very interested in the project			Not very interested in the project	Very uniterested in the project
Practical work	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
Weighted 2x	Practical work was of perfect quality	Practical work was of good quality	Practical work was usually of adequate quality	Practical work was of usually of bad quality and unreliable	Practical work was of extremely bad quality
	Took initiative when extra work was required	Did extra work when asked to do so	Did not do any extra work	Did not always do the work he/she was supposed to do	Barely did any of the work s/he was supposed to do
	Took initiative in organizing/setting up experiments	Active in organizing/setting up experiments	Aided in organizing/setting up experiments if asked to do so	No initiative and little help in organizing/setting up experiments	No initiative or help in organizing/setting up experiments
	Had a step by step plan of what should be done on a specific day on paper or in his/her head	Roughly knew what had to be done per day	Had little knowledge of the plan on specific day	Roughly knew what the idea of the project was; did not know what to do on a specific day	Had no idea about the project or what had to be done on a specific day
Reporting	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
Weighted 1x	Exceptionally strong contribution to the report	Contributed proportially to the report	Contributed to the report	Did not contribute to the report enough	Did not contribute to the report at all
	Arranged meeting to discuss about the report	Always attended meetings about the report	Usually attended meetings but was late or left early sometimes	Sometimes attended meetings but was usually late or left early	Attended meetings for only a small fraction of the others attendance or did not attend at all
	Written text was of great quality and needed little to no revision	and was not late or left early	Written text was of sufficient quality but still needed editing	Written text was of poor quality and needed a lot of editing	Did not write any text
	Had a big part in the final editing and overall quality of the report	Written text was of good quality and needed only little editing	Did not help editing and had very little part in the overall quality of the report	Brought down the quality of the report	
		Helped editing and had some part in the overall quality of the report			

Figure 6. *Groupwork rubric.*

The Association of American Colleges and Universities (Rhodes, 2010) have a variety of (Valid Assessment of Learning in Undergraduate Education (VALUE)) rubrics accessible online for assessing teamwork, critical thinking, problem solving, inquiry and analysis (which includes the design process) at Bachelor degree level.

A tool which may be useful when using rubrics, is the website roobrix.com which can help you in converting your rubric performance levels and criteria into a final numerical score.

Scoring sheets or grading forms

Rubrics can be time consuming to produce although it could be argued that they can consequently save time and improve the grading process. An easier but less academically robust compromise is a scoring or grading sheet. These contain far less detail than a full rubric but consequently take far less time to create.

A scoring sheet can take various forms but usually include at a minimum, a list of criteria and space to allocate a grade to these criteria. In this case a numerical score per criteria would be awarded which could be totalled up in order to calculate a final score. Otherwise scoring sheets could take the form of a checklist or rating scale. Checklists can help students see if they have met all required elements of an assignment (Brookhart, 2013). Rating scales (from “excellent” to “poor”, or from “always” to “rarely”, for example) can provide students with feedback on their performance or behaviour. The number of ticks in the “good” or “poor” columns could be used as a rough guideline to allocate a numerical grade at the end.

Portfolios

Portfolios are collections of student work usually including selections of assignments or artefacts, self- (and sometime peer-) reflections as well as evidence of achieving specific competences. These are usually used to integrate information across an entire degree programme and can be facilitated by an ePortfolio platform.

- How to use portfolios?

Portfolios are an excellent tool for getting students to reflect and make connections across their learning (Banta & Palomba, 2015) but may not be suitable for shorter-term groupwork unless the portfolio is developed across a number of individual groupwork periods throughout their degree programme. Reflection is an important part of personal development and can help in the long-term development of relevant group-working skills. Evaluating such a portfolio may be achieved through a simple checklist of required items and criteria (Banta & Palomba, 2015), or a rubric could be developed (see page 28). Portfolios are particularly effective for learning when frequently reviewed by assessors or peers (Banta & Palomba, 2015) and can be highly motivating for students to perform well as they can also be useful for demonstrating their achievements in job-seeking beyond the academic arena.

- E-portfolios

For e-portfolios there are a variety of different options. You could invite students to create a personal website (e.g. in Wordpress) or make use of a dedicated online platforms like EPASS (created by FHML, for more information on EPASS see http://www.epass.eu or contact info@epass.eu). Several Learning Management Systems also offer e-portfolio functionality. A good example can be found here: https://werklund.ucalgary.ca/tandl/eportfolio

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Annexes

Annex I - Individual Timesheet Groupwork (example)

Name:

Course:

Group:

ID number

Day	Minutes	Activity	Comments
TOTAAL			

Annex II - Collective Timesheet Groupwork (example)

Groupname/Topic _____

Student 1
Name _____
ID _____

Student 2
Name _____
ID _____

Student 3
Name _____
ID _____

Student x
Name _____
ID _____

Overview

Student	Tasks	Total hours
1		
2		
3		
4		
x		
…		

Signatures for approval

_____

Date + Signature Student 1

_____

Date + Signature Student 2

_____

Date + Signature Student 3

_____

Date + Signature Student 4

_____

Date + Signature Student x

Annex III - Assessment Rubric (example)

	Excellent	Good	Sufficient	Insufficient	(Very) poor
Communication Weighted 2x	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
	Always made clear what he/she was doing to other members of the group/supervisor	Usually made clear what he/she was doing to other members of the group/supervisor	Not always clear what he/she was doing to other members of the group/supervisor	Usually did not make clear what he/she was doing to other members of the group/supervisor	Never made clear what he/she was doing to other members of the group/supervisor
	Took on a very prominent role in organistation	Had a good idea of what should be done and could explain this	Did not exactly know what to do and could not always explain what had to be done	Had little idea about what had to be done and could usually not explain this	Had no idea what had to be done and could never explain anything
	Had a perfect idea of what should be done and made that clear to everyone	Active in discussions about results and progress	Little participation in discussions about results and progress	Hardly praticipation in discussions	No participation in discussions
	Made sure there was discussion between group members about results and progress				
Academic input Weighted 2x	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
	Was present on all required days and worked well	Was present on all required days and worked well	Was present on most days and worked in a satisfactory manner	Was not present on most days and did not work ina satisfactory/adequate manner	Was absent most of the days and spent most time outside of the lab
	Always met deadlines that were set	Usually met deadlines that were set	Was usually working, but also took too many breaks	Was late/left early several times	Did not show up several times
	Made extra effort (extra hours, special trips etc.)	Showed initiative and came up with some ideas to keep the project going	Handed things in late	Handed things in far over deadline	Never handed in anything
	Showed initiative and creativity in discussions to come up with new ideas to bring the project further	Quite interested in the project	Did what was asked from them without showing much initiative	Did not always do what was required and showed little to no initiative	(Almost) never did what was required and showed no initiative whatsoever
	Very interested in the project			Not very interested in the project	Very uniterested in the project
Practical work Weighted 2x	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
	Practical work was of perfect quality	Practical work was of good quality	Practical work was usually of adequate quality	Practical work was of usually of bad quality and unreliable	Practical work was of extremely bad quality
	Took initiative when extra work was required	Did extra work when asked to do so	Did not do any extra work	Did not always do the work he/she was supposed to do	Barely did any of the work s/he was supposed to do
	Took initiative in organizing/setting up experiments	Active in organizing/setting up experiments	Aided in organizing/setting up experiments if asked to do so	No initiative and little help in organizing/setting up experiments	No initiative or help in organizing/setting up experiments
	Had a step by step plan of what should be done on a specific day on paper or in his/her head	Roughly knew what had to be done per day	Had little knowledge of the plan on specific day	Roughly knew what the idea of the project was; did not know what to do on a specific day	Had no idea about the project or what had to be done on a specific day
Reporting Weighted 1x	9.0-10.0	7.0-9.0	5.5-7.0	3.0-5.5	0-3.0
	Exceptionally strong contribution to the report Arranged meeting to discuss about the report Written text was of great quality and needed little to no revision Had a big part in the final editing and overall quality of the report	Contributed proportially to the report Always attended meetings about the report and was not late or left early Written text was of good quality and needed only little editing Helped editing and had some part in the overall quality of the report	Contributed to the report Usually attended meetings but was late or left early sometimes Written text was of sufficient quality but still needed editing Did not help editing and had very little part in the overall quality of the report	Did not contribute to the report enough Sometimes attended meetings but was usually late or left early Written text was of poor quality and needed a lot of editing Brought down the quality of the report	Did not contribute to the report at all Attended meetings for only a small fraction of the others attendance or did not attend at all Did not write any text