

The UM Handbook for Constructive Alignment



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This handbook is a production of the Maastricht University Institute for Education Innovation (EDLAB). Constructive alignment experts from all UM faculties have worked together at EDLAB over the course of 2016 to share and write down their knowledge and experiences regarding constructive alignment. The information has been bundled in this handbook and can be viewed at <u>www.constructivealignment.nl</u>. EDLAB is grateful for the all the input it has received and wants to thank the UM colleagues involved in the process. Special thanks go to the following authors: Joost Dijkstra, Sylvia Gerhards, Matthijs Krooi, Marloes Menten, Elissaveta Radulova, Mark Spigt, Rina Vaatstra, Peter Vermeer and the members of the EDLAB Assessment Taskforce.



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i. What is Constructive Alignment?

This handbook aims to explain the principle of Constructive Alignment (CoAl). Constructive alignment refers to an approach to instructional design that integrates Intended Learning Outcomes (ILOs) or learning objectives, (b) Teaching and Learning Activities (TLAs), and (c) Assessment methods (Ass.). As shown in Figure i, CoAl requires optimal coherence between these three elements in a course or curriculum. Moreover, CoAl underpins and assures the quality of an educational programme.



Figure i. Constructive Alignment cycle.

Definition

Founding father of constructive alignment, John Biggs, has defined this approach as the following: "[Constructive alignment] makes quite explicit the standards needed if the intended learning outcomes are to be achieved and maintained" (Biggs & Tang, 2011, p. xiv).



ii. Constructive Alignment at UM and how to use this guide?

The guide starts from the constructive alignment approach by <u>Biggs & Tang (2011)</u>. The added value of this guide is the applicability to the specific UM context and stakeholders. This guide provides UM examples, solutions and recommendations while taking into account the UM organisation and specific actors. We think that such a focus serves the UM community best and gives hand-on tools to translate theoretical perspectives of constructive alignment into real practice.

The UM context includes such factors as the Bologna Process, the Dutch accreditation framework (NVAO) and the Problem-based Learning (PBL) philosophy. Throughout this website CoAL is applied with PBL as the main educational philosophy. This guide does not have the intention to redefine PBL or to focus on the preconditions and perception of PBL at Maastricht University.

This guide is based on knowledge and UM good practices related to the CoAl approach that are derived from the experiences of various stakeholders in the educational process. The guide is developed around specific education roles e.g. programme coordinators, course coordinators, boards of examiners and vice-deans. This provides practical information regarding constructive alignment and curriculum design.

iii. Emphasis on assessment

In this guide we approach CoAl with an emphasis on assessment. The 'assessment drives learning'principle stresses the importance to maintain connection between intended learning outcomes (ILOs), teaching & learning activities and assessment, both on a course, programme level and to a lesser extent on institutional level. A good connection between ILOs and assessment is therefore crucial when (re-)designing curricula. Biggs states that: "The underlying principle of [constructive alignment] is that the assessment tasks should comprise an authentic representation of the course intended learning outcomes" (Biggs & Tang, 2011, p. 191).

With large student populations, assessment methods are often selected based on efficiency rather than on the ability to capture the richness of the learning experience. When assessment methods do not connect well to ILOs, it becomes difficult to uphold constructive alignment and the quality of education is likely to be distorted (e.g. a mismatch between 'what students need to learn' and the type of assessment that has to test the student's developments). When applying constructive alignment, the coherence between ILOs, teaching & learning activities and assessment can be secured and serves as an identification of strengths of the curriculum as well as elements for improvement. CoAl can be used for quality assurance as well as sparking improvements in the design of a curriculum.

iv. How to benefit from reading this guide?

The guide has been developed around specific education roles. For each role a different chapter can be the starting point (e.g. course vs programme level). All chapters can be read standalone, which makes redundancy and overlap inevitable. Each chapter provides a short theoretical abstract combined with cases based on authentic UM settings. This guide serves those stakeholders in higher education that are responsible for the creation and/or coordination on ILOs, teaching, assessment and the coherence between them. This guide is particularly useful for:

• <u>Programme coordinators</u> (also named programme directors and directors of studies in UM faculties): carry the final responsibility for the quality of the educational programme and the tuning of the separate units.



- <u>Course coordinators:</u> carry the responsibility of linking course-ILOs to programme ILOs.
- <u>Tutors:</u> infuse awareness of ILOs (course/programme/institutional) on a meta-level to the students resulting in a better tuning of ILOs and activities of tutorial groups.
- <u>Boards of Examiners</u>: are responsible for the quality assurance of assessment in general to reach and to guarantee the accomplishment of institutional/programme/course ILOs.
- <u>Programme Committees:</u> as the advisory and participation body ('opleidingscommissie') that evaluates and advises on the execution of the EER (Educational and Examination Regulation) and quality assurance of the programme EER.
- <u>Education quality-care staff</u>: provides educational advice on evaluation and improvement of the programme.
- <u>Vice-deans education & Management team:</u> have the final responsibility for the quality assurance of the curriculum.

Throughout this handbook, a number of key terms and abbreviations are used. For a more elaborate list of terms we refer to the Glossary (see <u>Annex I</u>, p. 82).

Further reading:

http://ec.europa.eu/education/policy/higher-education/bologna-process_en.htm

https://nvao.net/

Biggs, J. B. & Tang, C. (2011). *Teaching for quality learning at university: What the student does*. McGraw-Hill Education (UK).

NVAO (2016). Assessment frameworks for the higher education accreditation system of the *Netherlands*. Retrieved from:

https://www.nvao.com/system/files/procedures/Assessment%20Framework%20for%20the%20High er%20Education%20Accreditation%20System%20of%20the%20Netherlands%202016_0.pdf on 14.11.2016



Chapter 1. Course (re-)design and Constructive Alignment

1.1 Course (re-)design and Constructive Alignment: Theory

The three elements of constructive alignment introduced in the introduction are typically used at course level (Figure 1.1). This chapter explains the function of ILOs and gives instructions on how to design quality ILOs.



Figure 1.1. Constructive Alignment at course level.

1.2 Intended learning outcomes (ILOs)

According to Biggs (2011), ILOs can be formulated at three levels, being:

- 1. The institutional level: what are graduates of Maastricht University able to do?
- 2. The programme level: what are students of bachelor X, or master Y able to do?
- 3. The course level: what are students after 8-weeks course x able to do?

On a course level (in some faculties named 'module') the ILOs are very specific for that course. ILOs are directly related to one or more specific examinations and explicitly taken into account in order to get credits (e.g. the grading of a course).



1.2.1 How to (re-)design ILOs on a course level?

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". On a course level, an ILO is well-formulated when a student who reads the ILO knows what to do and how well to do it in order to achieve the ILO. Biggs and Tang (2007) specifically chose the term 'ILO' instead of 'objective' since ILO puts more emphasis on the student's perspective, on what the student has to learn (versus what the teacher has to teach). To derive course ILOs, they distinguish three choices that need to be clarified based on the aim of the course:

- 1. The type of knowledge;
- 2. The topics that will be taught/learned;
- 3. The level of understanding or performance (and how this achievement is displayed) of each chosen topic.

The intended type of knowledge and the level of understanding/performance can be expressed in an outcome verb. Verbs can be chosen from e.g. the SOLO taxonomy or Bloom's revised taxonomy (see <u>Annex II</u>, p. 85). Based on these three choices, the course ILOs can be written. These ILOs are the starting point for developing the teaching and learning activities and assessment of a course. Biggs & Tang (2007) advise to derive **no more than five or six ILOs per course**: *"The more ILOs, the more difficult it becomes to align teaching/learning activities and assessment tasks to each".*

Example 1			
Course Manual:	This course will provide students with knowledge on the most important scientific theories and empirical findings on topic X, topic Y, and topic Z. They will learn why and how topic X impacts what will happen to us in our life. They will also discuss practical applications of theory and research findings and learn to apply measurement techniques for assessing topic Y.		
Required adjustments	 The ILOs are formulated from a teacher perspective instead of student perspective (e.g. '<i>This course will provide</i>', '<i>They will learn</i>'); For some topics, the level of understanding/performance is mentioned (e.g. ' apply measurement techniques'). But for other aspects the required level is not clear yet and needs to be specified. 		
Good ILOs	 Students Can describe and compare the most important theories and empirical findings about topic X, topic Y and topic Z; Can explain the relation between topic X, topic Y and topic Z; Can discuss practical applications of theory X and research findings; Can apply measurement techniques for assessing topic Y and topic Z. 		
Example 2			
Course Manual:	 You will familiarize yourself with topic X; You will learn about important experimental paradigms for studying topic Y; 		



	You will study social and cultural determinants of topic 2.			
Required	The type of knowledge and required level of understanding/performance need to			
adjustments	be specified.			
Good ILOs	Students are able			
	• To explain processes of topic X (i.e. process A, process B, process C);			
	 To explain the relation between topic Y and topic Z; 			
	• To explain the role of topic Q in process A;			
	• To explain theories on the role of processes T in the development of applied			
	disciplines.			
Example 2				
Course Manual:	Once you have completed this course, we expect you to be able to:			
	 Indicate the difference between science and common sense; 			
	 be informed about the ethical directives governing research; 			
	 theorize on a particular topic; 			
	 draw up a research question on the basis of previously acquired 			
	theoretical knowledge;			
	 be acquainted with various research designs; 			
	 draw up an appropriate design in order to test a specific hypothesis; 			
	 design quantitative research for testing a research hypothesis correctly; 			
	gather data adequately:			
	 analyse data in the right way: 			
	 interpret the results of a piece of research referring them back to theory 			
	and hypothesis			
	and hypothesis;			
	 translate your research into a scientific article in writing in English and in 			
	accordance with the APA norms that apply;			
	 present your research clearly, in the form of a presentation or poster; 			
	 understand what went all wrong during the research, and why. 			
Required	These ILOs are well-formulated: They are clear regarding the content, type and level of			
adjustments	understanding/performance a student is expected to achieve. Small adjustments for			
	further improvement are:			
	• This course has 13 ILOs which is rather high. However, several ILOs relate to the			
	same topic and can be combined into one ILO (e.g. 'gather data adequately' and			
	'analyse data in the right way').			
Good ILOs	Students are able			
0000.100	- To indicate the difference between science and common sense:			
	- To understand the ethical directives governing nsychological research:			
	To distinguish and compare various research designs:			
	To overlain and apply the empirical cycle of research i.e.			
	- To explain and apply the empirical cycle of research, i.e.:			
	 To theorize on a particular topic and draw up a research question on the 			
	basis of previously acquired theoretical knowledge;			
	 To translate a research question into hypotheses; 			
	 To draw up an appropriate design in order to test a specific hypothesis 			
	(i.e. operationalisation of hypotheses);			
	 To design quantitative research for testing a research hypothesis 			
	correctly;			
	 To collect and analyse research data adequately; 			
	• To interpret and discuss the results of a piece of research, referring			
	them back to theory and hypothesis;			



0	To translate research into a scientific article in writing in English and in
	accordance with the APA norms that apply;
0	To present research clearly, in the form of a presentation or poster;
0	To evaluate what went all wrong during the research, and why.

1.2.2 Guiding questions to set ILOs on a course level

- Are programme ILOs defined?
 - If not: first start defining programme ILOs.
- Are the course ILOs in line with the programme ILOs?
 - If not: consider why there is no alignment. Do you need to update your programme ILOs, your course ILOs, or both?
- Who are the relevant stakeholders, and how are they involved?
 - The central role might differ according to the procedures or work arrangements within your faculty. In some faculties, the course coordinator receives the course ILOs from the programme coordinator. The course coordinator then needs to develop the course based on these ILOs. In other faculties, course coordinators are the ones who develop the course ILOs, albeit that these need to be based on input of the programme coordinator (also called programme director/director of studies in faculties) and agreed upon by the programme director/programme coordinator/director of studies. Policy advisors and educational consultants can assist through the process of developing ILOs.
- What type(s) of learning do you want to achieve?
 - This can be declarative or functioning knowledge, cognitive processes, skills, competences.
- What topics will be taught/learned?
 - E.g. EU institutions and integration theories.
- What level of understanding or performance do you want to achieve (in line with the course level)?
 - The intended kind of knowledge and the level of understanding/performance can be expressed in an outcome verb. Chose the right verb to formulate the ILO, e.g. from the SOLO taxonomy or Bloom's revised taxonomy.
- Are the ILOs written from a student perspective?
 - A student who reads the ILO needs to know what to do and how well to do it to achieve the ILO. The focus is on what the student has to learn, not on what the teacher has to teach.
- Is the number of ILOs limited?

The advice is to limit to five or six ILOs per course.

1.2.3 Who is involved in (re-)designing ILOs on a course level?

When it comes to formulating course ILOs, the person responsible might differ according to the procedures or work arrangements within your faculty. In some faculties, the course coordinator receives the course ILOs from the programme coordinator. The course coordinator then needs to develop the course based on these ILOs. In other faculties, course coordinators are the ones who develop the course ILOs, albeit that these need to be based on input of the programme coordinator and agreed upon by the programme coordinator. The latter is important since the programme coordinator needs to check whether the course ILOs are well-aligned with other courses' and the



programme ILOs. When adjusting course ILOs, the assistance of policy advisors and/or educational consultants and the opinions of the stakeholders mentioned above might be consulted as well. It is important to make sure that staff involved in formulating course or programme ILOs is aware of constructive alignment and knows how to formulate programme ILOs.

1.2.4 How to link course level ILOs to ILOs on a programme level and institutional level?

All ILOs on course, programme and institutional level need to be aligned. Aligning programme and institutional ILOs can be done by listing all ILOs in e.g. a curriculum map (see Figure 1.2), and checking how each programme ILO reflects an institutional ILO. However, according to Biggs & Tang (2007), not all graduate attributes need to be addressed individually in the programme ILOs. They state that some graduate attributes may not be relevant for each particular programme or discipline.

The next step is to align the programme and course ILOs. This can be done by firstly evaluating how the course ILOs address the programme ILOs. Secondly, this linkage between course and programme ILOs of all courses needs to be evaluated on programme level by considering whether 1) all programme ILOs are addressed; 2) the alignment is balanced (don't overemphasize); 3) there are no programme ILOs that are not (sufficiently) being addressed.



				A - skills		B - orientation				C - capable		D	Е	F	G			
	Period	Course	ECTS	Study	Academic	General Professional	Specialist Professional	General Orientation in Psychology	Bidogal	Cognitve	Philosophical Foundations	Historkal Background	Analysing and Conceptualising the Reid	Reporting	Metho dology	Understand and Judge Psychological Writing	Doing and Reporting own Research	Eligible for Admittance to Master in Science
		Progress Test	2															
Year 1	0	Skills I	2											•				
	1	Social Behaviour	6	•				•					•			•		•
	1	Methodology	6												•	•	•	•
	2	Body and Behaviour	6	•									•			•		•
	2	Statistics I	6											•	•	•	•	•
	1-3	Skills II	4	•	•	•		•						•	•		•	•
	4	Development	6	•									•			•		•
	4	Perception	6	•					•	•			•			•		•
	5	History and Foundations	6	•				•			•	•	•			•		•
	5	Learning and Memory	6	•					•	•			•			•		•
	4-6	Skills III	4			•								•	•	•	•	•
Year 2		December 7 - 1																
		Progress lest	2	•				•	•	•	•	•						
	1	Complex Cognition	6	•					•	•		•	•			•		•
	2	Fersonality Colored Theoleters	6	•					•	•			•	•		•		•
	2	Critical Ininiong	6		•						•	•	•			•	•	•
	12	Skile IV	0	÷					•	•			•					
	2	Skille V	2												•			
	3	Attaction and Considurates	6															
	4	Man and Machine	6															
	5	Statistics II	6															
	5-6	Research Practical	10															
		Progress Test	4															
Year 3		Subject Participation	1															
	1-3	Electives	18															
	1-3	Bachelor Thesis	6															
	4	Research Methods/ Paradigms in the Lab	5	•	•		•		•	•			•	+	•	•	•	•
	4	Statistics III	6															
	5	Neuroscience of Action/ Decision Making	6	•			•		•	•			•			•		•
		Theoretical Perspectives/ Learning	6	•			•		•	•	•		•			•		•
	5	Portfolio Year 3	2			•												
	6	Psychodiagnostics	6										•		•	•		•

Figure 1.2. Example of a Curriculum map.



1.2.5 Final recommendations with respect to ILOs

The following recommendations are extracted from the NVAO document 'Assessment and Demonstration of Achieved Learning Outcomes: Recommendations and Good Practices', published on February 2016.

Please visit the full document here: <u>https://www.nvao.net/actueel/publicaties/report-achieved-</u> learning-outcomes-recommendations-and-good-practices

Recommendation 1: It is all about learning outcomes - consider intended and achieved learning outcomes as two sides of the same coin

- Keep it simple.
- Implement learning outcomes in the course of regular development and improvement of education.
- Use simple rules of thumb in the definition of learning outcomes (e.g. "start with a verb"); make them student-focused and measurable.
- Use to the language of the teachers and avoid discussions on semantics or methodology.
- Make sure learning outcomes cover the important elements in a programme, but do not try to be too detailed.
- Involve all stakeholders in the formulation of outcomes, both internal teachers and students, as well as external the professional field and prospective employers.
- Make sure that the formats of teaching and the assessment align with the intended learning outcomes.
- Calibrate the difference between learning outcomes at the level of 'short cycle', 'bachelor', and 'master'.
- Learning outcomes at lower levels should be defined on their own terms and not as 'light' versions of those at a higher level.
- Learning outcomes tend to be more detailed for programmes with a strong professional orientation. Allow enough freedom for teachers and for innovation.
- Pay attention to generic, transversal competences, which are overly generic and lack a connection with domain-specific learning outcomes, as this makes them hard to transfer. This also goes for '21-st century skills', which require integration of knowledge and skills from the traditional domains.

Recommendation 2: Use learning outcomes as a tool for developing and improving education, not as a goal in itself

- Learning outcomes should be a 'living' element and shape the formats of curricula, courses, teaching, learning and assessment. Define and implement them in a process of team-based co-creation, not as an administrative obligation.
- Maintain a good balance between making learning outcomes conform to external qualification frameworks and expectations in the professional field and autonomy for teachers and institutions.



Further reading:

Biggs, J.B. & Tang, C. (2007). *Teaching for Quality Learning at University (3rd Edition)*. The Society for Research into Higher Education & Open University Press.

Biggs, J.B. & Tang, C. (2011). *Teaching for quality learning at university: What the student does*. McGraw-Hill Education (UK).

Lokhoff, J., Wegewijs, B., Durkin, K., Wagenaar, R., González, J., Isaacs., A.K., Dona dalle Rose, L.F., Gobbi, M. (Eds.) (2010). *Tuning, Educational structures in Europe: A Guide to Formulating Degree Programme Profiles*. Nuffic/TUNING Association: Bilbao, Groningen and The Hague.

<u>NVAO (2016)</u>. *Assessment frameworks for the higher education accreditation system of the* <u>Netherlands</u>, September 2016.

NVAO (2016). *Report Assessment and Demonstration of Achieved Learning Outcomes: Recommendations and Good Practices*, February 2016.

Toohey, S. (1999). Designing Courses for Universities. Buckingham: Open University Press.

1.3 Teaching and learning activities

1.3.1 How to improve the link between ILOs, PBL core learning principles and teaching activities?

Constructive alignment is a framework with which to realise education in which intended learning outcomes, teaching/learning activities, and assessment are aligned. This implies that when (re-)designing courses choices have to be made regarding these three aspects. This chapter intends to give a short, non-exhaustive overview of different instructional approaches that can be used to facilitate learning and assessment?

Why think about teaching and learning activities (TLAs)?

A TLA is appropriate if it enables students to practice exactly those skills or cognitive processes which they need to achieve the intended learning outcomes. Students will be more motivated as they perceive the activity as meaningful.

The following video, based on J. Biggs Constructive Alignment theory, shows how a teacher can make sure that all types of students learn what the teacher wants them to learn:

https://www.youtube.com/watch?v=iMZA80XpP6Y&feature

Box 1.1 PBL Disclaimer

Problem-based learning is widely embedded in the Maastricht University (UM) teaching model. Problem-based learning at UM relates to four key learning principles (1) constructive, (2) collaborative, (3) self-directed, and (4) contextual learning (Dolmans, 2005). Whereas the PBL-format used to organize the learning process, e.g. the 7-steps, is applied in various ways by various faculties, the key learning principles remain at the core of UM's teaching and learning activities. This project takes into account PBL on the basis of these four key learning principles rather than on the basis of varying teaching formats.



Learning Tasks

At the basis of the learning process lies the learning task. Van der Vleuten defines the learning task as follows:

"A learning task can be anything that leads to learning: a lecture, a practical, a patient encounter, an operation in the hospital operating theatre, a problem-based learning (PBL) tutorial, a project, a learning assignment or self-study. When arranged appropriately, these learning tasks in themselves provide a coherent programme or curriculum constructed in accordance with the principles of instructional design (...)." (Van der Vleuten et al., 2012).

How to connect teaching and learning activities with ILOs and assessment?

A TLA should support the achievement of intended learning outcomes. Whether or not a TLA is suitable depends on the aim and should be evaluated in relation to other TLAs. Please consider the following questions:

- Is the TLA the right method to address the ILO?
- Does the TLA evoke the right cognitive processes?
- Is there sufficient time for students to process the TLA?

1.3.2 Examples of commonly used TLAs at UM

The following examples of commonly used TLAs and related cognitive domains at UM can assist and inspire course –and/or programme coordinators involved in course design.

PBL Tutorial Group Meeting

Cognitive domains

◆ Analysing ◆ Understanding ◆ Remembering ◆ Applying ◆ Evaluating ◆ Creating

The tutorial group is a central element in Problem Based Learning. This is a group of students supervised by a tutor. Each session, the tutorial group is faced with a problem (the task) that challenges them to think about the subject-matter, discuss it with each other and ultimately, through independent study, gain deeper insight into the subject-matter. After independent study, the group reconvenes to discuss the studied matter, using the learning goals based on the prior discussion and apply the studied matter to the problem at hand. The ultimate goal of this reporting session is to gain the most thorough understanding of the matter as possible and to be able to use this knowledge to explain different situations.

Project Work at UM

Cognitive domains

♦ Applying ♦ Analysing ♦ Understanding ♦ Evaluating ♦ Creating

Project work can be seen as a format of problem-based learning or can be part of problem-based learning. Project work can replace an entire course or can be integrated as part of an entire course. In project work students collaborate with fellow students. They are responsible for their progress and final result. If needed, the group can consult a tutor or an expert etc. The consultation can be scheduled or on demand. Guidelines for project work can be very strict. In this case, the final

Constructive Alignment



product of all students is similar. If students can be creative within the boundaries end products can be very different.

The objective of project work varies. Communication within the group can be one of the objectives. The focus can also be on other 21st century skills like leadership, critical thinking, and collaboration. Most of the time, project work has several objectives, in which skills and knowledge are combined. Project work should reflect the professional skills and competencies which students need for their future job.

Students enjoy project work in which *real* people or *real* situations are involved. For example, the project team can act as an advisory team for a real organisation or client, rather than just work on an assignment developed by an academic staff member. Students should get the feeling their work is needed and awarded. Project work, as a final product and/or the process, can be assessed by staff as well as clients. Individual qualities can also be assessed by these assessors, but also by peers.

Box 1.2 Project work – ERD, School of Business and Economics

"In the course 'Supporting Learning @ the Workplace' in the MSc Management of Learning (MoL) students take the role of an (HRD) consultancy team, working for a real company to tackle a specific HRD-related problem or question. Each team is challenged to apply and integrate the knowledge and skills acquired during the previous courses of the MoL programme.

Students work together in a project team of approximately five to six team members, all having their individual qualities. The team (1) identifies, explores, and (re-)formulates the specific problems and questions the organisation (the client) has submitted; (2) analyses them based on literature study and field work, and (3) answer the questions posed with this input.

The assessment is aligned with the programme and course objectives as well as the learning activities. Concretely, two times a week the project teams have the opportunity to have a feedback dialogue with the tutor or, if needed, with another expert in the specific issue they are addressing. The feedback dialogue with the tutor addresses the content and the process of the project work as well as the team interaction process. In addition, the teams are encouraged to have regular feedback dialogues with their client to ensure a high level of sharedness of understanding during the course of the collaboration. With respect to the summative assessment, all project deliverables and the presentation of the project results to the client are assessed by staff as well as clients."



Lecture <u>Cognitive Domains</u> ♦ Understanding ♦ Remembering ♦ Creating

Lectures are an exposition of a given subject delivered before an audience or class, as for the purpose of instruction. In a PBL-setting lectures have an integrative and clarifying role instead of a straightforward transfer of information (see Box 1.3).

Box 1.3 The role of lectures in PBL at Maastricht University

In PBL you can think of lectures having different functions in the wider context of a course. It is helpful to explicitly label the kind of lecture you are looking for when you are designing a course. In principle lectures are a bit of an outsider in PBL since PBL is not a lecture-based system. So in the context of a course you cannot simply use a lecture to transfer knowledge about a particular topic, after all even though the theme of a course is clear the learning goals and most of the literature they read are the results of students' discussion on the topic. Lectures do not directly address answers to learning goals (how can they if the learning goals are not clear when a lecture is prepared?) which is what students are looking for in literature and other ways of acquiring knowledge. So for example issues in philosophy of science closely match the events that are happening in science at that time. Since preparation time is limited for students and some issues are complex you can choose to have the tasks in a course like philosophy of science (and possibly suggested literature) deal with philosophical issues. The lectures can then provide illustrations and cases that facilitate understanding for students because they acquire information on the origin and context of the issues. Another example of a series of lectures that can be very helpful for students is that you request the lecturers to provide more in depth information on issues in an introductory level course so that the lectures demonstrate to students some of the issues and topics they will encounter later in studying a particular topic. Especially in the context of an open curriculum where students make their own choices about what to study next this can be helpful. In other contexts it can function as an appetizer or motivator to stick with a topic. Lectures where complex issues are explained can also be very useful (even in a PBL context). Some issues are conceptually difficult and may need additional explanation or the possibility for students to interact with someone who masters the material. In that case the lecture serves to explain.

Digital instructional content Cognitive domains

Understanding

Digital instructional content should support learning and should be just-enough, just in-time. The objective of digital instructional content is to help students in their learning. For example, video clips and animations could deepen knowledge and explaining complex issues. It applies also to other online content. Staff can offer online content only when necessary.

Digital instructional content can also change the format of your education, like into the format *'flipped classroom'*. Staff can ask students to prepare (online) content and in the classroom the



knowledge could be applied, like in (panel) discussions or in role plays. Click here for an example animation by Bas Verhage, Epidemiology: <u>https://vimeo.com/46161438</u>

Practicals

Cognitive domains

♦ Applying ♦ Understanding ♦ Evaluating ♦ Creating

Practicals come in many different shapes and forms, which all share the core feature that they are aimed at teaching practical professional skills. Student research projects, specific skills trainings, simulations and workshops are the most common formats. In practicals, acquired knowledge is applied in different settings allowing the students to further hone their scientific competences (e.g., working in a lab, planning experiments, designing new tools or methods, analyzing data, and scientific writing) and enabling competences (e.g., flexibility, creativity, planning, organizing and, communicating with interested peers and stakeholders, and presenting results to professional and lay audiences).

Box 1.4 Practical example: Simulation

Simulations are intended to be realistic and representative of problems and issues encountered in the real world. This includes cases and role play (see example below).

Simulation at UM: FPN Practical Psychiatric Anamnesis

In the 2nd year of the Bachelor Psychology, students are trained to have a professional conversation with a patient who is suffering from a mental illness. In their professional life the range of patients and their symptoms may vary significantly. They may deal with manic patients referred by their family, patients who are hallucinating, depressed or confused patients, just to name a few. To better prepare students for such conversations in real life, they practice with student actors who play the role of different types of patients (combined with a preparation lecture, instruction materials and literature). Students are then asked to structure the conversation in a way that important topics are covered and the patient feels comfortable enough to share information. The ultimate goal is to give a correct diagnosis and to report on this. The practical consists of four 3-hour meetings lead by an experienced trainer. Every meeting, students have the opportunity to apply the acquired techniques to simulated patients with various psychiatric disorders.

Moreover, video is used to record all these conversations the students have with their simulated patients. An advantage of video is that, rather than taking notes, a student can fully concentrate on the conversation. Afterwards you can watch the patients' answers again and evaluate your own and others' verbal and non-verbal behavior. Although students are nervous before the conversation, they indicate that it is one of the most valuable parts of their course. The focus of the simulated patient contact is on training the following skills: Psychological conversation techniques, ability to structurally execute a psychiatric anamnestic conversation, professional client relation, diagnosing, professional language, written reports. In this practical 'Psychiatric Anamnesis', students use the knowledge (on diagnostics, disorders, symptoms, treatments) from the 2nd year course 'Psychopathology', and build further on the psychological conversation skills achieved in the first year.



Workshop Cognitive Domains

♦ Applying ♦ Understanding ♦ Evaluating ♦ Creating

The workshop is a useful educational format for didactic scenarios, which aims to teach practical skills, simulate professional working environment and activate/facilitate master-apprentice models of learning. Typically, knowledge transfer is secondary, while application of knowledge and the formation of (professional) skills and attitudes are placed central stage. This is why workshops are a typical format in the 2nd and 3rd year of BA degree programmes and a very common educational choice at MA level. In terms of intended learning outcomes, the workshop is geared toward application, understanding, evaluating and creation (according to the taxonomy of Bloom). It is possible, however, that the workshop reveals knowledge gaps from the previous educational stages, and is therefore a useful diagnostic tool that might lead to further (remedial) learning. Usually, assessment is accomplished on the basis of professional products, which are ideally graded by experts from the field. It is not excluded, however, at the end of the workshop to require an academic paper (reflective essay or report) next to the professional deliverables.

1.3.3. CoAl and the impact on TLAs

The following testimonial shows how a constructive alignment approach to teaching and learning activities increases the coherence between ILOs and teaching methods.

Box 1.5 Testimonial

Mark Spigt, Programme Coordinator at FHML, describes why and how he changed education in his educational programme to make sure it is constructively aligned:

"Constructive alignment changed the way I looked at the bachelor programme that I am coordinating; Biology and Health. Hopefully, the following example will make it clear how the theory changed the way we redesigned the curriculum.

Together with the course coordinators we determined the final competences (ILOs) for our curriculum, so "what should the students be able to do at the end of the curriculum". For example, we decided that our students should be able: "To design and carry out an experiment accurately, so that the results can be reproduced." In our 'old' curriculum there were several laboratory practicals/trainings. During these practicals, the students performed different measurements and wrote reports about these small experiments. However, these practicals were instructed through a clear manual that described which tests the students should perform and how they should do it. One could call this "cookery book practicals". But we figured that if we want to deliver students that can function independently in a laboratory, the students need to be able to make decisions on which tests to use, they need to carry out the measurements perfectly, they need to analyse the outcomes, and they need to critically reflect on the whole process to see if any issues or mistakes could be related to the outcomes. So we reckoned that if these 'skills' are actually desired, we first needed to get rid of the cookery book manuals. However, we could not expect a student to show independent experiment skills straight away, so we redesigned the whole series of practicals so that each element of 'experimenting' would be addressed over the course of practicals. For example, they increasingly had to make their own choices in choosing the measurement tools or the statistical models for the



analyses. Now we have a structured plan for the practicals and it is clear which ILOs are covered in each practical, so that in the end the student can function independently in a laboratory. So making the final ILOs very clear, automatically made us realise how to change the practicals."

Further reading:

Van der Vleuten, C. P. M., Schuwirth, L. W. T., Driessen, E. W., Dijkstra, J., Tigelaar, D., Baartman, L. K. J., & van Tartwijk, J. (2012). *A model for programmatic assessment fit for purpose*. Medical Teacher, 34(3), 205-214.

1.4 Assessment and CoAl on course level

The choice of assessment method in a course will to a large extent determine if and how students engage in teaching and learning activities. Any teacher will probably recognize questions such as "Is this part of the exam?"

Initially this sounds as a negative element. However, it can be beneficial if used in a constructively aligned manner. Hence, the assessment method (a) stimulates to participate in the teaching and learning activities, and (b) measures to what extent the intended learning outcomes are achieved.

Constructively aligned assessment requires at least three quality criteria:

- 1. Validity;
- 2. Reliability;
- 3. Transparency.

These quality criteria are in line with the criteria that the <u>Nederlands-Vlaamse Accreditatie Orgaan</u> (<u>NVAO</u>) states in its <u>framework for evaluating assessment</u>.

These three general assessment criteria are further explained in Chapter 2.5 Assessment and CoAl on Programme Level.

1.4.1 Assessment on course level: why, what, how, when and who?

Why do (or should) you assess?

There are numerous reasons why we choose to assess students. The institutional reasons for assessment are outlined in the programme and institutional level sections of this handbook. This chapter addresses why one should assess on course level.

At a course level reasons for assessment can include:

- gleaning diagnostic information
- benchmarking purposes
- evidence of progress
- provide students with feedback (to encourage and adapt future learning)
- evaluation of teaching (and for adaptation of teaching practice)



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

Assessment OF learning

Instructors use evidence of student learning to make judgements on student achievement against goals and standards.

Assessment AS learning

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

Assessment FOR learning

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

More information on Assessment OF, AS and FOR learning can be found here:

• <u>Rethinking classroom assessment with purpose in mind: assessment for learning,</u> assessment as learning, assessment of learning. ISBN 0-7711-3478-9

What do you assess?

It is prudent to ask yourself what exactly you wish to examine. In the chapter on ILOs at a course level you will have learnt how learning objectives for your courses can be created. It is these learning outcomes (or at least some of these) that you will be assessing to see if students are able to demonstrate that the ILOs have been achieved. Also think about: Is this compatible with our actions during the course?

What is the best way to examine this? How do you assess?

Consider which forms of examination and questions are most compatible with the objective of the examination and the content of the course. Bloom's taxonomy of learning objectives has already been referred to above in the course level ILO chapter. This handbook offers a tool for educators to select a broad range of learning objectives for their courses, thus providing a more holistic approach to their teaching. Bloom's taxonomy also provides a wide range of suggested assessment tools and methods for each of the levels of complexity described in the cognitive, affective and psychomotor domains outlined.

Don't forget:

- match the assessment method to the outcome and not vice-versa;
- different components of the assessment method(s) together determine what is assessed;
- one size does not fit all some methods work well for one course but not others;
- Make conscious trade-offs between different requirements, an examination is never perfect; but a consideration of factors and elements that play a role;
- take a continuous improvement approach, allow for ongoing feedback.

An overview of commonly used assessment methods at UM can be found below in chapter 1.5

When do you assess

Will the examination be held at the end of the course or also during the course as to encourage the students to make greater efforts during their studies? Within some UM departments there is a



requirement to assess students a minimum number of times during one block/course. This has the advantages of offering continual learning from assessment (in the case of homework or other formative means of assessment). This also spreads the workload for the students and thus reduces the pressure that may be otherwise experienced in having one final high stakes assessment at the end of a course. Finally, it provides multiple opportunities to assess students and therefore a range of assessment methods within one course can be employed. This final motivation helps to cater for students with different preferences of learning (and therefore performance) styles.

In other UM departments a maximum number of assessment points is specified to ensure the workload and stress placed upon the students is kept within a reasonable limit (and thus proportional to the ECTS of a specific course).

Who is involved and who does the assessing?

At the course level, the appointed examiner is responsible for the course assessment. The course coordinator can make the assessment. However, students can also be involved in the assessment process through for example peer-assessment and self-assessment.

1.4.2 Inventory of assessment methods in the UM context

Online assessment / E-assessment

A compulsory first year mathematics course has a large number of students from a wide range of different backgrounds. The aim of the course is to provide all students with the necessary foundational maths skills to apply to their future studies.

In order to stimulate learning throughout the course, online assessment is employed in the form of fortnightly homework assignments. The online assessment tool used also grades the numerical and formulaic answers from the students automatically and provides students with instant feedback. As students are given multiple attempts per question, the feedback allows them to review their own learning, adapt their methods and try again when necessary. This way the assessment is used formatively although a nominal grade is still awarded to encourage participation (7 % per homework assignment).

Information from the grades and attempts from students are also used for the tutor to identify areas of weakness to concentrate on during tutorials. Online assessment questions are similar in style to the final, high-stakes exam.

The online assessment is used to assess the following types of ILOs:

- Convert between complex numbers of different forms;
- Identify which rules are functions and explain their reasoning;
- Differentiate and integrate functions of single and multiple variables using chain, product, quotient rules, and substitution, and by parts, respectively;
- Solving first and second order linear differential equations.

Oral assessment

In a third year (advanced) electronics laboratory practical course, the students must build and test



various electronic circuits. In order to check that the students understand what they have built and how it functions, they are asked to undergo an oral examination where they are asked about the components and the functioning of their devices.

The goals of the practical are not just for the students to be able to read schematics and correctly build the relevant circuits, but also to gain an understanding of how the components individually function, and how they work together to provide the required functionality.

Oral assessment must have more than one invigilator and as each student is examined individually, some logistical planning is required to ensure that students do not have contact with each other between assessments. Set questions are asked to each student and a rubric is used for the grading. The oral assessment is worth a total of 30 % of the student's course grade.

In addition to oral assessment, the students are also graded on individual experimental proficiency (10%) and on lab reports (as a pair) (60%).

The oral assessment is used to assess the following types of ILOs:

- Apply Boolean theory to circuits built from logic gates to calculate and explain outcomes;
- Read and use digital and analogue circuit diagrams to build and then describe the functioning of various devices including clock and counter systems, a heart rate monitor and a pacemaker;
- Identify the different components and their functions that are used in a given circuit;
- Measure, describe and explain the signals generated from a circuit using an oscilloscope;
- Work with a commercially available medical device with nothing more than a manual to summarize the workings and the results from a measured EMG.

Peer review

In a four-week block, students must work in groups between 3 and 8 to complete an experimental research project. During this time they have to investigate a certain topic (specific to each group), write and submit a group project report, and give a poster or PowerPoint presentation. After this the students receive an individual performance grade from their supervisor and are also asked to give each other a peer review grade and feedback per taining to this score.

In this particular case the students are asked to review each other's performance in the following areas:

- Communication;
- Academic input;
- Practical work contribution;
- Reporting.

Reporting is worth half of the weighting of the other topics since the report itself also receives a grade and this also reflects the performance of the students in this area.

The grades that the students award each other are kept anonymous (they are submitted online using qualtrics.com) and each individual student receives only an average grade. However, all students are required to give individual feedback to each other during a group meeting.



Projects are run at a first year, second year and third year bachelor's level and the ratio of the grades between supervisor and peer-review grades changes depending on the level of the group. At first the supervisor grade is worth 35% and the peer-review 15 %, then this changes to 25%: 25% and finally 15%: 35% in a third-year project. The report and presentation together make up the other 50 % of the course grade.

Peer review is used to assess the following ILOs:

- Communicate effectively within a project team who have set goals and deadlines to achieve;
- Distribute and agree on workload, tasks and responsibilities within a team;
- Critically reflect on their team's overall performance and that of the individuals within the team;
- Identify the contribution of each teammate and demonstrate their own abilities within a team environment;
- Provide constructive (and justified) feedback to individuals within their team (both positive and negative);
- Identify areas for self -and peer-improvement.

Research paper

A first year (MSc), 8 week course provides students with in-depth knowledge of central driving forces, turning points, and features in the history of European integration. The students' knowledge of conceptual issues and empirical insights related to the history of European integration will be assessed by way of a research paper. The paper is an individual output by the student and it combines empirical insights with more conceptual and theoretical reflections.

A complementary form of assessment is the oral presentation given at one of the workshops. This is done to allow candidates to work on their presentation skills (i.e. presentation and communication of their research plan, methods, and hypotheses).

The grade for the research project counts as the final grade for the course. The presentation will count for 20% of the grade; the written paper for the remaining 80%. Grading follows the rules of the Dutch system used at Maastricht University with a range of 1 to 10. The lowest passing grade is 6.0.

The research paper of 7,000-8,000 words will be submitted online via SafeAssign and sent by email to the course coordinators. The paper will be graded in terms of its overall coherence and the strength of the arguments presented and the analysis thereof (empirical and theoretical backing of the argument).

The research paper is used to assess the following types of ILOs:

- Have knowledge and understanding of the historical evolution of the European Union;
- Are able to place these developments in the more global historical context and longer term perspective;
- Are able to compare the history of the EU to other forms of international cooperation and integration;



- Are able to find historical source material and can critically assess it, and use it for their own writings;
- Can conduct their research informed by a broad range of theories and methods from history and neighbouring disciplines;
- Are able to write a paper on the history of European integration and its relevance for today.

Interview diary

A first year (MSc), 4-week, skills training course on qualitative interviewing provides students with an in-depth insight into the strengths and weaknesses of different types of academic interviews. It furthermore provides students a hands-on training in conducting interviews. Students will have to conduct an interview with a policy official and write a report on this interview. Students will be formally assessed on the basis of this report, their interview diary (100%) and it will be graded numerically [1-10]. The report (interview diary) will discuss the preparation of the interview, selection of the interviewee and response rate, a transcript of the interview, and a concluding reflection.

It is difficult to have an exact word length for the interview diary, since students need to include the e-mail conversation. Excluding this conversation, the interview diary counts 3000-4500 words. Submission of the interview diary via Safe Assignment. Submission of the transcript via email to the course coordinator.

The interview diary is used to assess the following types of ILOs:

- Understand the strengths and weaknesses of qualitative interviewing as a research method;
- Learn how to conduct a qualitative interview;
- Learn how to transcribe a qualitative interview;
- Learn how to use data from qualitative interviews.

Video

A first year Master course aims at providing students with the knowledge to better understand and critically reflect on contemporary European civil society. Students are asked to submit a group assignment - a recorded BBC-style documentary (40%) and an individual assignment - a Policy Brief (60%) for assessment (see other example), which together make up the final grade for the course.

The BBC-style documentary is a 10-15min long video recording in which smaller groups of students (4-6 students per group) present an analysis of either an EU mechanism of participatory democracy or a social movement in Europe. In week 2, students split into two groups to prepare the documentaries. The documentaries will be presented to the tutor and course-coordinator.

Students know what a BBC style documentary looks like and can easily 'imitate' the set-up and structure of the assignment. This in turn helps them to 'adopt' their communication to a non-academic audience and to show and apply their knowledge of the subject matter in an effective manner. BBC style documentaries also present different points of view and case studies, which help students to compare, contrast and critically reflect upon civil society in the context of EU policy-making (e.g. by featuring different expert options in their 'documentary', or discussing different



examples of EU instruments aiming at civil society involvement). In addition, planning and putting together a documentary is a lively, interactive and multi-skills assignment, requiring students to reach out to 'real' experts and 'real people', recording in different locations outside the university, which makes this assignment a unique and exciting learning experience.

The BBC-style documentary and Policy brief are used to assess the following types of ILOs:

- Acquire advanced knowledge of the role of civil society in EU policy and in the wider historical, political and social processes of European integration;
- Choose and apply appropriate theories and concepts of civil society in function of answering a research question;
- Present a coherent and well-argued empirical analysis of a case study, applying advanced knowledge of civil society, and relating theoretical propositions to empirical evidence;
- Derive meaningful conclusions from the empirical analysis: formulate balanced and informed judgments from the analysis in light of the research question;
- Develop the advanced capacity to critically reflect on civil society in the context of relationships of power, sources of influence, modes of governance and cultural specificities in EU policy-making and the wider process of European integration;
- Develop the enhanced skill of presenting research to a non-academic audience;
- Demonstrating the ability to function effectively in collective problem-solving processes: contribution to collective process of developing the video-recordings;
- Dealing with new challenges (how to do a video recording);
- Dealing with time constraints;
- Ability to respond to feedback (workshops and feedback on draft policy briefs).

Policy brief

A first year Master course aims at providing students with the knowledge to better understand and critically reflect on contemporary European civil society. Students are asked to submit a group assignment - a recorded BBC-style documentary (40%) and an individual assignment - a Policy Brief (60%) for assessment, which together make up the final grade for the course.

The policy brief should contain all the relevant elements (given to the student via course book and Student Portal), including an executive summary, description of the policy problem, a discussion of policy options and policy recommendations (students also receive links to best practice examples on the EleUM pages of the course). Submission of the Policy Brief is done via Safe Assign.

The Policy brief and BBC-style documentary are used to assess the following types of ILOs:

- Acquire advanced knowledge of the role of civil society in EU policy and in the wider historical, political and social processes of European integration;
- Choose and apply appropriate theories and concepts of civil society in function of answering a research question; Present a coherent and well-argued empirical analysis of a case study, applying advanced knowledge of civil society, and relating theoretical propositions to empirical evidence;
- Derive meaningful conclusions from the empirical analysis: formulate balanced and informed judgments from the analysis in light of the research question;



- Develop the advanced capacity to critically reflect on civil society in the context of relationships of power, sources of influence, modes of governance and cultural specificities in EU policy-making and the wider process of European integration;
- Develop the enhanced skill of presenting research to a non-academic audience;
- Demonstrating the ability to function effectively in collective problem-solving processes: contribution to collective process of developing the video-recordings;
- Dealing with new challenges (how to do a video recording);
- Dealing with time constraints;
- Ability to respond to feedback (workshops and feedback on draft policy briefs).

Quiz

A Master course has the objective to provide participants with insights into the polity and politics of the European Union in order to create a common point of departure for all. Moreover the aim is to lay the foundations with regard to professional skills such as presentation skills and to academic skills such as academic writing skills. Therefore, this course has a 'quiz' in week 3 of the 8-week course that counts for 10% of the final grade. This will encourage students to make it part of their daily routine to become acquainted with current affairs and to follow political and policy developments. The quiz will contain 20 multiple choice questions and will cover basic facts or current events in the European Union.

The quiz is used to assess the following types of ILOs:

• Will demonstrate knowledge and understanding relating to aspects of the EU policy and EU politics.

On the one hand students will thus have an insight how different processes of EU integration impact on how the EU institutions work and have an insight into the key features of EU policies and EU policy-making.

Combination exam (multiple-choice questions and open questions)

In a second year Bachelor's course the purpose is to help students understand the basics of international trade and finance and the effects of various international economic policies on domestic and world welfare. The course is divided into two parts: international trade relations and international monetary relations.

The course requirements are made up of an exam and a group presentation. The written examination is of a multiple-choice type (50 questions) combined with two open-ended questions from a menu of four questions, from which one question has to be answered for International Trade and the other from International Finance. This will make up 3/4 or 75 percent of the final grade. The other 1/4 or 25 percent will come from a group presentation which intends to apply the theories students are going to learn from this course as well as from a parallel course.

The written combination exam is used to assess the following types of ILOs:

• to introduce the basic economic concepts and principles in international trade and finance which was not taken up in the Micro-Macroeconomics course of the first year;



- to apply the concepts and principles of international economics in real-life developments through a group project;
- to inculcate in students the foundations of economic analysis that are required to understand the other economics course in year 2 of the programme.

1.4.3 Final recommendations on assessment

- The formats of assessment should be congruent with the intended learning outcomes and with the formats of teaching and learning;
- The development of student-centred assessment should follow the transition to student-centred learning and avoid teacher-oriented approaches which assess the curriculum rather than the learning by the students;
- There is much in a study programme that cannot be easily assessed, such as attitudes. Take care that the emphasis on competences or knowledge leaves enough room for properly assessing other aspects which have great value for students and for society;
- Structure the assessment system, and make sure that methods and criteria are valid. Do not underestimate the challenge this can pose;
- Using external examiners is a useful way of enhancing the validity of assessments, and should be implemented more generally.

Chapter 2. Programme (re-)design and Constructive Alignment

2.1 Programme (re-)design and CoAl: Introduction

The previous chapters introduced the principles of CoAl and were aimed at systematically presenting each edge of the CoAl triangle: the intended learning outcomes, the teaching and learning activities and the assessment methods. These three notions are typically used at course level (see Figure 2.1).



Figure 2.1. Constructive Alignment at course level.

When it comes to the entire educational programme, the principles of alignment are essentially the same, yet the vocabulary changes. On a programme level we distinguish final qualifications (FQs) (or programme ILOs), curriculum of educational activities and assessment programme (also often called assessment plan) as illustrated on Figure 2.2.





Figure 2.2. Constructive Alignment at programme level.

Next to the adaptation of the concepts used, the alignment project at programme level is a much more complex one because of the need to ensure coherence and progressive build-up of the envisioned competences (knowledge, skills and attitudes) from the start of programme to the stage of graduation (completion of the final work). In other words, next to the adaptation of the composing units (course level) constructive alignment needs to take place also for the entire whole (programme level) - see Figure 2.3.



Figure 2.3. Constructive Alignment at course and at programme level.



This chapter discusses the steps involved in this complex operation by: firstly, outlining the general roadmap in the formulation of the final qualifications, the curriculum of educational activities and the assessment programme; and subsequently discussing the difference between designing a new educational programme and re-designing an existing educational programme, whereby certain reflections and tips are provided regarding gaining support for the CoAl project among the staff members and steering the process of management of change.

2.2 Programme (re-)design and CoAI: Theory

Ideally, the principles of CoAl should be followed from the very beginning in the process of educational programme design and entail 3 basic steps¹ (see Figure 2.4):

- 1. Formulation of the final qualifications (FQs) i.e. the ILOs at programme level
- 2. Formulation of the educational activities in a curriculum
- 3. Formulation of the assessment programme (also called assessment plan)

The choices in the three steps are sequential, but are interrelated and condition each other i.e. subsequent adaptation on one edge of the triangle leads to adaptation in the other two. This is why the intermediary step of course development is not only an *implementation step* (where the choices taken at step 2 and step 3 will be operationalised at course level), but also is a *control step*, and should include reflection whether the initial intentions are realised fully during the development of the curriculum and of the assessment programme.

¹ Here it should be noted that these 3 basic steps are also followed in the process of external quality assurance: the current NVAO re-accreditation framework aims to verify namely the Intended learning Outcomes (Standard 1), the Learning environment (Standard 2) and the Achieved learning outcomes (i.e. assessment of regular exams and final works, as well as the internal quality assurance system -Standards 3 and 4). In other words, following the principles of constructive alignment in the process of design of the educational programmes automatically prepares the programme for its re-accreditation. For a more detailed discussion on this point see chapter 5.





Figure 2.4. Educational programme design following the CoAl principles.

Step 1: Formulation of the final qualifications (FQs) i.e. the ILOs at programme level

The definition of Final Qualifications (FQs) is based on the vision of the educational institution on the demand of the labour market for professionals with a particular expertise, the general economic and social context and also the expertise developed within the educational institution in terms of research and training capacities. Moreover, at this stage a decision needs to be taken as to the admission requirements and the entry level of the inflowing students (e.g. required prior qualifications and competences). These considerations (see Figure 2.5) typically are done within the curriculum development working groups (curriculum committee) and should fit the larger educational vision and portfolio of expertise within the faculties i.e. the Faculty and UM strategic vision and mission.



Figure 2.5. Formulation of the Final qualifications and programme entry requirements.



Step 2: Formulation of the curriculum of educational activities

At this step the path through which the educational goals is charted, i.e., the FQs will be achieved. Essentially, this is a process of mapping out in the timespan of the educational programme (typically 3 years for a BA degree, 1 year for a regular MA degree and 2 years for a Research Master degree) the necessary teaching and learning activities and didactic choices. In practice one needs to define the learning trajectories (or learning lines/'leerlijnen') and plot them across the educational units (courses of e.g., 4 or 8 weeks) as illustrated in Figure 2.6 below:



Figure 2.6. Formulation of the curriculum of educational activities.

Here is the place to give meaning and shape to the PBL didactics within the educational programme, but also to consider whether all FQs can be reached solely based on the PBL method or other educational activities are necessary as well (e.g., training of research methods or particular professional skills typically are trained via workshops or simulations of the professional practice). Moreover, this is the step where the process of acquisition of the competence is defined as well as the expected end-level according to the adopted taxonomy of learning outcomes. The decision about the level of the learning outcome (e.g. understanding, application, analysis, creation) usually narrows down the choice of assessment methods during the next step. Figure 2.7 displays the learning line "Statistical training" within a MA programme at FASoS, whereby the final qualification is defined at the highest (creation) level.




Figure 2.7. Learning line Statistical training for a one-year MA programme (FASoS).

As displayed in Figure 2.7, the learning trajectory starts in course 1 with basic knowledge and understanding, as well as with application on an existing dataset. In course 3 the students are trained to design surveys and collect data (application skills). In course 5 they acquire the understanding how to process and analyse the collected survey data, and via the final work they are tested on the highest level (creation skills), namely to design a survey, collect data via questionnaires, process and analyse the data. In a similar way, all learning lines need to be designed and mapped out for each final qualification that is trained progressively in several courses of the programme.

Step 3: Formulation of the assessment programme

At this step a decision is expected about the path through which the progressive achievement of the learning goals and of the FQs will be tracked and formally assessed. It is expected that this path assures sufficiently precise monitoring of the students' learning curve toward the final qualifications. The set of exams and assessments should be valid, reliable and transparent (for a definition of these terms, see chapter 2.5). Moreover, it is expected that the assessment programme incorporates a variety of the assessment formats and ideally includes as many as feasible authentic for the profession deliverables.

The decision how to compose and organize the assessment programme heavily depends on the choices of learning outcomes (especially the expected end-level), as well as the didactic vision and capacity to grade of the staff members. For example, higher levels of learning outcomes involve a certain degree of socialization in the professional behaviour i.e. are trained longer and require more moments of formative assessment (which has a steering function). Moreover, they are tested via more complex deliverables such as research papers, professional reports, or 'products/services' which are characteristic to the job for which the educational programme prepares (e.g. advisory/consultancy report, design advice, medical/psychological examination, etc). Conversely, learning outcomes which do not involve that much analytical skills and only cognitive retention can



easily be tested with multiple-choice exams. Figure 2.8 illustrates this point by displaying the assessment format choices related to the example above - the learning line "Statistical training" within a MA programme at FASoS. The final qualification is defined at the highest (creation) level, but prior to that the student undergoes a test of knowledge and application via a multiple-choice test in course 1. Then, in course 3, the student drafts a research assignment where the composition of the survey questionnaire is explained and justified (test at the level of Analysis). Consequently, a reflective report/paper is required in course 5 to test the capacity of the student drafts the final MA thesis, which includes all steps from operationalization of the variables, through the development of an own questionnaire, dataset, and the analysis thereof (this is the ultimate competence acquisition attainment defined at the level of Creation).



Figure 2.8. Assessment sequence in the examination of a learning line Statistical training (FASoS).

Longitudinal development of ILOs and assessment

Based on the '1 on 1-development' of ILOs, courses and assessment in the text above, the longitudinal development of ILOs should be taken into account. There is more complexity and development possible with ILOs that are addressed in multiple courses. Similarly, a test can assess multiple ILOs. Figure 2.9 shows the effect of the longitudinal integration of ILOs/teaching and learning activities/assessment in a curriculum.







2.3 Programme (re-)design: practical instructions

The steps charted in the previous section, concern designing an educational programme from scratch. It is possible, however, to aim at aligning an existing programme to the CoAL principles. Under this scenario, while the steps are essentially the same, much more preparatory work needs to be done e.g. through the study of the current courses and their ILOs, adjustment of the FQs, a good overview of the existing learning trajectories, and/or inventory and development of missing learning trajectories. Moreover, the re-design operation is much more complex than the direct design because a management of change trajectory is necessary.

If the educational programme already exists, a potential revision will affect existing (entrenched) interests and stakes behind the current curriculum. These need to be taken into account, and carefully managed toward the new and desired version of the curriculum. But first of all, you need to gain support and cooperation of the stakeholders involved in the (re-)design. That's why the first part of this section offers recommendations on how to get this process started. Subsequently, chapter 2.3.1 provides examples from curriculum (re-)design processes at UM. The ensuing chapter 4 & 5 will discuss how to maintain what was achieved, and how to warrant the CoAl in a sustainable manner.

2.3.1 How to get started with curriculum (re-)design along the CoAl principles?

How to re-design a programme and manage change

Constructive alignment requires a particular way of thinking about higher education. While its principles are quite simple, it is often not easy to achieve constructive

Box 2.1 Team Building Process

At FASoS the team-building aspect of the CoAl workshops were considered as one of the positive yet unexpected effects of the project. The workshops allow senior and junior staff to sit together and discuss the 'early years' and the evolution of the educational programme, to rethink the strategic direction and the overarching vision, to synchronise watches (see also chapter 4.4.1 to learn more about organising CoAl workshops).





alignment in an existing programme. Existing programmes often do not have the luxury of starting fresh. They already have a history and there might be entrenched interests of stakeholders. Change will only succeed if the key stakeholders understand the core ideas of CoAl and regard them as fair and useful. This means that achieving constructive alignment, and maintaining it in a curriculum, is a team effort. The process of redesign and implementation is thus as much a team building process (see Box 2.1) as an educational innovation/curriculum redesign process. This paragraph aims to provide some recommendations on how to start the constructive alignment process when redesigning a programme in such a way that it is not a chore, but a mind-set that motivates staff to guard and improve the quality of education as a team.

There is no prescribed best way to start the change process. You can find suitable instruments of change in sections concerning internal audits, staff development and external advisory board.

Recommendation 1: Start small, less is more

It is imperative to take it slow in the beginning: Firstly, because you need time and some experience to optimize the process to be able to convince others, and secondly, because 'infecting the masses' is a gradual process. First, you need some early adopters, who understand that at first things can be a bit messy, but are nevertheless enthusiastic and persevere. This 'coalition of the willing' will be your greatest asset. Their first experiences will give you the opportunity to share successful experiences and to be transparent about improvements you made to the system. After you have made it work in one or a small number of courses or programmes (e.g. one BSc and one MSc) you can gradually increase the number of programmes you include. Similarly, it might be wise to limit the number of ILOs. A common mistake is the impression that course coordinators have to cover every objective in every course. Keep it lean, make sure there's as little bureaucracy as you can afford, as this is often perceived as a sign of repression rather than an invitation for an open discussion. In this context, it might be recommendable to get the paperwork done by the educational policy advisors, and to let the coordinators just discuss openly, and agree on the big picture (main ILOs, teaching methods, assessment formats). In practice this will mean that the workshops are attended by educational advisors who after the workshop translate the discussion into tables, curriculum maps, etc. This will facilitate the coordinators, but will also get the right content on paper (because the educational advisors are experts in the formulation of ILOs and choice of TLAs/assessment methods).

Recommendation 2: Communication is crucial

People tend to be distrustful of new tasks and even more so when it comes with certain rules or a bit of bureaucracy. For this reason it is important to make sure your communication is not solely about what staff has to do (or else!), but about how this is beneficial for them:

- Teachers get the means to see whether their students are learning what they are supposed to be learning (validity).
- It makes courses and programmes more efficient because teachers can focus on teaching the topics and skills you (as a programme /course coordinator) think is important, while other course coordinators can address other topics/competences.
- The focus on intrinsic quality and organisation of goals, instruction and assessment means that quality of education is not solely defined by students' perceptions from surveys.
- It is easier to explain the purpose of a constructively aligned course to students, which helps recruiting motivated students to join the course or programme.



- The courses remain up-to-date with regard to developments regarding the whole programme.
- The course/programme is safeguarding its fundamental principles and quality standards because the paperwork prepared in the process of implementation of the CoAl project can be reviewed by internal or external quality assurance committees in order to verify the quality of the educational process offered.

A personal approach usually works best: talk with people before you start sending emails which can be misinterpreted. Make sure the staff knows that whatever challenges you find along the way, you will solve them together.

Recommendation 3: Always keep the end-goal in mind The reason for implementing CoAl is to improve or maintain the quality of education. All processes are subservient to this one goal. Also, the system(s) you implement to measure constructive alignment can never become more important than student learning. This is especially important because different education programmes can require a different approach. If something doesn't work, change it.

Box 2.2 Practical tip

The sentence "we have to do this for accreditation" is not a motivating justification for doing CoAl. It is true, however, that accreditation is one of the things that becomes less of a hassle if you explicitly organise the programme along the lines of constructive alignment. For more information on this topic see Chapter 5 on External Quality Assurance

2.3.2 Formulating ILOs on a programme level: Define relevant frameworks

According to Biggs (2011), ILOs can be formulated at three levels, being:

- 1. <u>The institutional level</u>: what are graduates of Maastricht University able to do?
- 2. The programme level: what are students of bachelor X, or master Y able to do?
- 3. <u>The course level</u>: what are students after 8-weeks course x able to do?

Before you start formulating or redesigning your programme ILOs, you need an overview of the requirements your programme has to meet. These requirements consist of internal aspects – the institutional level as described above – and external aspects. For our UM programmes, external aspects consists of the Dublin descriptors, European and national qualification frameworks (Lokhoff et al., 2010). The requirements of the NVAO assessment framework for higher education in the Netherlands (NVAO, 2016) are defined in Box 2.3.

Box 2.3 Standard 1 of the NVAO assessment framework for higher education in the Netherlands²

The intended learning outcomes of the programme have been concretised with regard to content, level and orientation; they meet international requirements.

Explanation: As for level and orientation (Bachelor's or Master's; professional or academic), the intended learning outcomes fit into the Dutch qualifications framework. In addition, they tie in with the international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the programme. Insofar as is applicable, the intended learning outcomes are in accordance with relevant legislation and regulations.

Consequently, a first step in defining ILOs is to determine the relevant frameworks for your particular study programme. While some frameworks are relevant to all programmes at UM (Dublin descriptors), other frameworks are specific for the particular professional field and/or discipline of the programme. Moreover, each institute or faculty can put its specific emphasis. As argued by Biggs & Tang (2007), programme ILOs need to reconcile the graduate attributes (institutional level) with the aims of the programme in that particular study field. For example, the frameworks and attributes that the UM Bachelor Psychology needs to take into account when designing its programme ILOs are described in Table 2.1.

Criteria	Framework
Criteria set by the Dublin descriptors, Qualification	European reference framework regarding the level of
Framework for the European Higher Education Area	a Bachelor programme
(EHEA)	
Criteria set by the National Qualifications Framework	National reference framework regarding the level of a
The Netherlands (NQFT)	Bachelor programme
Europsy criteria set by the European Federation of	European content and domain-specific reference
Psychologists' Associations (EFPA)	framework
Criteria set by the Dutch cluster of Psychology (in	National domain-specific reference framework
Dutch: 'Kamer Psychologie')	
Criteria set by the Dutch National Institute for	National domain-specific reference framework
Psychologists (NIP)	
Criteria set by the Dutch vLOGO regarding post-	National domain-specific reference framework
academic education (Gezondheidszorgpsycholoog,	
Klinisch psycholoog, Psychotherapeut)	
Criteria set by the German "Landesprüfungsamt für	National domain-specific reference framework in

Table 2.1. List of relevant frameworks for the Bachelor's programme Psychology at UM.

² Here it should be noted that 3 basic steps are followed in the process of external quality assurance: the current NVAO re-accreditation framework aims to verify namely the Intended learning outcomes (Standard 1), the Learning environment (Standard 2) and the Achieved learning outcomes (i.e. assessment of regular exams and final works, as well as the internal quality assurance system -Standards 3 and 4. In other words, following the principles of constructive alignment in the process of design of the educational programmes automatically prepares the programme for its re-accreditation. For a more detailed discussion on this point see Section 5.1.



Medizin, Psychotherapie und Pharmazie"	Germany
Focus on Problem Based Learning Format	UM attribute
Focus on research and research methods	Faculty attribute
Emphasis on cognitive-biological Psychology	Faculty attribute

2.3.3 Formulating ILOs on programme level: Define programme competences and ILOs

On the programme level, Lokhoff et al. (2010) distinguish 'programme competences' and 'programme learning outcomes'. They consider the competence as a quality, ability, capacity or skill that is developed by and belongs to a student. Each programme is based on a set of key competences; these are the cornerstones of the programme. These key competences consist of both generic and subject-specific competences: Generic competences are general academic skills, relevant and transferable to any degree programme. Subject-specific skills are typical for a particular subject area (Lokhoff et al, 2010).

The learning outcomes are formulated as a reference to verify the achievement of the competences: they express the level of competence to be obtained by the student. A learning outcome is defined as "a measurable result of a learning experience which allows us to ascertain to which extent/level/standard a competence has been formed or enhance. The learning outcomes are not properties unique to each student, but statements which allow higher education institutions to measure whether students have developed their competences to the required level." (Lokhoff et al., 2010). Lokhoff and colleagues (2010) distinguish the following five components in an ILO:

- 1. An active verb form indicating the level of achievement;
- 2. An indication of the type of learning to be achieved: knowledge, cognitive processes, skills, or other competences;
- 3. The topic area of the ILO: this can be specific or general and refers to the subject matter, field of knowledge or a particular skill;
- 4. An indication of the standard or the level that is intended / achieved by the ILO;
- 5. The scope and/or context of the ILO.

According to Lokhoff et al. (2010), a programme should consist of up to 15 (generic and subjectspecific) competences and 15 to 20 programme learning outcomes. The programme learning outcomes can be formulated for every cycle/formalized level.

Verb	Туре	Subject	Standard	Scope/context
Ability to apply	Business	To real-life cases	(in real life setting)	International
	Intelligence			Business
	techniques			Information
				Management &
				Business
				Intelligence
To demonstrate	Academic	Based on academic	(academic)	International
	reasoning skills	theories and		Business: Supply
		evidence		Chain Management

Table 2.2. Two examples of programme ILOs at School for Business & Economics.



If there are several tracks/specializations within a programme, additional learning outcomes or competences are needed to specify the tracks/specializations (Lokhoff et al., 2010). E.g. the Master Psychology at Maastricht University consists of 6 specializations. Each specialization has set ILOs regarding: 1) Knowledge and understanding, 2) Applying knowledge and understanding, 3) Making judgements, 4) Communication, and 5) Learning skills. However, since each specialization focuses on another subfield of psychology, these ILOs and competences are specified for each track. For instance:

- The specialization Psychology and Law requires that graduates are able to develop a critical attitude towards legal psychology (as part of 'making judgements'), and are able to write an expert witness report and perform as an expert witness in court (as part of 'applying knowledge and understanding').
- The specialization Work and Organisational Psychology requires that graduates are able to evaluate conflict management and negotiation techniques (as part of 'making judgements') and to perform a job analysis (as part of 'applying knowledge and understanding').

2.3.4 Formulating ILOs on programme level: Stakeholders

When setting up a new programme, ILOs of the programme need to be defined. Once these ILOs are completed, it is important to keep an overview of the programme ILOs and the linkage with course ILOs: Are the programme ILOs still reflected sufficiently by the course ILOs? Or do programme ILOs need to be adjusted? An educational programme is not static: the university internationalises and so does the student population. Furthermore, changes in society and the labour market alter the demands of skills and knowledge that students need to develop. The educational programme needs to be able to tackle these changes by adjusting its ILOs. Moreover, course coordinators might propose or integrate adjustment in the courses, which might alter the course ILOs and consequently the degree to which programme ILOs are achieved.

Thus, it is important that someone keeps track on the programme. The best person to coordinate the programme ILOs and the linkage with course ILOs is the programme coordinator (also called programme director/director of studies). In addition, input from other stakeholders is required. Policy advisors and/or educational consultants can assist the programme director/programme coordinator/director of studies through this process. To define or adjust the programme ILOs, opinions of different stakeholders can be gathered such as:

- <u>Board members:</u> since they are responsible for the education offered at your faculty
- <u>Educational Programme committees:</u> since they determine the level of knowledge, skills and insight that students have obtained at the end of their study
- <u>Boards of Examiners:</u> since they have to provide a guaranty for the adopted knowledge, skills and insights of students at the end of their study
- <u>Course coordinators</u>: since they are involved in the course content and often specialist within their field
- <u>Students and alumni</u>: since they might be the first to notice strengths and pitfalls of the programme



• And other persons with a clear view on the requirements of the labour market.

2.3.5 Guiding questions to set ILOs on a programme level

- Who are the relevant stakeholders and how are they involved?
 - The best person to coordinate the programme ILOs and the linkage between course and programme ILOs is the programme coordinator. Policy advisors and educational consultants can assist through the process of developing ILOs. Other relevant stakeholders can be members of the Faculty Board, Educational Programme Committees, course coordinators, students and alumni etc.
- What is the aim of the programme?
 - Programme coordinators should decide on the programme aims in consultation with the Faculty Board, programme committees, course coordinators. They should be informed about these aims to be able to design coherent courses.
- What is the level of your programme? Bachelor, Master or Research Master.
- Which frameworks are relevant to your programme?
 - The NVAO assessment framework for higher education in the Netherlands and the Dublin descriptors are relevant to all programmes aiming an NVAO accreditation. Besides, there might be other frameworks you are obliged to incorporate specifically for your professional field and/or discipline (e.g. a study leading towards a position as a physician, needs to fulfil specific criteria in order to grant this title).
- Which requirements do you want and/or need your programme to meet?
 - Besides the frameworks you are obliged to follow, there are also requirements you can decide upon for yourself. For instance, you'll probably consider whether you want your students to meet criteria for relevant post-academic studies, for specific jobs or criteria set by non-Dutch countries were graduates often want to continue studying or start working.
 (e.g. if many psychology students want to continue post-academic education to become a psychotherapist, you'll probably consider to make sure that your graduates can meet the entrance criteria set).
- What are the key competences in this programme? Think about general academic skills and subject-specific skills.

Aligning course ILOs and programme ILOs

- Who guards the alignment between course and programme ILOs?
 The best person to coordinate the programme ILOs and the linkage between course and programme ILOs is the programme coordinator.
- Evaluate per course how the course ILOs address the programme ILOs?
 - E.g. A curriculum map.
- Are all programme ILOs addressed throughout the courses?
 Consider whether (1) all programme ILOs are addressed; (2) the alignment is balanced (no overemphasize); (3) there are no gaps of programme ILOs not (sufficiently) being addressed.
 Consider using curriculum maps to gain a good overview of the alignment.
- *Is the alignment balanced? (e.g. no overemphasis on specific topics)*



If a topic is overemphasized, you should consider how to regain balance. Probably there is room to address other (innovative) topics at some points in your curriculum.

Are there no gaps of programme ILOs not (sufficiently) being addressed?
 If a topic doesn't get enough attention within your curriculum, you can search for possibilities to adjust this.

2.3.6 UM examples: How to complete curriculum (re-)design along the CoAl principles?

Having discussed how to create the right conditions prior to the start of the CoAl project, the remainder of this section will provide concrete examples from the UM practice. While reading this chapter, you probably already have a specific programme and curriculum in mind. This curriculum might be in a preliminary phase, or might already be running for several years. Whatever your situation might be: to have a programme that keeps up with societal developments (and thus changes in the requirements set by frameworks or the needs of the labour market), you need to systematically scrutinise your curriculum every year, and effectively revise it every couple of years. In this chapter, examples are provided of the (re-)design:

- A minor update: FPN BA Psychology
- A complete re-design: FASoS MA Globalization and Development Studies
- A new programme: FPN International Joint Research Master Work and Organisational Psychology

2.3.6.1 Minor update

- 1) Agree on who is going to coordinate the programme update.
- 2) Evaluate/ make an inventory of the current situation: what is the current state of the programme regarding CoAl? And which changes are required or desired?
 - Are programme ILOs still up-to-date?
 - Are course ILOs well-formulated?
 - Are course ILOs well aligned with the programme ILOs
 - Is there a clear and good alignment between the course ILOs, teaching/learning methods and assessment methods?
- 3) Plan how you will develop the adjustments. Try to integrate your planning in the existing structure of your faculty. Make sure that all relevant stakeholders are included. Create a timeline.
- 4) Start working out your plan: implement and monitor.

Box 2.4 Example of a minor update

The Bachelor Psychology is an existing programme at Maastricht University. From 2010 onwards a curriculum redesign was implemented. The programme ILOs, course structure and modules were defined. These programme ILOs reflect the international, European and national guidelines and the FPN emphasis on biological and cognitive psychology in a Problem Based Learning format. A curriculum map provides an overview of the linkage between the courses and the programme ILOs.

In 2016, FPN decided to evaluate whether the programme of the Bachelor Psychology is still up-to-date and constructively aligned. No large adjustments are expected.



Process

The programme coordinator coordinates this process, supported by the policy advisor education. Course coordinators are informed and involved: The programme coordinator informs the course coordinators regularly in the 'curriculum year groups' (in Dutch 'curriculum jaargroepen') meetings. The management staff is informed in the three-weekly meeting of the Education Management Team. Since the aim is to adjust the existing curriculum only where needed (no complete re-design, but minor changes), the starting point is the current curriculum. In a first step, the programme coordinator and policy advisor mapped out the content of the courses and the course ILOs based on the course books and tutor instructions. Course coordinators are subsequently asked to check these maps. Meanwhile, the programme ILOs were discussed in a meeting with the programme coordinator, policy advisor, EDLAB liaison/coordinator internationalisation and a senior lecturer who was involved in the former curriculum redesign.

Based on these opinions, the following points of attention are identified:

- 21st century skills: Throughout the curriculum three learning lines are present in the curriculum: 1) Statistics, 2) Research methodology, 3) Academic writing skills. A fourth line focusing on communication and visualisation skills is advisable. Some courses already use learning activities that focus on creating communication or visualisation skills. But these are not aligned. Besides, there is little focus on intercultural knowledge and skills. Depending on the new strategic programme, an increased focus on intercultural knowledge and skills (adjusting learning outcomes) might be desirable.
- Update of relevant frameworks: There are no recent changes in the requirements of the existing frameworks (Criteria set by the Dublin descriptors, Qualification Framework for the European Higher Education Area (EHEA), Criteria set by the National Qualifications Framework The Netherlands (NQFT), Europsy criteria set by the European Federation of Psychologists' Associations (EFPA), Criteria set by the Dutch cluster of Psychology (in Dutch: 'Kamer Psychologie'), Criteria set by the Dutch National Institute for Psychologists (NIP), Criteria set by the Dutch vLOGO regarding post-academic education (*Gezondheidszorgpsycholoog, Klinisch psycholoog, Psychotherapeut*)).

- UM and FPN strategic programme: Currently UM and FPN are working on a new strategic programme. At course level, the following points of attention are identified:

- Each course has formulated objectives in terms of the content. But not all courses have ILOs specified according to the principles of constructive alignment.
- The translation from ILO to teaching/learning and assessment method is not described explicitly for most courses.

Timeline

The following timeline was set:

- Feb.-June 2016: Evaluate the programme ILOs and make an inventory of the course ILOs and course topics, learning and assessment methods. The inventory of the courses is made by the Bachelor Programme Coordinator and Policy Advisor Education, and checked critically by the course coordinators.
- July-August 2016: Based on the current inventory of the courses, feedback from course coordinators and evaluation of the programme ILOs, required changes are identified (e.g. New aspects required in the curriculum? Gaps in the curriculum? Overemphasize on certain topics?)
- September –November 2016: Course coordinators will be involved to include the adjustments in the nominal plans for 2017/2018.
- November 2016 February 2017: The adjustments suggested for the nominal plans 2017/2018 are discussed and set by the different committees involved.
- March 2017 onwards: The adjustments in the programme will be implemented in 2017/2018.



2.3.6.2 Complete re-design

When considering the redesign of an entire educational programme, in principle all three edges of the CoAl triangle can function as a departure point, and can function as a trigger to the educational reform. In other words one could start by:

- 1. Examining and updating the final qualifications and the learning outcomes of the courses.
- 2. Examining and updating the educational activities i.e. the content of the study materials, lectures, assignments and PBL-tasks.
- 3. Examining and updating the assessment programme i.e. the choice of assessment formats or final work deliverables.

Each of these departure points or approaches provides advantages and disadvantages. In this book (and concretely in the FASoS example discussed in Box 2.5) we accord preference to departing from the final qualifications i.e. the ILOs at programme level, because the accreditation by the NVAO is done at the programme level.

Box 2.5 FASoS example of complete educational redesign of the MA programme "Globalisation and Development Studies"

<u>Step 1:</u> the final qualifications of the programme (FQs) were updated and reformulated following changed circumstances on the educational landscape of the Netherlands (appearance of competitors, new insights from research, changed socio-political context especially with regard to the study of migrant flows and re-conceptualization of the Global South vs Global North divide). The leading questions at this step were: *Are the FQs and the current learning trajectories up-to-date? What adjustments need to be performed?*

These questions were answered based on input from the teaching team, but leading was the vision of the Director of Studies, the curriculum committee and the Faculty Board. This step of the process had as a final deliverable a **revised list of final qualifications**.

Step 2: the ILOs at course level were discussed in a meeting with the entire team of course coordinators, where the Director of Studies informed the team about the revised FQs. Each course coordinator was requested to reflect on the following questions (which are also the leading ones for this step of the process):

- 1. Considering the newly formulated final qualifications of the programme: which ILOs of your course can remain the same, which need to be adjusted, and which need to be dropped?
- 2. Considering the newly formulated final qualifications of the programme: look critically at the content of the study materials, lectures, assignments, PBL-tasks and other educational activities of your course: which can remain the same, which need to be adjusted, and which need to be dropped?
- **3.** Considering the newly formulated final qualifications of the programme: look critically at the assessment methods and formats of your course: which can remain the same, which need to be adjusted, and which need to be dropped?

The team received instructions on how to reformulate the ILOs for their course, namely that a good



learning outcome has the following characteristics:

- has a clear and unambiguous content;
- contains an "active verb" i.e. a measurable action or cognitive performance that can be observed.

Each coordinator was requested to come up with a revised education dossier of their course, which in practice meant that they had to fill-in the following table:

Final qualification no.	Revised Learning Outcome (including indication of the respective Dublin Descriptor)	Revised teaching/learning activity that specifies how the learning outcome will be achieved	Revised assessment method that specifies how the attainment of the learning outcome will be assessed

To facilitate the coordinators in the process of revision each of them received:

- a list of active verbs following the taxonomy of Bloom (see <u>Annex II</u>, p. 85);
- a list of the Dublin-level descriptors of learning outcomes, which are nowadays standard requirement of the NVAO re-accreditation framework;
- stand-by consultation (upon request) with the educational expert of FASoS.

This step of the process had as a final deliverable a revised educational dossier for each course.

Step 3: revision and adjustment of the learning lines. Upon completion of the educational dossiers for every course, the educational advisor critically assessed the existing learning lines within the programme and re-drafted them. In practice this meant a revised version of the curriculum of educational activities. At this stage there was also an inventory made as to whether all final qualifications are 'covered' and adequately assessed. In practice this meant a revised version of the assessment programme (also often called assessment plan) of the programme.

The leading questions at this step were: In light of the introduced revisions of the FQs and the course educational dossiers, what adjustments need to be performed in the curriculum and in the



assessment programme? How does the entire education plan of the programme need to be revised?

The work was done primarily by the educational expert of FASoS with occasional consultations with the course coordinators and the Director of Studies.

This step of the process had as final deliverables:

- <u>a revised draft-curriculum with revised learning lines (including links to the final</u> <u>qualifications)</u>,
- <u>a draft-assessment programme (including links to the final qualifications)</u>
- recommendations for adjustment of the individual course books.

Step 4: the revised drafts of the curriculum of educational activities and the draft assessment programme were discussed in a meeting with the entire team of course coordinators, where the educational expert informed the team about the introduced revisions and their rationale.

The leading questions at this step were: *Are the revised curriculum of educational activities and the revised assessment programme coherently adjusted? Are the introduced revisions acceptable to the entire team? Can all team-members work with the new version of the programme Education plan? Was the redesign process successful?*

The entire team discussed the new outlook of the educational programme (i.e. the entire Education plan) and was invited to provide final comments and remarks. Wherever necessary, final corrections were introduced.

This final step of the process had as final deliverables:

- <u>a revised draft-curriculum with revised learning lines (including links to the final qualifications)</u>,
- <u>a draft-assessment programme (including links to the final qualifications)</u>
- recommendations for adjustment of the individual coursebooks.

2.3.6.3 New programme

- Define your programme ILOs based on the aims of the new programme and the relevant frameworks;
- Define the structure of your programme, including the course ILOs, teaching activities and assessment methods;
- Align your programme and course ILOs.

Box 2.6 Example of the design of a new programme

The International Joint Research Master Work and Organisational Psychology (IJRMWOP) is a new two-year master under construction. It will be a joint Master of Maastricht University, the University of Valencia, and Leuphana University. At the moment of writing this example, the programme is in the process of the macro-efficiency check ('macrodoelmatigheidstoets') and the concrete structure of the programme is still under construction.

Aims of the programme

The programme aims to provide high quality research training in the domain of Work and Organisational (W&O) psychology, which implies that students are taught the state-of-the art theories and developments in W&O psychology, and provide knowledge and skills for a wide range of research techniques, including fundamental research but also research & development requirements.

Relevant frameworks

The programme will build on the reference curriculum model for academic education and training in W&O psychology that was developed by the European Network of Organizational Psychologists (ENOP) and is now widely accepted as the basis for curriculum development for W&O psychology in Europe.

Programme content has been determined after close scrutiny of various qualifications frameworks including the European Qualifications Framework for LifeLong Learning (level 7), the Tuning-Europsy reference points, the overarching Qualifications Framework of the European Higher Education Area, the reference model and minimal standards of the European Network of Organizational and Work Psychologists, the Society for Industrial and Organizational Psychology's guidelines for education and training at the Master's level in Industrial and Organizational psychology and the German qualification framework (Deutscher Qualifikations-rahmen) as well as recent debates on graduate training in the discipline.

Within the programme development, the term research is broadly defined to include basic research, applied research, evaluation research, R&D, translation -, and innovation research, and non-standard consultancy.

Final qualifications

The following core research competencies will be developed in the programme:

- Research design and implementation
- Development of research methods and tools, and interventions
- Data analysis
- Scientific writing
- Writing research proposals / fund raising
- Research dissemination and valorisation
- Innovation

In addition, the following enabling competencies will be developed:

- Communication (oral-, stakeholder-,...)
- Cross-cultural competence
- Team work
- Ethical competence
- Self-regulation and self-management, organisational citizenship behaviour, planning

Work process/stakeholders

The formulated competences resulted from a two-day brainstorm with a group of nine professors from all three universities. This group was also responsible for specifying aims and frameworks, and for the selection of course courses. Often, existing courses could be modified to fit into the new programme. One university (UM) was chosen to coordinate further development of the programme



and supporting (e.g. accreditation) documents, which involved online fine-tuning and two subsequent face-to-face meetings with teachers and support staff. In addition, the coordinating university was responsible for setting up an initial consortium agreement and for writing an application for a macro-efficiency check, which the Dutch Ministry of Education requires in order to decide on funding a new programme. Consequently, there was a need to demonstrate that the programme met labour market and societal and/or scientific needs.

Structure of the programme

The programme will consist of course courses offered at the three Universities involved in this Master. The next step in designing the programme is to map out the competences that are developed and assessed in the different courses using the curriculum map below. For each semester, the level of competence to be achieved will be defined. If needed, the courses and corresponding ILOs will be adjusted.

Inventory of the learning activities and of the assessment of the competences throughout the courses

Competences	Courses					
	Course 1	Course 2	Course 3	Course 4		
Competence 1						
Assessment competence 1						
Competence 2						
Assessment competence 2						
Competence 3						
Assessment competence 3						

The level of the competences to be achieved after each semester								
Competences	Benchmark	Milestone 1	Milestone 2	Capstone				
Competence 1								
Competence 2								
Competence 3								

2.4 TLAs on programme level

<u>Problem-Based learning (PBL)</u> is UM's teaching philosophy. It is a pedagogy based on the principle that learning should be a constructive, semi-structured, collaborative, and contextual process. During the learning process competences such as self-directed learning, problem-solving, analytical thinking, team work, critical reflection, and knowledge application are trained.



2.5 Assessment and CoAl on programme level

At the programme level, alignment of assessment methods between courses takes place by comparing and combining characteristics of single assessments. Hence, at the course level not every ILO is assessed comprehensively, and not every single assessment method can be maximally valid, reliable, and transparent. Yet, these three main principles of assessment should apply as much as possible to the assessment plan on programme level.

<u>Validity</u>

Validity means that the exam measures knowledge, skills and attitudes in a relevant and balanced way, in line with the ILOs. In other words, overall, the type and content of the assessment in all the courses is aligned with the stated intended learning outcomes of the courses in a curriculum.

UM good practice: Faculty of Law

To ensure the validity, the exam is judged by a referent before it takes place. The referent is a content expert but has not helped to establish (a part of) the exam. In addition, advice on the validity of the exam can be requested of the assessment advisor of EDIT. The Board of Examiners will check after each course period, according to the assessment evaluations, if the content and level of the exam is aligned with the content and objectives of a course.

Reliability

This aspect of assessment indicates the degree to which the exam measures consistent, fair and stable. In other words reliability refers to the consistency or repeatability of the measurements that exams are. Reliability indicates how certain we can be about the information obtained regarding the exam results. In other words, an exam with high reliability means that good students succeed in the exam and less good students don't. There is a fair succeed-respectively fail chance.

UM good practice: Faculty of Health, Medicine and Life sciences

In all multiple choice exams an item-analysis is calculated indicating the reliability of each item compared to the exam as a whole. This analysis is used to inform decisions regarding the withdrawal of an item from the exam in order to improve the reliability of the whole exam.

Transparency

Transparency is the extent to which all stakeholders – teachers/trainers, learners, assessors, administrators, Board of Examiners – know and understand what is required in the assessment, how the assessment tasks represent intended learning outcomes, and how the students' work or performance will be graded and marks awarded.

UM good practice: Faculty of Health Medicine and Life sciences

At FHML, assessment practices are specified in so called 'assessment plans' (toetsplannen) per course (block, module or educational unit). Assessment plans, as implemented at FHML, describe the connection between intended learning outcomes, teaching and learning activities, and assessment tasks. Assessment plans furthermore clarify standard setting procedures and grading criteria, requirements to pass the (course) exam; criteria and procedures for resits; and general rules and regulations that apply to course tests or exams. Assessments plans are drafted by the examiners responsible. After incorporation of any feedback from the Board of Examiners, a final version is published in Student Portal/EleUM before or at the start of the course. An example of an FHML



assessment plan can be found here.

2.5.1 Assessment on programme level: why, what, how, when and who?

At the programme level the overview of assessment methods must lead to an **assessment programme** which as a whole comprehensively measures the ILOs in a reliable, valid, and transparent way. Additionally the resources and infrastructure (such as time, money, staff, equipment, facilities, and information technology support) should be taken into account when selecting an assessment method.

To guide decision taking in assessment five basic questions can be used as a guide in thinking about assessment methods:

- Why do (or should?) you assess?
- What do you assess?
- How do you assess?
- When do you assess?
- Who does the assessing?

Why should we assess?

The question to ask yourself as an assessor: What is the purpose of the exam in relation to the teaching and learning activities and the intended learning outcomes?

Assessment can have different purposes:

- Determining whether a student has achieved a particular learning outcome (competency). This
 is often called assessment <u>of</u> learning at the end of a course or programme;
- 2. Stimulating learning behaviour of a student, e.g. by providing feedback to students. This is often called assessment *for* learning during the course or programme;
- 3. Information about the course (teaching and learning activities) which can be used to improve education.

What should we assess?

The obvious answer is that assessment methods should measure the ILOs. However, in practice this turns out to be less obvious, for two reasons:

- Not all ILOs are easy to measure and as a result are not covered by the assessment methods.
- Not all ILOs can be measured with one method or at one moment. Or vice versa, an assessment method can measure more than one ILO. Reducing the assessment programme to a 1:1 matrix (one method for one ILO), does not reflect the complexity of the ILOs (or competencies).

How should we assess?

The assessment programme as a whole should be a purposeful mix of assessment activities that optimally contribute to the main purpose of the assessment at the programme level. In most cases assessment of learning is the most important purpose, determining whether or not a student receives a degree. However, single instruments can (and must) also serve other purposes.



When do you assess?

At the programme level there are modular courses (specific period) and longitudinal courses (during a longer phase; e.g. an academic year). In both types of courses it can be useful to assess during the course and not only at the end of the course. The longer the period, the more important it is to assess at multiple times. For the formative function (assessment for learning) it is also more important to assess timely to ensure the possibility (time) for learning.

Who should do the assessing?

Depending on faculty, terminology and organisation – actors responsible for the assessment on programme level can be the programme -and course coordinators concerned. In case of a longitudinal course in a Bachelor's programme, actors involved may be the programme coordinator, the bachelor coordinator and course coordinators concerned. Their tasks:

- 1. to determine the ILOs and the programme and alignment of assessments overall;
- 2. to have an overview of all used assessments of the longitudinal course and to check regularly whether are assessments are aligned with the ILOs.

If the purpose is to control whether students may receive a degree after they finished the whole programme and therefore meet all requirements, the board of examiners is in charge of control.

Further reading:

Lokhoff, J., Wegewijs, B., Durkin, K., Wagenaar, R., González, J., Isaacs, A.K., Dona dalle Rose, L.F., Gobbi, M. (Eds.) (2010). *Tuning, Educational structures in Europe: A Guide to Formulating Degree Programme Profiles*. Nuffic/TUNING Association: Bilbao, Groningen and The Hague. <u>http://core-project.eu/documents/Tuning%20G%20Formulating%20Degree%20PR4.pdf</u>

Chapter 3. How to uphold the principles of Constructive Alignment on an institutional level?

3.1 Intended learning outcomes: institutional philosophy

According to Biggs (2011), ILOs can be formulated at three levels, being:

1. The institutional level: what are graduates of Maastricht University able to do?

2. The programme level: what are students of bachelor X, or master Y able to do?

3. The course level: what are students after 8-weeks course x able to do?

At an institutional level, ILOs can be formulated in the line of the 21st century skills, like creativity or life-long-learning. Often you would find that these ILOs are not translated into specific teaching activities and/or assessments methods, but these are related to the overarching educational philosophy (i.e. PBL). At the programme level, the ILOs become more concrete and more related to the content or profession.

In the case of UM, ILOs defined on the institutional level can apply both to institutional - and faculty level.

3.1.1 Formulating ILOs on institutional level

At Maastricht University, we perceive the institutional level as both the level of Maastricht University as well as the Faculty level. We include the Faculty level at this institutional level, since each UM Faculty can put its own emphasis within the framework of Maastricht University. This Faculty level is different from the programme level as it concerns rather generic attributes and covers the whole range of programmes within that Faculty.

Institutional ILOs thus can consist of attributes set by the University institution as well as attributes set by the Faculty. These are ILOs at an institutional level, meaning that they are not targeting a specific field of study. They are relevant to the broad range of all University and/or Faculty graduates, and can be seen as the context within which a programme is embedded. Typically, the institutional ILOs consist of generic skills each graduate is expected to develop. These ILOs can be rather abstract and don't necessarily need to be formulated as a measurable ILO. The translation into measurable (SMART) ILOs takes place at the course level (see Box 3.1).

3.1.2 Example

Box 3.1 Example of formulated ILOs on institutional level at SBE

SBE defined four institutional ILOs for both Bachelor and the Master graduates. The distinction between Bachelor and Master is in line with the Dublin descriptors. These ILOs are broadly defined, such that all programmes offered by SBE can fit within this framework.



Constructive Alignment

Domain	BSc ILO	MSc ILO
Knowledge & Insight	Our graduates are able to understand and use academic knowledge in a self-directed manner	Our graduates are able to develop insights based on academic knowledge in a self-directed manner
Academic Attitude	Our graduates have developed an academic attitude	Our graduates are able to demonstrate an academic attitude
Global Citizenship	Our graduates are aware of their responsibility in a global, ethical, and social context	Our graduates are able to actively engage in the global community in a globally responsible manner
Interpersonal Competences	Our graduates are able to demonstrate excellent interpersonal competences in an international professional context.	Our graduates are able to demonstrate excellent interpersonal competences in an international professional context.

Explanation of the domains

Knowledge & Insight

These learning goals focus on the cognitive domain (as described by Bloom), which involves the development of knowledge. There are multiple categories of cognitive processes, such as understanding, applying, analysing, evaluating, and creating (starting from the simplest to the most complex). Keep in mind that the categories build on each other (e.g. you need to understand a concept before you can apply it). It is therefore important that students learn to handle topics at different stages of the taxonomy for optimal learning effects.

Academic Attitude

Academic attitude refers to intellectual skills a student needs to function in an academic or professional environment, such as: critical thinking, self-directedness, awareness of the limitations of data and theories, and reflectiveness. These are all mechanisms that allow students to make meaning out of their experiences and adjust their frames of reference.

Global Citizenship

Fostering global citizenship is at the heart of higher education in the 21st century. Students are presented with the opportunities to nurture the mindset and abilities required to operate in an increasingly interconnected global society. These include social responsibility, global awareness and societal engagement. Our graduates are able to think beyond the boundaries of their discipline about the context in which they function, and the consequences of actions or decisions.

Interpersonal competences

Interpersonal competences are work-supporting skills which are of vital importance for learning, but also for the future careers of our students. The classic examples of interpersonal competences are writing skills, presenting, and teamwork. In the PBL environment, students have to work extensively with others in small groups, so they have plenty of opportunity to practice those skills and to use them to improve their learning experience.



3.2 Teaching and learning activities

<u>Problem-Based learning (PBL)</u> is UM's teaching philosophy. It is a pedagogy based on the principle that learning should be a constructive, semi-structured, collaborative, and contextual process. During the learning process competences such as self-directed learning, problem-solving, analytical thinking, team work, critical reflection, and knowledge application are trained.

3.3 Assessment: Delivery to the job market

At Maastricht University there is no institutional or faculty-wide assessment in place. All assessment takes place within the Study Programme as described in the EER (Education and Examination Regulations).

At the university level a framework for assessment policy is available. At the faculty level this framework is used to determine the faculty assessment policy.



QUALITY ASSURANCE

Chapter 4. Internal quality assurance

In order to assure that the achieved alignment at course and programme level is maintained and sustainably revised, a comprehensive quality assurance (QA) system needs to be in place. The main actors of such a system are stipulated already in the WHW: the programme coordinators, the vice-Dean of Education (portfolio-holder Education), the educational programme committees, the Board of Examiners, potentially a Test Committee (toetscommissie). In addition, the educational institution typically organizes and maintains a support structure of educational databases, of educational policy advisors, educational administration, etc. All these actors come sequentially into play within the so-called quality assurance cycles and they use various instruments that verify and improve the educational quality. It is beyond the remits of this handbook to address all such instruments and processes. Instead, in what follows the main actors, tools, and processes are presented that have direct bearing to the systematic maintenance of the CoAl principles within the educational practices. Concretely, the first subsection of this chapter will amongst others outline the main actors and their typical competences, the informational infrastructure (database), the instruments of internal quality assurance, and the external quality assurance processes.

4.1. Actors and their responsibilities with regard to CoAl: Theory

CoAl is a joint effort. Once embedded in the initial programme design, it needs to be maintained and warranted. This is a complex iterative (ideally yearly) exercise which involves various parties from the educational institution. The current section provides a brief overview of the main UM actors and their function.

- **Programme Coordinators (also called Programme Directors / Directors of Studies):** this is probably the most engaged person with CoAl in the educational programme. Based on the existing curriculum map/education plan the programme coordinator supports and manages the links between the intended learning outcomes (ILOs), the teaching methods, and the assessments of the whole programme. This is the linking pin between the strategic educational management: Faculty Board, External Quality Assurance institutions, the curriculum committee, and the "work-floor" i.e. the course coordinators, the examiners and the students.
- **Course Coordinators (teachers):** they have to implement in practice the coupling of the ILOs to teaching activities and to assessment formats. Moreover, they continuously maintain the balance of the CoAl triangle within the course, but also to reflect upon the position of their individual course in the context of the whole programme (relation to other courses and to the final qualifications/ ILOs). It is also advised to communicate this to students in the course book.
- **Students:** the student perspective on the achieved CoAl within the courses and the entire programme can be very insightful. This is why the students should be encouraged to submit evaluations and discuss the programme cohesion (via IWIO evaluations or student panel discussions).



- *Educational policy advisors:* continuously monitor that CoAl is observed in the creation and redesign of courses, and in revision of curricula. The educational policy advisors provide recommendations on how to implement and maintain CoAl on a course and programme level. Moreover, they draft the re-accreditation self-study reports and maintain the institutional database of education plans, curriculum maps, and other necessary CoAl documentation.
- **Programme committee:** this committee is charged with discussing the rationale of the programme and to evaluate its coherence. In its work the programme committee can use the CoAl as a guiding principle and as a point of departure to offer recommendations to change and to adjust educational processes, learning outcomes, didactic approaches, assessment formats, etc.
- **Board of Examiners:** this is one of the main actors when it comes to quality assurance of assessment practices. According to the WHW, this committee is expected to guarantee the quality of examinations within the institution, and to act as a warrant of the Faculty diploma certificates. It is therefore crucial to convince the BoE in its role of a watchdog to pursue and warrant the CoAl principles. Moreover, given the toolbox of instruments, which the BoE possesses with regard to the CoAl edge assessment it can trigger change in the other 2 edges (ILOs and TLAs).
- *Curriculum committee:* this is a committee mainly charged with the curriculum (re-)design and therefore a potentially primary trigger of change when it comes to the principles of CoAl. Ideally, this committee was already led by CoAl in the initial stages of the curriculum design, but CoAl can be achieved also at a late stage. The curriculum committee could be a vital actor via its advices to the programme coordinator and the Faculty Board.
- *Faculty Board:* this is a body for strategic management and steering, which is only indirectly involved in CoAl processes. Nevertheless, its support is crucial in order to launch the process (including financial back-up of the project) and to keep the momentum. Moreover, based on the monitoring of and the contacts with the external environment, the Faculty Board can provide input for CoAl by proposing new final qualifications or ILOs to enter the curricula of the educational institution.

One of the crucial questions when it comes to processes of QA is about the interaction and the division of responsibilities between the actors within the quality assurance cycle. It is advisable to agree upon and fix the interaction pattern that works for the faculty/educational unit in an Actor-Responsibility matrix, which specifies the tasks and remits of engagement per activity. Table 4.1 provides a list of the typical activities related to safeguarding the CoAl at a course and programme level. Each educational programme is advised to hold a discussion and delineate the responsibilities per row from this table in order to assure smooth functioning of the quality assurance cycle related to the CoAl principles.



Table 4.1. Example of a RACI matrix supporting the CoAl project in the educational institution.

						-		
Legend R = responsible: executes/implements decisions and re A = accountable: is held accountable by top manageme C = consulted: gives advice, pushes decision-makers in I = informed: receives information about decisions, pro O = out of the loop, omitted	quality assurance of assessment programme	implementing (=uitvoeren) assessement programme	realising (=definiëren/opstellen) assessment programme	periodically verifying the quality of final student signments	periodically verifying whether the examinations as a whole cover all final qualifications	defining the final qualifications	Assessment programme (curriculum)	This RACI Matrix is an example. Different steps in the process can be defined if deemed necesarry (or relevant). The same applies to the stakeholders. Other stakeholders (or terminology) can be added or adjusted, depending on the specific context.
eports to the ent, is autho the right dir ogress, and/o	WHW 7.12b(1a)			WHW 7.12b(1a)	Ξ			Legislation/ Regulations/ Inspectorate/ (Further Improvements (=FI))
person w rized to gi ection, is or achieve					-	>		Dean
/ho is acco ive a defin asked abo ed results.								Vice-dean Education
untable. itive go/no ut his/her	C					C		Educational Programme Committee (EPC)
o go, appro opinion b	R	А	А		R	R		Director of Studies/ Programme coordinator
oves the fi efore deci	А			A	А	с		Board of Examiners
nal result sions or ac		R	₽	Я		с		Course coordinator/ Responsible examiner
of an activ ctions are								Assessment committee (toetscommissie)
rity. N.B.: c taken.								Educational advisors / QA policy employees
only one p								Tutor
erson is ac						-		Examination Administration/ Education Office
:countable								Board of Admissions
in								HR
								Student counselor
						c		Student (council)/ Faculty Council

4.1.1 The CoAl cycle: a good practice (SBE)

The focus of constructive alignment lies with the design of education. However, we know that education programmes are dynamic – keeping up with changing society, new scientific insights, and



changes in staffing. In other words, there is a tension between the orderliness of design and the messiness of reality. One familiar example is problem-based learning (PBL), where it is felt by many that current PBL-practices are not always in line with the original intentions (Azer et al., 2013; Dolmans et al., 2005; Moust et al., 2005). To manage this need for change in a structural manner, the Maastricht University School of Business and Economics has developed an 'Assurance of Learning' (AoL) system. This AoL system distinguishes from other evaluation methods itself by its

focus on education itself instead of surveys (student perceptions) and its cyclical nature.

A core feature of AoL is the triennial internal audit where a panel of peers evaluates whether and how the ILOs of the programme are achieved. In doing so, the audit panel reviews samples of student products (e.g. exams, papers) and other information from education (e.g. grade metrics, course manual). The audit is not intended to judge the performance of academic staff, rather the audit triggers a series of conversations about the curriculum: firstly, among the members of the audit panel, secondly between the audit panel and the programme coordinator and the programme director, and thirdly between the programme coordinator and the course coordinators. The

Box 4.1 Top 5 advantages of an internal audit process

- Informal learning: audits maintain awareness of CoAl and diffuse best-practices in the organisation
- 2. Continuous improvement: audits lead to concrete improvements
- Coherence: the programme as a whole is the main unit of analysis, not the courses
- 4. Outsider perspective: Bringing in fresh ideas and a critical eye
- 5. Team building: it signals that education is a common good

value of these conversations should not be underestimated since a great deal of informal learning takes place that reinforces the mind-set required for CoAl on programme level – like a refresher course in fundamentals of CoAl. The conversations result in a set of agreements which are documented and feed back in the annual educational renewal cycle. Because an audit takes place every three years, the education team is motivated to implement improvements in the next academic year. Chapter 4.2.1 explains the internal audit process in more detail.

4.2 Instruments to assure CoAl

In order to facilitate the communication between all the actors outlined in the previous section and to ensure the continuity of the CoAl principles, it is recommended to work with a well-documented education plan. An education plan focuses on how an academic programme is contributing to the learning, growth, and development of students as a group. A good education plan reflects all programme choices regarding the FQs, the measureable student learning outcomes per course, the teaching and learning activities, and the assessment methods. Thus, an education plan is the material evidence of CoAl both at course and at programme level.

The education plan (EP) provides a useful tool for different actors in the quality assurance system. Its systematic discussion every year is the most common way to warrant CoAl at programme level. This is the first step of the annual quality assurance cycle and the revision of the OER, and follows the Plan-Do-Check-Act cycle³ (see Box 4.2 and Figure 4.1) (Deming, 1986; Vietze, 2013).

³ Deming, W.E. 1986. Out of the crisis. Cambridge, MA: Massachusetts Institute of Technology Center for Advanced Engineering.



Box 4.2 Plan-Do-Check-Act cycle

PLAN – Establish the objectives and processes necessary to deliver results in the upcoming future period.

DO – Implement the plan and execute the planned processes. Collect data for charting and analysis in the following 'check' and 'act' steps.

STUDY – Study the actual results (measured and collected in the 'Do' step) and compare against the expected results (targets or goals from the 'plan') to ascertain any differences. Look for deviation(s?) in implementation from the plan and also look for the appropriateness and completeness of the plan to enable the execution.

ACT – If the 'check' shows that the 'plan' that was implemented in 'do' is an improvement to the prior standard, then that becomes the new standard for how the organisation should 'act' going forward.





Further reading:

Vietze, J., (2013). *Visualization of the PDCA cycle based on the work of W.E. Deming*, 1986. Retrieved from: <u>http://de.wikipedia.org/wiki/Datei:PDCA_Process.png</u> on 12.9.2016.

Deming, W., (1986). *Out of the crisis*. Cambridge, MA: Massachusetts Institute of Technology Center for Advanced Engineering.



4.2.1 The internal audit meeting

The main output of the audit panel is its report. The audit panel decides for each programme objective whether it has been achieved, based on the information that has been provided. To help structure the discussion (and the report) there is a format which is similar for all AoL audits. This format has several items:

- <u>Introduction</u>: briefly introduces the principles of the AoL system, its purpose, describes the working process of the audit panel, limitations, a word of thanks to those who have helped make the audit happen.
- <u>Validity of the data</u>: touches upon whether the collected information provided the panel with evidence of how well the students have acquired the respective programme objectives.
- <u>List of ILOs</u>: the audit panel discusses per programme-level intended learning outcome whether it has been achieved by the students. In other words, is there constructive alignment? This is the main part of the meeting and the report.
- <u>General conclusions and recommendations:</u> summarizes the conclusions and lists the recommendations to make sure the feedback is communicated in a clear manner to the programme coordinator.
- Feedback on audit process: tips to improve the internal audit process for next time

Please note that the format can change based on new insights or changing needs.

4.2.2 Information management of internal audits

The key to successful internal audits is having access to relevant information sources.

• Assessment programme / Curriculum map:

This document shows the link between the programme-level ILOs and assessment throughout the programme (including the courses, skills, projects or thesis). The assessment is the 'point of measurement' to see whether students are on track with regard to the ILOs.

• Course manuals

Course manuals provide important contextual information about the courses and their place in the programme

• Grade overviews

In most cases, it is interesting to see what the grading is for each type of assessment in the programme. The numbers can be used to start asking questions. For example, if the audit panel sees that a high percentage of students underperform with regard to a certain ILOs, as this can be a signal that something's wrong.

• Assessment

The assessments (e.g. exam questions or assignments) as well as samples of student work are collected. The audit panel uses this to see whether the assessment measures student



performance on the ILOs, as stated in the curriculum map or assessment programme. The BSc/MSc Thesis can also be a point of measurement.

• Rankings and surveys

There can be signals from rankings and surveys (i.e. indirect measurement) which can help the audit panel focus on certain areas of interest.

In Figure 4.2 it is explained how this information feeds into the audit cycle. First, the information is collected and made accessible by the Policy Development & Quality Assurance Office (PDQA). The audit panel then analyses the data, reports on the findings, and makes recommendations. The programme coordinator and programme director formulate a response in which they state which recommendations they will adopt and implement. Both the report and the implementation plan will be archived as it is the starting point for the next audit cycle. To ensure the report and the reply letter will not be forgotten until the next audit (in three years) they are also input for the annual Education & Examination Regulations (EER) cycle. This has as an additional benefit that the Programme Committee and Board of Examiners are informed as well.



ASSURANCE OF LEARNING

Figure 4.2. The flow of information that drives SBE's internal audits.



4.2.3 Actors in the internal audit processes

An internal audit system like SBE's *Assurance of Learning (AoL)* requires different actors to fulfil specific roles. When implementing such a system it is wise to map the roles and responsibilities of different actors, depending on the organisational culture and institutional context. At SBE the following actors are involved:

- <u>Audit panel:</u> small group of peers (academic staff), when available, includes an alumnus or a contact from future professional environment of graduates. The panel reviews the degree of constructive alignment in an education programme.
- <u>Programme coordinator</u>: Is the main contact for the audit panel, and speaks on behalf of the curriculum team (course coordinators).
- <u>Programme coordinator (II)</u>: (also called programme director/ director of studies in faculties): is responsible for starting and finishing audit processes, thereby keeping close contact with programme coordinators.
- <u>Course coordinators:</u> discuss proposals and implement improvements.
- <u>AoL coordinator</u>: facilitates the audit process in terms of planning and communication, and instructs the audit panels.
- <u>Education & Exams Office:</u> collects data concerning assessment.
- <u>Programme Committee:</u> receive all audit reports in the context of the annual EER cycle.
- <u>Board of Examiners:</u> receive all audit reports in the context of the annual EER cycle.
- <u>SBE Board:</u> receives all audit reports in the context of the annual EER cycle.

It is recommended to experiment before implementing a full scale AoL system, for example by doing a pilot with one or two education programmes. These early adopters should accept that things can be a bit messy, and can act as ambassadors when upscaling the operation. Please see chapter 2.3.1, section 'How to redesign a programme and manage change' for tips on change management.

4.2.4 Implementation and transparency

It is very important that the actors involved who dedicate time and energy in the audits perceive the process as being effective and result-oriented. One way to achieve this is to make sure the audits are embedded in the annual EER cycle. This ensures that all stakeholders are reminded of the improvements exactly at the moment when the changes for next year's education programme are being discussed and decided upon. This is a helpful reminder for programme and course coordinators and simultaneously makes transparent for advising and deciding bodies (a) what the specific improvements are which will be implemented and (b) that there are structural and well-documented mechanisms to reflect on the curriculum.



Annual Cycle Education Programmes



Figure 4.3. A representation of how the AoL audit reports feed into SBE's annual EER cycle.

Further reading:

Azer S., McLean M, Hirotaka O., Masami T. & Scherpbier, A. (2013) Cracks in problem-based learning: What is your action plan? *Medical Teacher*, 35(10): 806-814.

Dolmans D.H., De Grave W., Wolfhagen I.H., van der Vleuten C.P. (2005) Problem-based learning: future challenges for educational practice and research. *Medical Education*, 39(7):732-741.

Moust J., van Berkel H., Schmidt (2005). Signs of erosion: Reflections on three decades of problembased learning at Maastricht University. *Higher Education*, 665–683.

4.2.5 Indirect programme evaluation and recommended structure IWIO surveys

Evaluations

Although there can be many purposes for evaluations, the most widely used form of evaluation is the assessment of student satisfaction, usually done after a course, or after a specific element of a course, such as a lecture or practical. The questions in such evaluations usually cover a broad range of domains, such as good logistics, workload, study facilities, etc. However, if a course coordinator decides to use the principles of CoAl, he would probably want to know in more detail how the students perceived the new approach. The traditional evaluation forms may then seem too superficial; when the teaching is focussed on a deep approach, then of course the evaluations should not be surface. We searched the literature on student evaluations to find out which kind of evaluations could be used to help the course coordinator to evaluate and improve his new course.



Evaluating the study process

The aim is to challenge the students, so that they become eager to investigate the topic and to go the extra mile to really understand what they have to learn. Obviously, the aim is to avoid the students to just memorize the topics and/or to pass the exam with minimal effort. John Biggs himself developed and investigated the Study Process Questionnaire which he later modified into the R-SPQ-2F (see Table 4.2). This questionnaire has two main scales, Deep Approach (DA) and Surface Approach (SA) and it measures whether students are motivated and use deep study approaches to reach understanding. According to this scale, the approach a student uses is determined by motivation and strategy, so besides the main overall scores for deep and surface approach, the scale has four subscales, Deep Motive (DM), Deep Strategy (DS), Surface Motive (SM), and Surface Strategy (SS). A total score for the main scales and for the subscales can be calculated by summing the items. The scale has been used in several studies since it was developed, and it has also been translated and validated in different languages, including Dutch.

		never or only rarely true of me	sometimes true of me	true of me about half the time	frequently true of me	always or almost always true of me
Deep	motive					
1	I find that at times studying gives me a feeling of deep personal satisfaction.	0	0	0	0	0
2	I feel that virtually any topic can be highly interesting once I get into it.	0	0	0	0	0
3	I find that studying academic topics can at times be as exciting as a good novel or movie.	0	0	0	0	0
4	I work hard at my studies because I find the material interesting.	0	0	0	0	0
5	I come to most classes with questions in mind that I want answering.	0	0	0	0	0
Deep	strategy					
6	I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.	0	0	0	0	0
7	I find most new topics interesting and often spend extra time trying to obtain more information about them.	0	0	0	0	0
8	I test myself on important topics until I understand them completely.	0	0	0	0	0
9	I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.	0	0	0	0	0
10	I make a point of looking at most of the suggested readings that go with the lectures.	0	0	0	0	0
Surfa	ce motive					
11	My aim is to pass the course while doing as little work as possible.	0	0	0	0	0
12	I do not find my course very interesting so I keep my work to the minimum.	0	0	0	0	0
13	I find I can get by in most assessments by memorising key sections rather than trying to understand them.	0	0	0	0	0
14	I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.	0	0	0	0	0

Table 4.2. The Revised Study Process Questionnaire (R-SPQ-2F).



Constructive Alignment

15	I see no point in learning material which is not likely to be in the examination.	0	0	0	0	0
Surfac	e strategy					
16	I only study seriously what's given out in class or in the course outlines.	0	0	0	0	0
17	I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.	0	0	0	0	0
18	I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.	0	0	0	0	0
19	I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.	0	0	0	0	0
20	I find the best way to pass examinations is to try to remember answers to likely questions.	0	0	0	0	0

Clarity of intended learning outcomes, teaching/learning activities and assessment methods

A curriculum that is developed according to the principles of CoAl should have very specific Intended Learning Outcomes (ILOs), Teaching and Learning Activities (TLAs) and Assessment methods (Ass.). This may create the desire among teachers to evaluate how much the students appreciated these specific elements and the alignment between them. In his book, Biggs gives the following examples of possible questions a course coordinator could ask. Were the ILOs clear? Did the TLAs help the student to achieve the ILOs? Which did not? Did the Assessment methods address the ILOs? Were the grading rubrics understood? Did the ILOs help students plan for learning? Did they see the assessment methods as fairly assessing what they had learned?

Based on the work of Biggs, a questionnaire was designed and evaluated by Wong, Kwong and Thadani (2014). Similarly to what Biggs suggests, Wong and colleagues state that effective learning would only be taking place if students are clear about:

- 1. What they are to learn and how that learning is manifested (ILOs).
- 2. What they are supposed to do when learning appropriately (TLAs).

3. What the requirements and standards of assessment are (Ass.).

Following these three constructs Wong designed and evaluated the Learning Experience Inventory in Courses (LEI-C) (see Table 4.3).

Table 4.3. The Learning Experience Inventory in Courses (LEI-C).

		Strongly	Agree	Neutral	Disagree	Strongly
Clarit	ty of what to learn	ugree				uisugree
1	I had a clear idea of what I was to learn	0	0	0	0	0
2	I found that what I learnt was what I had expected of this course	0	0	0	0	0
3	I was given a clear idea of what I had to be able to do with the topics learnt	0	0	0	0	0
4	Topics covered in the course addressed what I understood the course was meant to be	0	0	0	0	0
Clarit	ty of how to learn					



Constructive Alignment

5	The teaching and learning activities provided me the opportunities to learn through active participation	0	0	0	0	0
6	The teaching and learning activities helped me learn what I was supposed to learn	0	0	0	0	0
7	Instructions for learning activities were clear and specific	0	0	0	0	0
8	The teaching and learning activities addressed my learning needs	0	0	0	0	0
Clarity	of how learning may be assessed					
9	The assessment methods addressed what I was supposed to learn	0	0	0	0	0
10	The assessment standards were clear enough to help me self- assess the quality of my work	0	0	0	0	0
11	I have achieved what I was supposed to learn in this course	0	0	0	0	0
12	I received useful information or feedback on how well I was doing in this course	0	0	0	0	0

Some examples of validated student evaluation questionnaires

Generic student evaluation questionnaires have been used for many years, far before CoAl was developed. Therefore, most universities have a long lasting routine of systematic evaluations of programmes. Quite often such evaluations are self-designed questionnaires, often by an independent office at the university. Besides this pragmatic approach to student evaluations, there is also a large body of evidence around student evaluations, see for example a very useful review of the available evidence around student evaluations written by Richardson. The most widely used and investigated student evaluation questionnaires are the Students' Evaluations of Educational Quality (SEEQ) questionnaire and the Course Experience Questionnaire (CEQ). Both questionnaires have been used a lot in both research and everyday practice.

The SEEQ has 35 items in which students are asked to rate their teacher or course unit, using a five-point scale from 'very poor' to 'very good'. The statements are intended to reflect nine aspects of effective teaching:

- 1. Learning (I have found the course intellectually challenging and stimulating)
- 2. Enthusiasm (Instructor was enthusiastic about teaching the course)
- 3. Organisation (Course materials were well prepared and carefully explained)
- 4. Group interaction (Students were invited to share their ideas and knowledge)
- 5. Individual rapport (Instructor made students feel welcome in seeking help in or outside of class)
- 6. Breadth (Instructor adequately discussed current developments in the field)
- 7. Examinations (methods of evaluating student work were fair and appropriate)
- 8. Assignments (required readings/texts were valuable)
- 9. Overall (compared with other courses I have had, I would say this course is (very poor-very good))

An interesting aspect that emerged from the research that has been done on the SEEQ, is that the scores of the SEEQ seem to be very much associated with the teacher giving the course and not so much with the course itself. So the scores are stable when one teacher is evaluated over several courses, but unstable if the same course is given by different teachers. When looking at the items of the SEEQ this makes sense, because enthusiasm and organisation for example seem directly related to the teacher.



Although not specifically designed to evaluate the alignment of teaching and assessment, some questions in the SEEQ are indicative of good alignment and deep approaches to studying. One could for example expect that students feel more intellectually challenged after the introduction of a CoAl curriculum, and comparing this to other courses or previous years could be interesting and helpful.

The other frequently used and investigated general student evaluation questionnaire is the CEQ. The CEQ has been widely used in Australian universities for many years. The initial CEQ consisted of 30 items reflection 5 domains:

- I. <u>Good teaching</u>: Teaching staff here normally gives helpful feedback on how you are going.
- II. <u>Clear goals and standards</u>: You usually have a clear idea of where you're going and what's expected of you in this course.
- III. <u>Appropriate workload</u>: The sheer volume of work to be got through in this course means you cannot comprehend it all thoroughly.
- IV. <u>Appropriate assessment</u>: Staff here seems more interested in testing what we have memorized than what we have understood.
- V. <u>Emphasis on independence</u>: *Students here are given a lot of choice in the work they have to do.*

Many studies have been done with the CEQ, also resulting in different versions such as a 23 item version and a 36 item version. In the light of constructive alignment, the addition of a Generic Skills domain consisting of 6 questions that are concerned with problem solving, analytic skills, teamwork, communication and work planning is interesting. But also the domains 'Clear goals and standards' and 'appropriate assessment' are very relevant when evaluating the alignment of a programme. An interesting finding that came out from the research done on the CEQ is that it seems to be highly related to deep approaches to studying, which makes sense if you look at the domains previously mentioned. So it seems that quite some elements of the CEQ are very much aligned with the intentions of CoAl.

How to move forward?

The available questionnaires to evaluate deep learning approaches (R-SPQ-2F) and to evaluate clarity of alignment (LEI-C) seem very useful when evaluating curricula with a focus on CoAl. In addition, at the end of a course, a course coordinator would also like to evaluate general issues such as the enthusiasm of the teacher or efficiency of organisational aspects. The good thing about using the already investigated questionnaires is that they are validated and benchmarks are available from the previous studies. However, using both the R-SPQ-2F and the LEI-C, added to a questionnaire such as the SEEQ or the CEQ, would make the assessment at the end of a course probably too burdensome for the students. As a consequence, the response rate would drop or items would be skipped or not properly considered by the students, which would influence the validity of the questionnaires. Since using all questionnaires is not an option, in our view there are two other options, one is to choose a validated questionnaire that fits best to the needs (without being perfect) and the other option is to combine the good items of the different questionnaires and create a new questionnaire tailored to the course's or university's needs.

When it comes to the first option, using the CEQ would probably be a good choice. Questions like 'You usually have a clear idea of where you're going and what's expected of you in this



course' come very close to the ideas about having a clear and aligned course plan, which was the basis of the LEI-C. The same goes for questions like 'the staff made it clear right from the start what they expected from students'. But also the desire to create a deep approach study environment comes back in the CEQ with questions such as 'I found my studies intellectually stimulating', or 'I was generally given enough time to understand the things I had to learn'. So using the CEQ gives good opportunities to evaluate constructively aligned courses, and it has the benefit of using a validated questionnaire and benchmarking.

The other option is to combine the good elements of the different questionnaires. We made an attempt to combine the good things of the available items, and our attempt is shown below (see Table 4.4). Of course such an attempt is too subjective and it doesn't come close to the rigorous standards we usually demand when designing new questionnaires. However, as has been stated before, the current practice of designing evaluation questionnaires is that of internal (university) development of 'own' questionnaires, so this attempt should be seen as an informed suggestion of good items to consider.

		Strongly	Agree	Neutral	Disagree	Strongly
		agree				disagree
Study approach						
1	I work hard at my studies because I find the material	0	0	0	0	0
	interesting.					
2	I find most new topics interesting and often spend extra time	0	0	0	0	0
	trying to obtain more information about them.					
3	I see no point in learning material which is not likely to be in	0	0	0	0	0
	the examination.					
4	I believe that lecturers shouldn't expect students to spend	0	0	0	0	0
	significant amounts of time studying material everyone knows					
	won't be examined.					
Clarity	of alignment					
5	I had a clear idea of what I was to learn	0	0	0	0	0
6	The teaching and learning activities helped me learn what I	0	0	0	0	0
	was supposed to learn					
7	The assessment methods addressed what I was supposed to	0	0	0	0	0
	learn					
Quality of education						
0	the sector of the second to be intellectually shallow size and					
8	stimulating	0	0	0	0	0
9	The course coordinator was enthusiastic about teaching the	0	0	0	0	0
	course					
10	The course coordinator was adequately accessible to students	0	0	0	0	0
	during or after class					
11	Course materials were well prepared and carefully explained	0	0	0	0	0
12	The scheduling of the course was well constructed	0	0	0	0	0
13	The course adequately addressed current developments in the field	0	0	0	0	0
14	This course motivated me to do my best work	0	0	0	0	0
15	I was generally given enough time to understand the things I had to learn	0	0	0	0	0
16	The sheer volume of work to be got through meant it could	0	0	0	0	0

Table 4.4. Selection of items from different questionnaires.


not all be thoroughly comprehended

17 I consider what I learned valuable for my future

Further reading:

Biggs, J.B., Kember, D., & Leung, D.Y.P. (2001) The Revised Two Factor Study Process Questionnaire: R-SPQ-2F. *British Journal of Educational Psychology.* 71, 133-149.

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Wong, E., Kwong, T., & Thadani, D.R. (2014). The Effects of Students' Perceptions of their Learning Experience on their Approaches to Learning: The Learning Experience Inventory in Courses (LEI-C). *Education Journal*, *3*(6), 369-376.

4.3 Curriculum database

The use of databases in CoAl

There are many evaluation cycles per year of these three are mentioned since they are central to quality assurance of a programme. One is the course evaluation cycle during which information from students about the courses that they have been involved in is gathered. A second evaluation cycle is the cycle that precedes that decision about the course catalogue of the next academic year. The third evaluation cycle is the preparation and writing of the Rules and Regulations of the next academic year. Every faculty has lots of data available. Most faculties have data on students, courses, teaching, teachers, admission alumni, and advisors at least. Other than that there are data relevant to the specific possibilities programmes offer like semester abroad, internships, or data on scheduling and student affairs procedures. A good question to ask is whether and how these data can be used to facilitate CoAl.

The ILOs of a programme are given in the Education & Examination Regulations (EER) of that programme. Data about the programme, more specifically data students generate about the programme (both data based on feedback and data based on student performance) are sources that allow a programme to assess whether the intended learning outcomes of the programme as a whole are achieved. A central database can help ensure that stakeholders have all relevant data at their disposal. It helps if data on course evaluations filled out by students, assessment analysis data from course coordinators and are available to a Board of Studies for example. It is also imperative that all stakeholders base their inputs/assessments etcetera on the *same* data.

Not all information needs to be available to everybody. It is perfectly conceivable that different stakeholders get different kinds of access to the same database. This way all information, current course content in combination with a record of course performance in the past for example, derives from the same database. So that when a new coordinator needs to discuss evaluations on the changes that she made to the course has relevant information on past performance available. Or when an education director wants to update his profile of ILOs per course in order to see how they match the ILOs of the programme it is transparent which ILOs are defined for which course and it will be easy to discuss adjustments or changes if necessary. Or when an examination committee is asked to judge whether a student meets the ILOs of a programme the data of the students concerned are easily available.



There are many uses of a well maintained and easily accessible database that may not concern the process of CoAl directly but will definitely help generate input for discussions concerning the question of whether or not the programme is constructively aligned.

The UCM example of a curriculum database can be viewed in <u>Annex IV</u> (p. 94): Curriculum database.

4.4 Staff development: How to support staff in processes of constructive alignment?

4.4.1 Team-based workshops (FASoS example)

Working on introducing or reinforcing of CoAl in your educational programme is also an invaluable opportunity to (re-)train your teachers, and assure continuous staff development. Concretely, a CoAl project requires knowledge about:

- Formulation of tangible learning outcomes
- Didactic approaches and monitoring their effectiveness
- Assessment methods and mix of grading formats
- Syllabus design
- Curriculum design
- Re-accreditation

All these topics can be subject to in-house or external training courses (for example the University Teaching Qualification (UTQ) trajectory). However, they can also be weaved-in implicitly or explicitly during the CoAl trajectory. Depending on the needs and the vision of the programme coordinator and the Faculty Board, a (short) training on each of these subjects can be intertwined within the trajectory of curriculum (re-)design. When the staff members are anyway in the process of revision of their courses, they do not mind and are more prone to receiving instructions or being guided by an educational expert. This means that the CoAl project can be an excellent training infrastructure, where the staff members can apply the learned tips and can immediately observe the added value of their effort invested in the course re-design.

In Box 4.3 an example from FASoS is sketched that combined a curriculum re-design of an MA programme (which was also simultaneously preparing for re-accreditation) with staff development and training sessions in four of the aspects listed above, namely: formulation of tangible learning outcomes, choice of adequate assessment methods, syllabus design, re-accreditation. The same example was already outlined above (chapter 2.3.6) in terms of the steps in the curriculum re-design process. This is why in the example presented in Box 4.3 only the staff training will be discussed.

Box 4.3 Combining the introduction of CoAl in a MA programme with staff development: a FASOS testimonial

The preparation for a re-accreditation is a unique opportunity to update and reform an educational programme. To accomplish such a change, however, and especially to assure its sustainability, it is necessary to have well-prepared staff, who are competent and motivated, to maintain the introduced changes. In this context, (re-)training focusing on the necessity of CoAl is often essential



and very desirable. This was the case with the MA 'Globalization and Development Studies' at FASoS. The programme was preparing for a re-accreditation and this preparatory trajectory was used to introduce the CoAl principles⁴ in the Education Plan, but also to re-train the team of teachers behind the programme.

The main focus of the training was the formulation of tangible ILOs at course level, whereby the staff was also refreshed on the most common taxonomies of LOs and the underlying rationale. **The second goal** of the training was to teach the staff members to explicate the rationale behind the chosen assessment methods in their course, and to teach them to critically choose assessment formats, and justify the grading process they perform.

The training was structured in 3 sessions of which no. 1 and no. 3 were **group sessions** - workshops, while no. 2 was **individually scheduled meeting** related to feedback and discussion of the concrete course-book of the trained coordinator. Under this structure the staff were able to oversee their position within the programme (in sessions 1 and 3), but also to reform their individual courses and receive direct feedback from the educational expert. The training had the following structure:

Workshop 1 – Raising the awareness and setting the norms:

1. Trainer introduces the concept of constructive alignment (CoAl), explains its function, and provides examples and good practices.

2. Trainer presents the requirements toward a well-formulated ILO, and the taxonomy of Bloom. Everyone discusses where the ILOs of his/her course score according to the taxonomy, and also which final qualification does it correspond to. Trainer provides comments, the Programme Directors finalises the decision which competence is trained where in the programme.

3. Trainer explains how the definition of the ILO (and in particular the level at which the educational attainment defined) conditions the choice of assessment format.

Homework:

Every course coordinator should think through his/her course and draft a plan about how the programme FQs are reflected in the course-level ILOs. Furthermore, all ILOs have to be revised using the list of active verbs. In addition, every coordinator proposes a revision of the current didactic approaches and assessment methods for his/her course.

Individual meetings between trainer and course coordinators:

The trainer discusses the homework of every course coordinator and provides feedback. An action plan is formulated how to revise the course books based on the revised in the homework ILOs. Opportunity to address case specific questions and tailored advice.

Workshop 2 – Wrapping-up and decisions at programme level:

1. Trainer discusses global lessons (of relevance for all) from the homework assignment and the individual meetings.

2. Trainer maps out the proposed by the course coordinators didactic approaches. The group discusses how they match or not with each other. Is the didactic programme convincing and forming

⁴ As stated before the current NVAO re-accreditation framework reflects and moreover expects the principles of CoAl in the four Standards (also see chapter 5.1).



a coherent curriculum given the final qualifications? Gain input from all the coordinators and make a final decision.

3. Trainer maps out the proposed assessment methods. The group discusses how they match or not with each other. Is the assessment programme convincing and forming a coherent whole with the curriculum of educational activities and the final qualifications? The group discusses and makes final adjustments.

QUALITY ASSURANCE

Chapter 5. External quality assurance: accreditation and external validation

Since all UM programmes need to be accredited by the NVAO (the Accreditation Organisation of the Netherlands and Flanders), a constructively aligned programme is crucial to guarantee and show the quality of your programme to internal and external stakeholders. In short, accreditation concerns the trajectory in which an accreditation authority awards (nationally) recognised degrees. These programmes are included in the official register of the relevant country (e.g., the CROHO in the Netherlands or the Higher Education Register in Flanders). Accreditation relates to the assessment of the quality of the programme and focuses on learning outcomes⁵. Currently, the NVAO assessment takes place via a 'limited accreditation' or 'extended accreditation' (see assessment frameworks⁶). If the institution has applied for the institutional audit, the programmes are assessed through 'limited accreditation'.

5.1 Importance of constructive alignment for accreditation and external evaluation purposes

In the four standards of the NVAO accreditation framework there are three central questions: (1) What does the programme aim for? (cf. Standard 1); (2) How is this realized by this programme? (cf. Standard 2); and (3) Are the objectives achieved? (cf. Standard 3 and 4). Looking at these three central questions and looking at CoAl some similarities are recognisable as stipulated already in chapter 3 that are discussed further in chapter 5.

Other similarities with CoAl are recognizable within documents provided by external parties such as the Dutch Inspectorate of Education and on a more international level within e.g. the Organisation for Economic Co-operation and Development (OECD)⁷.

The Dutch Inspectorate of Education is responsible for the inspection and review of schools and educational institutions in the Netherlands. This Inspectorate has completed a report⁸ in which they want to encourage universities and universities of applied sciences (Hogescholen) to improve the quality of assessment. The inspection is of the opinion that institutions for higher education should give extra attention to the consistency in assessment, to the professional development of teachers and educational leaders, and to the organisational integration of assessment. Within this report, they mention the use and importance of CoAl. The concept 'alignment' is also explicitly included in the flow chart of quality of assessment in higher education⁹ within the possible areas for improvement.

⁵ <u>http://nvao.com/three_steps_of_accreditation</u>

⁶https://www.nvao.com/system/files/procedures/Assessment%20Framework%20for%20the%20Higher%20Ed ucation%20Accreditation%20System%20of%20the%20Netherlands%202016_0.pdf

⁷ <u>http://www.oecd.org/education/skills-beyond-school/AHELOFSReportVolume1.pdf</u>

⁸ <u>http://www.onderwijsinspectie.nl/binaries/content/assets/nieuwsberichten/2016/de-kwaliteit-van-de-toetsing-in-het-hoger-onderwijs-definitief-rapport.pdf</u>

⁹<u>http://www.onderwijsinspectie.nl/binaries/content/assets/publicaties/2016/03/stroomschema-kwaliteit-toetsing-hoger-onderwijs.pdf</u>



Some similarities between the three central accreditation questions and CoAl

What does the programme aim for? (Intended Learning Outcomes) <u>Standard 1:</u> The intended learning outcomes of the programme have been concretised with regard to content, level and orientation; they meet international requirements. As for level and orientation (bachelor's or master's), the ILOs fit into the Dutch qualifications framework. In addition, they have to tie in with the



international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the programme. Insofar as is applicable, the ILOs are in accordance with relevant legislation and regulations.



How is this realized by this programme? (Teaching-learning environment) <u>Standard 2:</u> The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the ILOs. Explanation: The contents and structure of the curriculum enable the students admitted to achieve the intended learning outcomes. The quality of the

staff and of the programme-specific services and facilities is essential to that end.

Are the objectives achieved?

(Assessment)

<u>Standard 3:</u> The programme has an adequate system of student assessment in place. The tests and assessments are valid, reliable and transparent to the students. The programme's examining board safeguards the quality of the interim and final tests administered.



Within different assessment types it should be indicated what they are supposed to assess and why they do so. In concrete terms, it means that it should be expressed how the assessment relates to the objectives of the course and to other assessment types which take place within the same course. This can be proved through e.g. an assessment scheme and/or an assessment matrix (see e.g. Table 5.1).

(Achieved learning outcomes)

<u>Standard 4:</u> The programme demonstrates that the intended learning outcomes are achieved. The level achieved is demonstrated by interim and final tests, final projects and the performance of graduates in actual practice or in post-graduate programmes.

Following the principles of CoAl in the process of design of the educational programmes automatically prepares the programme for its (re-)accreditation. These principles can be visualised for accreditation and external evaluation purposes in different ways. However, this visualisation



entails more than an overview. It reflects specific programme goals, measureable student learning outcomes, and a well-articulated plan for timely implementation, strategic data collection, and analysis. Findings should then be used to inform, confirm, and support programme level change and facilitate continuous programme level improvement. And then of course, we keep on learning. It is important that all these elements will be revised and reflected upon every year¹⁰.

5.2 Considerations when writing self-evaluation reports

Following the principles of CoAl in the process of design of the educational programmes automatically prepares the programme for its (re-)accreditation. These principles can be e.g. visualised for accreditation and external evaluation purposes in different ways. Below you can find some examples of how the different Faculties at Maastricht University tackle this. But first there are some considerations that can be taken into account.

Every programme writes a critical (self-)reflection (Kritische Reflectie, KR), according to the NVAO-framework (for limited programme evaluation). The Review Committee (Evaluatiebureau) can provide guidelines, reviews, and writes the report. Based on this, the Board requests an accreditation at the NVAO. NVAO then does (not) accreditate or gives time for recovery and improvement.

Considerations related to Standard 1

ILOs per education unit/course must be finalized and the chosen method of assessment per education unit/course must be integrated into the learning objectives. This can be proved through e.g. an assessment scheme and/or an assessment matrix.

Assessment matrix

An assessment matrix counts two dimensions: the topics learned, and the levels of learning goals. If a course uses several assessment formats (written exam, paper, presentation, etc), one can in principle design an assessment matrix for each component of the assessment portfolio. In the School of Business and Economics (SBE), where the final written exam is in most cases the major piece of assessment, we work with a form that splits the final exam into 8-12 topics and includes other assessments at a global level.

The other dimension of the matrix is the level of learning. That is, again in SBE, based on the four Dublin indicators:

1. cognitive, 2. academic attitude, 3. global citizenship, 4. interpersonal competences. The first category, being the most important one for most written exams, is further subdivided into 1a. knowledge and understanding, 1b. application of knowledge and understanding, 1c. ability to make judgements, 1d. ability to communicate, 1e. and learning skills (note that this resembles closely Bloom's hierarchy of proficiency levels).

Adding the two dimensions together results in the assessment matrix. The cells in the matrix are filled with questions in the exam or other assessment formats. The example provided below is from the first year SBE course Quantitative Methods. Since this is the first-course students encounter, it won't surprise that many of the higher order learning goals are not covered.

¹⁰ See e.g. the PDCA-cycle: https://www.deming.org/theman/theories/pdsacycle



Levels of learning goals → Final exam, topics ↓	1a. knowledge and understand- ding	1b. application of knowledge and understand- ding	1c. ability to make judgements	1d. ability to communicate	1e. learning skills	2. academic attitude	3. global citizenship	4. interpersonal competences
Functions		Q01-Q06						
Differentiation		Q7-Q12	6					
Optimization		Q13-Q20						2
Descriptive statistics	Q21	Q22-Q24						
Probability models		Q25-Q30	2 ²					5
Sampling theory	Q31	Q32	5			2	3	
Inferential statistics	Q33	Q34-Q40						
3 Quizzes	25%	75%	Ī					
Student project				X			1	

Table 5.1. Assessment matrix.

From this matrix we read that beyond the final exam, assessment consists of three quizzes and a student project. Quizzes and exam are directed at the first two cognitive levels, knowledge and understanding and the application of it, whereas the student project aims to assess student's verbal ability to communicate the outcomes of a statistical analysis. In general, there are additional formats of assessments, such as papers, presentations, and contributions to PBL sessions, that are better suited to assess these higher order proficiency levels, where the written exam typically focuses on the cognitive level.

Considerations related to Standard 2

How is this realized by this programme? (Teaching-learning environment)

<u>Standard 2:</u> The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the ILOs.

Explanation: The contents and structure of the curriculum enable the students admitted to achieve the intended learning outcomes. The quality of the staff and of the programme-specific services and facilities is essential to that end.

Considerations related to Standard 3 and 4

Within different assessment types it should be indicated what they are supposed to assess and why they do so. In concrete terms, it means that it should be expressed how the assessment relates to the objectives of the course and to other assessment types which take place within the same course. Furthermore, the function of assessment is of interest: is it intended to select, to classify, to place or to certify? Within summative assessment, at the end of a course, generally the certifying function will come into view in relation to the course objectives and, indirectly, also to the final qualifications of the programme. From the point of view of level monitoring, especially these kind of summative certifying assessments are of interest.

It is also important that it can be proven that there is a clear relationship between learning outcomes and learning objectives (possibly also learning trajectories) and that all learning outcomes are adequately assessed (e.g. in terms of level of difficulty).



5.3 Examples

All UM faculties have inspirational practices related to how they (try to) assure CoAl and how they make CoAl e.g. visible for accreditation and external evaluation purposes. Examples from the Faculty of Law, FASoS and SBE can be found below.

Faculty of Law

This is an example of an overview that is made per programme, linking the Dublin Descriptors¹¹ to the final qualifications/end terms. The overview also shows which objectives occur and/or are assessed on a course level (only related to compulsory courses).

			Year of study (e.g. Year 1)			
Dut	lin descriptors	End terms	Course X	Course	Course Z	Master thesis
A.	Knowledge and understanding					
В.	Applying knowledge and understanding					
C.	Making judgements					
D.	Communication					
E.	Learning skills					

This is an example of an overview of assessment methods per programme and per year provided as appendix to the accreditation.

Programme X

Period	Name course	What is being assessed	How is being assessed
1 - 5		Learning objectives of the	Form(s)/method(s) of
		course	assessment

Faculty of Arts and Social Sciences

Good practice external quality assurance: External Advisory Boards

One possible instrument for the periodic renewal of the curriculum and the updating of the final qualifications could be the establishment of the so-called 'External Advisory Boards' (EABs). These Boards are convened by the programme coordinator or the Faculty Board and are composed of alumni and of professionals employed or active in fields closely related to the aims of the

¹¹ http://nvao.com/page/downloads/Dublin_descriptors.pdf



educational programme. The idea behind these Boards is to create a network of 'friends of the programme' who could provide valuable input as to the future development of the programme, the mix of intended learning outcomes, and the positioning of the educational programme vis-à-vis its external environment. In this context, the EABs become part of the quality assurance circle, and provide input for the annual evaluation and revision of the curriculum, which informs the yearly revision of the Educational and Exam Regulations (the OER-cycle).

Box 5.2 FASoS Case study of the External Advisory Board

Composition and appointment procedure

At FASoS the members of the EABs are appointed for five years. The programme coordinators are asked to provide a list with a balanced (international) mix of both men and women, recent and older graduates, people from the public as well as the private sector and professionals from big companies as well as small 'start-ups'. Shortlists are drawn up with approximately 14 members per Board. Upon approval by the programme coordinators and the Faculty Board, the members are invited to become an EAB member for a period of five years, during which they meet once a year in Maastricht. Apart from the EAB members the annual meeting is attended also by the Associate Dean of Education (Faculty Board member), the Chair of the respective Programme Committee, as well as the programme coordinator.

Content of the annual meetings and added value in terms of quality assurance

During the annual meetings the EAB members discuss the latest developments in the sector and the larger external environment of the programme, provide feedback about the final qualifications and the curriculum. During re-accreditation processes they provide input also for the self-evaluation reports. In order to make sure that the EAB's suggestions for improvement/change will actually be taken into account, minutes are taken during the meeting. These minutes are subsequently sent to the Programme Committee (PC) responsible for the educational programme. The PC discusses the recommendations from the EAB, and drafts a plan of action regarding how to implement (some of) the EAB suggestions. This action-plan is submitted to the programme coordinator who further implements the plan and reports back to the PC. The PC's annual report reflects on and evaluates the improvements introduced by the programme coordinator, and charts out potential further lines of improvement. This evaluation report is placed on the agenda of the next annual EAB meeting, and the session starts with this overview, before proceeding to the latest

developments. In this way the cycle is complete and feeds into the next yearly cycle leading to continuous attention to updating and improving the intended learning outcomes of the programme.



School of Business and Economics

SBE Master Learning Goals	1. Knowledge and insight	2. Academic Attitude	3. Global Citizenship	4. Interpersonal Competences		
	Our graduates are able to develop insights based on academic knowledge in a self- directed manner	Our graduates are able to demonstrate an academic attitude	Our graduates are able to actively engage in the global community in a globally responsible manner	Our graduates are able to demonstrate excellent interpersonal competences in an international professional setting.		
Programme name Programme Objectives	1.1 Programme objective	2.1 Programme objective	3.1 Programme objective	4.1 Programme objective		
	1.2 Programme objective	2.2 Programme objective 2.3	3.2 Programme objective	4.2 Programme objective 4.3		
Compulsory courses:	Programme objective 1. Knowledge and insight	Programme objective 2. Academic Attitude	Programme objective 3. Global Citizenship	Programme objective 4. Interpersonal Competences		
Course name 1	Instructional approach:					
Course name 2						
	Instructional approach:	Instructional approach:				
Course name 3						
	Instructional approach:					
Course name 4						
	Instructional approach:					
Course name 5						
	Instructional approach:					
Course name 6						
	Instructional approach:		I	I		
Course name 7						
	Instructional approach:	1	l	1		
MSc Thesis						
		1	1	1		

Legend: Ex = exam Pr = presentation Pa = paper Th = Thesis (partial grade) Oth = other means of assessment 0 = covered, but not assessed





Annex I: Glossary

Assessment

The systematic collection, review, and use of information about educational programmes undertaken for the purpose of improving student learning and development.

Assessment methods

All instruments or activities that are used to determine the competency level of a student (i.e. testing to what extent an ILO is achieved). Read more about assessment tasks and Constructive Alignment <u>here</u>.

Bloom's taxonomy

See also <u>SOLO taxonomy</u>.

Bologna Process

A series of ministerial meetings and agreements between European countries with the purpose to reform of European higher education systems and ensure comparability in the standards and quality of higher education qualification on a local, national and international level.

Curriculum Mapping

An analytical approach that allows faculty to identify important components of programme curricula, place them in relation to each other in a visual format, and then capture an overarching curricular structure to support cognitive scaffolding for further analysis. A curriculum map is a visual tool that can be used to introduce new students and faculty to the programme, curriculum discussion, accreditation requirements, and provides an approach to systematically study the curriculum. Curriculum mapping is especially helpful in implementing an assessment plan.

Direct Assessment of Learning

Occurs when measures of learning are based on student performance or demonstrates the learning itself. Scoring performance on tests, papers, or the execution of lab skills are examples of direct assessment of learning.

Final qualifications (FQs)

FQs identify the subject of the programme. Synonym for FQs: subject-specific learning outcomes on programme level. Final qualifications are sometimes treated as synonymous with ILOs; though final qualifications are usually more general statements of what students are expected to achieve in an academic programme.

Formative Assessment

The gathering of information or data about student learning during a course or programme that is used to guide improvements in teaching and learning. Formative assessment activities are usually low-stakes or no-stakes; they do not contribute substantially to the final evaluation or grade of the student or may not even be assessed at the individual student level. For example, posing a question in class and asking for a show of hands in support of different response options would be a formative assessment at the class level. Observing how many students responded incorrectly would be used to guide further teaching.



Indirect Assessment of Learning

Uses perceptions, reflections or secondary evidence to make inferences about student learning. For example, surveys of employers, students' self-assessments, and grades are indirect evidence of learning.

Intended Learning Outcomes

Objectives or operational statements describing specific student behaviours that evidence the acquisition of desired knowledge, skills, abilities, capacities, attitudes or dispositions. Intended learning outcomes can be usefully thought of as behavioural criteria for determining whether students are achieving the educational objectives of a programme, and whether overall programme goals are being successfully met. The objectives are written from the students' perspective and can be defined on three levels: the institute (i.e. faculty or UM); the programme (or study); course (or module, unit, block).

ILOs are sometimes treated as synonymous with final qualifications (or objectives); though ILOs express more concrete what a student should acquire during his/her studies.

NVAO Dutch accreditation framework

The NVAO explains this framework as follows: "This is a system in which: a. institutional quality assurance assessments bolster an institution-wide internal quality culture; b. programme accreditations focus on the essence of the education provided: (improving) substantive quality; c. a proper balance is achieved between assessing programmes on the one hand and quality improvement on the other." (NVAO, 2014, p. 6). In September 2016, the updated version of the NVAO Dutch accreditation framework was published. This version can be found <u>here</u>.

NVAO Limited programme assessment (accreditation)

UM has an institutional accreditation and therefor only a limited programme assessment is required for accreditation. This implies that 4 standards need to be met: (1) intended learning outcomes (2) Teaching-learning environment (3) Assessment (4) Achieved learning outcomes.

NVAO Standards

Intended learning outcomes

Standard 1: The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

Explanation: As for level and orientation (Bachelor's or Master's; professional or academic), the intended learning outcomes fit into the Dutch qualifications framework. In addition, they tie in with the international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the programme. Insofar as is applicable, the intended learning outcomes are in accordance with relevant legislation and regulations.

Teaching-learning environment

Standard 2: The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

Explanation: The contents and structure of the curriculum enable the students admitted to achieve the intended learning outcomes. The quality of the staff and of the programme-specific services and facilities is essential to that end.



<u>Assessment</u>

Standard 3: The programme has an adequate system of student assessment in place. Explanation: The tests and assessments are valid, reliable and transparent to the students. The programme's examining board safeguards the quality of the interim and final tests administered.

Achieved learning outcomes

Standard 4: The programme demonstrates that the intended learning outcomes are achieved. Explanation: The level achieved is demonstrated by interim and final tests, final projects and the performance of graduates in actual practice or in post-graduate programmes.

Problem based learning

Problem-Based learning (PBL) is UM's teaching philosophy. It is a pedagogy based on the principle that learning should be a constructive, semi-structured, collaborative, and contextual process. During the learning process competences such as self-directed learning, problem-solving, analytical thinking, team work, critical reflection, and knowledge application are trained. Find out more about problem-based learning <u>here</u>.

Rubrics

Scoring tools that explicitly represent the performance expectations for an assignment or piece of work. A rubric divides the assigned work into component parts and provides clear descriptions of the characteristics of the work associated with each component, at varying levels of mastery. Rubrics can be used for a wide array of assignments: papers, oral presentations, artistic performances, group projects, etc. Rubrics can be used as scoring or grading guides, to provide formative feedback to support and guide ongoing learning efforts, or both.

SOLO taxonomy

SOLO stands for Structure of the Observed Learning Outcome. The SOLO taxonomy classifies learning outcomes in terms of their complexity and enables one to assess the work of students in terms of quality rather than assessing in terms of quantity and how many parts of an assessment students got right. In addition, SOLO is useful in the (re-)design of the curriculum with regard to intended learning outcomes. Find out more about SOLO taxonomy <u>here</u>.

Summative Assessment

The gathering of information at the conclusion of a course, programme to improve learning or to meet accountability demands. Examples: examining student final exams in a course to see if certain specific areas of the curriculum were understood less well than others.

Teaching and Learning Activities

All educational formats that are used to achieve the ILOs, independent of the assessment.



Annex II: Examples of active verbs to specify ILOs

SOLO taxonomy

SOLO stands for Structure of the Observed Learning Outcome. The SOLO taxonomy classifies verbs to specify ILOs in terms of complexity of understanding.



Source: http://www.johnbiggs.com.au/academic/solo-taxonomy/

Some verbs for ILOs fr	om the SOLO taxonomy
Unistructural	Memorize, identify, recognize, count, define, draw, find, label,
	match, name, quote, recall, recite, order, tell, write, imitate
Multistructural	Classify, describe, list, report, discuss, illustrate, select, narrate,
	compute, sequence, outline, separate
Relational	Apply, integrate, analyse, explain, predict, conclude,
	summarize (précis), review, argue, transfer, make a plan,
	characterize, compare, contrast, differentiate, organize,
	debate, make a case, construct, review and rewrite, examine,
	translate, paraphrase, solve a problem
Extended abstract	Theorize, hypothesize, generalize, reflect, generate, create,
	compose, invent, originate, prove from first principles, make
	an original case, solve from first principles

Source: Biggs, J & Tang, C (2007). Teaching for Quality Learning at University (3rd Edition). The Society for Research into Higher Education & Open University Press.



Bloom's revised taxonomy of educational objectives

In Bloom's revised taxonomy verbs are classified in 19 cognitive processes on a continuum of increasing cognitive complexity.

Cognitive process	19 Cognitive process	Alternative verbs
dimension	categories	
Remember	Recognize	Identify
	Recall	Retrieve
Understand	Interpret	Clarify, paraphrase, represent, translate
	Exemplify	Illustrate, instantiate
	Classify	Categorize, subsume
	Summarizing	Abstract, generalize
	Infer	Conclude, extrapolate, interpolate, predict
	Compare	Contrast, map, match
	Explain	Construct models
Apply	Execute	Carry out
	Implement	Use
Analyse	Differentiate	Discriminate, distinguish, focus, select
	Organize	Finding coherence, integrate, outline, parse, structure
	Attribute	Deconstruct
Evaluate	Check	Coordinate, detect, monitor, test
	Criticize	Judge
Create	Generate	Hypothesize
	Plan	Design
	Produce	Construct

Source: Anderson, L.W. (Ed.), Krathwohl, D.R. (Ed.), Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

Overview of verbs composed by the Faculty of Arts and Social Sciences at Maastricht University Based on existing taxonomies, the Faculty of Arts and Social Sciences at Maastricht University composed an overview of the most relevant verbs to formulate intended learning objectives within their curricula.

Verbs that can be used to give evidence of				
Knowledge and insight	Knowledge: Define, describe, list, outline, recognise, relate, state, write, measure,			
(understanding)	match, recount, extract, identify, show, name.			
	Understanding: Summarise, describe, compare, classify, contrast, convert,			
	discuss, distinguish, identify, estimate, explain, formulate, give examples of,			
	interpret, translate, express, illustrate, discuss, predict, present, translate, select.			
Application Low level application: Apply, assess, change, choose, demonstrate, discov				
	calculate, explain how, illustrate, predict, prepare, produce, relate, show, solve,			
	examine, verify, compute, construct, change, classify, experiment, solve.			



	Higher level application: Account for, argue, combine, compose, conclude, create derive, develop, formulate, generalise, generate, substitute, integrate, modify, order, organise, plan, propose, design, invent, restate, report, revise, select,					
	summarise, synthesise, teach, tell					
Formation of a	Analysing: Analyse, separate, categorise, order, compare, conclude, contrast,					
judgement	criticise, diagnose, explain, connect, differentiate, distinguish, examine, justify,					
	infer.					
	Evaluating: Appraise, value, decide, determine, grade, recommend, select,					
	discriminate, choose, compare, conclude, criticise, defend, evaluate, judge,					
	justify, rank, value, assess, summarise, criticise, rate.					
Communication	Communicate, express, explain, respond, debate, defend, outline, examine, tell,					
	teach, tutor, present, summarise.					
Learning skills (related to	Solve, resolve, choose, identify, propose, plan, justify, assess, formulate, describe					
problem-based learning)	a course of action, devise, and suggest options.					

Taxonomieën van Bloom (Dutch)



Krathwoh, et al, 2001, Teelen Kennismanagement, 2014

















Annex III: ILO levels

In the OER different levels of courses are distinguished. According to article 4.2 there are three levels at which courses are offered:

- 1. Introductory level (1000)
- 2. Intermediate level (2000)
- 3. Advanced level (3000)

Introductory level (1000)

All students that are qualified for the programme may enrol in courses on this level. There are no entry requirements for any 1000 level course. In terms of content a 1000 level course introduces a student to a scientific field or discipline. It does this at an elementary academic level. That means the level as it is studied, practiced and researched at universities. Such an introduction gives an overview of the major sub-disciplines and seminal issues; it makes students aware of some of the most promising research areas in the field, and introduces the ways these are researched. In general it prepares students for a more in-depth approach to particular themes or topics in a discipline on the next, 2000, level. Conceptually it lays the groundwork for further, more specialized, study in the field at hand. Most of the readings at this level will be in the form of textbooks and other secondary material.

The Liberal Arts and Sciences Bachelor programme has no entry requirements apart from a VWO diploma or equivalent thereof. There are no additional restrictions operative. This does bring in a student population with the whole gamut of high school profiles. So some will be more, other will be less prepared for 1000 level courses, especially if these pertain to disciplines also taught in high school. It is important to make explicit the implications this has for 1000 level courses. The range of prior knowledge does not imply that an introductory course to - for example - biology is a repeat of the material that is taught in high school. An introduction to economy is not identical to what is usually covered in high school economics. A high school diploma is more than proof of possession of knowledge in subjects studied there. It is first and foremost proof of the capacity to learn; it shows eagerness to learn and willingness to learn new things. Introductory level courses take this into account. Students admitted to the Bachelor's programme have affinity for learning and a capability to learn. Being on an elementary level an introductory course will have some overlap with high school material, but it also always goes beyond this level, as it will introduce students to the discipline as it functions at a university. Relying on their ability to learn students that have not been introduced to it in high school will still be able to finish such courses be it with some extra attention and work.

Orientation in terms of material taught is predominantly past, you focus on the known things. You don't do anything with the knowledge that is there other than 'know 'it and its principles so the cognitive dimensions that go with it are remembering and understanding.



Intermediate level (2000)

At this level students begin to zoom in on parts of the discipline dealt with on the 1000 level. In 2000 level courses knowledge of particular sub fields becomes the focus. Within the range of this focus knowledge of the discipline is elaborated and strengthened. Some of the reading will still be (from) textbooks but at this level also primary sources become study material. Both in terms of the nature of concepts that are studied and in literature students analyse, the bridge between secondary and primary sources is created in 2000 level courses.

At this level there *may* be entry requirements. Whether this is the case depends on the nature of a discipline. Look at an example. Typically 'Social Psychology' is a 2000 level course. To enrol in it, successful completion of 'Introduction to psychology' is not required. An overview of the complete field of psychology is not a necessary prerequisite to successfully complete a course in social psychology. A student who's main focus is on psychology will more or less naturally have begun the journey with an introduction to psychology, but a student with a special interest in business and management could opt for just the course in Social Psychology as relevant expertise for interest in organisation and management. Such a student can skip the introduction since fields like perception and developmental and clinical psychology hold no interest for the student. The student with a broader and more in depth ambition in the field of psychology a 2000 course in social psychology will be a step on the way to further and deeper exploration of psychology, whereas for the business student the social psychology course is the end point of that interest. Depending on the overall profile a student wants to articulate at UCM the same course will have a different function in the design of an individual curriculum.

Orientation past/present. You deal with things that are already known but gain more indepth knowledge of principles, procedures and composition. So you are able to apply relatively standard ways of analysing problems in your discipline or structure description sin such a way that it counts as evidence for or against a particular way of explaining. The cognitive dimensions that belong to this level are understanding analysing and applying. But the things that you understand apply and analyse are the things in discipline that are known in the discipline.

Advanced level (3000)

At the 3000 level courses will always have entry requirements. Such prerequisites make sure students will be familiar with, have prior knowledge of, the field of study that an advanced course represents. Entry based on this notion of familiarity with the field can be based on a number of different courses. Admission to a 3000 level history course could be based on having completed one or two of a range of 2000 level history courses. This is one sense of what an advanced course is. Another one is characteristic of disciplines where the acquisition of knowledge is more strictly sequential. You must have mastered certain elements of the discipline before you can handle the next level. Often such courses are part of the natural sciences and of mathematics. Both these kinds of advanced courses will usually have 2000 level courses as prerequisites instead of 1000 level courses.

A 3000 level course takes students deeper into an area of a discipline. Its specialization can be based on a mix of subfields (cognitive neuroscience and developmental psychology) linked to advanced research techniques, such as imaging; in other areas it can be a mix of a topic as dealt with by a specific discipline (the role of gender in certain historical or societal developments). A further category of 3000 level courses focuses on current and salient developments in a discipline; also contemporary issues for which particular disciplines are relevant, as for instance migration.



Orientation present/future. You use the things that are known to address things that are questions. It is informed ignorance that is at issue here. You are able to produce something that doesn't exist yet like an assessment or evaluation of a particular aspect of a discipline or you are capable of designing an approach to trying to find an answer to a particular piece of missing information in a larger research programme. The cognitive dimensions that belong to this level of learning are evaluation and creation. So things like learning to determine whether a particular conclusion follows from a set of observed data are on the agenda. Writing truly critical evaluations of procedures or claims to knowledge are capabilities a student gains in these courses. The things that you involve yourself with are the things at the forefront of your discipline so you acquire information that will reduce the uncertainty (ignorance) that exists at the forefront.



Annex IV: Curriculum Database

UCM Data and Surveys: an overview

This annex provides an overview of all of the data that is currently available within UCM. It includes both pre-existing data and research as well as on-going and regular data collection that specifically concerns our courses and/or students. Beyond this, there is also data about finances, management, and other aspects of the College, but those fall outside of the scope of this document at the moment.

For each discussed dataset, a brief summary is provided about what information is covered, and how this is gathered. The Board has made an assessment of many of these data collection strategies, has assisted in the construction or amendment of some of them, and has looked at potential overlap or synergy between them where applicable. These evaluations are for the most part not included in this document, however, as this document is meant as a high level overview first and foremost.

The first table below outlines the data collected per relevant office. After that, the same information is structured around the different aspects we have information on (students, courses, etc.). Finally, we identify specific aspects that we currently may not have (sufficient) data on.

Office/source	Description	Approach	Frequency
International Relations Office (IRO)	A fairly extensive request for evaluation of semester abroad, grouped by partner universities, concentrations, etc. Filling this in is a mandatory requirement for all students going on semester abroad, which is also enforced.	Online surveys through Qualtrics (used to be SurveyMonkey). Responses are not anonymous at the point of data collection (though they are in reporting). The survey includes both closed questions, scale questions, and extensive open questions. Reporting is on summary data. Open question data is available, but not regularly reported on without request.	Twice per year (depending on when the student went abroad).
Academic Advising Survey (OAA)	A fairly brief questionnaire that asks students to evaluate the quality of their academic advising at UCM. It includes an assessment of the advisor, of OAA itself, and a reflection on the student's own approach to advising.	Anonymous paper survey with 21 scale questions (1-5) and one open question.	Once per year.
Examination Committee (EC)	A fairly extensive evaluation of the learning objectives and examination	Online survey through Qualtrics (used to be on paper/email). Responses are not anonymous at	Once per year, and once for each course.



Office/source	Description	Approach	Frequency
	types for each course offered at UCM, to be filled out by course coordinators. Filling this in is mandatory and enforced.	the point of data collection due to personalized links per coordinator.	
Office of Student Affairs (OSA)	OSA Survey – a short and straightforward assessment from students about the work done by OSA. If this proves to be useful data, this survey would need to be improved in terms of quality of the data collection.	Very short paper questionnaire with one closed scale question and two general open questions, all of which are reported on.	Only once so far (N=181); might not be repeated in the future or integrated into another data collection point.
Scheduling & course registration (OSA)	Registration numbers and possibly regular scheduling conflicts per course and/or across the entire curriculum.	The Board has not investigated this (potential) data yet, so as of yet it is unclear how much data is actually saved about this, and whether this would be worthwhile to pursue in the future. If useful, this would initially take the form of 'raw' data.	Continuous.
Switch/ withdraw (OSA)	Number of requested course switches (technically withdrawals), and numbers per course (from/to) per period. Possibly an overview of reasons for requesting a switch.	The Board has not investigated this (potential) data yet, so as of yet it is unclear how much data is actually saved about this, and whether this would be worthwhile to pursue in the future. If useful, this would initially take the form of 'raw' data, though the recent move towards digital forms for this might make that easier.	Continuous.
Special requests (OSA)	This may include information on requests for additional courses etc., especially the number of requests of a certain type, as well as the reasons for these requests (e.g.	The Board has not investigated this (potential) data yet, so as of yet it is unclear how much data is actually saved about this, and whether this would be worthwhile to pursue in the future. If useful, this would initially take the form of	Continuous.



Office/source	Description	Approach	Frequency
	scheduling issues vs. shift in curriculum focus, etc.).	'raw' data, though the recent move towards digital forms for this might make that easier.	
SAP	Any information stored on students in SAP.	The Board has not investigated this source of data yet, particularly because the priority has been to assess on-going data collections that we may want to adjust or advise on.	Continuous.
Admissions Office	Numbers of applications, interview scores and assessments, number of admissions, divided by country, prior education, etc.	Admissions data is stored <i>in</i> Excel files and SAP. The Excel files contain the ID nr, name, etc but SAP contains the legal documents. ROA will be working with this (and other) data in the near future, and we are looking into collaborating with that initiative.	Continuous / twice per year.
Student file	Per student: all relevant data we have on each individual student.	Largely digital files, with access through exam office on a per- student basis.	Continuous.
Capstone survey	A survey that graduates are asked to fill in.	Paper survey.	Twice per year.
Alumni Master Orientation Survey (OAA)	A survey conducted amongst alumni that focuses on their experiences in (applying to) master programmes. Used to populate the Master Orientation Tool.	Online survey that is not anonymous, with voluntary participation. There are about 35 open and closed questions. Used SurveyMonkey in the past, but should now move over to Qualtrics for practical and legal reasons. This will be resumed over Summer 2016.	Once per year.
Freshmen survey	A survey conducted amongst Freshmen students focusing on why they chose UCM.	An anonymous (students may volunteer their name if they wish to be approached) paper survey with around 10 closed and open questions.	Twice per year.
Course evaluations	Course evaluations conducted at the end of every course taught at	Anonymous, paper evaluation forms with mostly closed scale questions and two open questions.	After every course; continuous.



Office/source	Description	Approach	Frequency
	UCM.	Both types are reported on. Summary data for the closed questions, and a list of all responses for the open questions without further analysis.	
MSLQ, AMS, SEQ	An on-going research project focusing on psychological traits of students in relation to their studies.	Online survey, not anonymous.	Twice per year.

Data that might be considered for collection

As the table below shows, we already collect a lot of data on the programme and our students. A challenge ahead is to integrate these fairly disjointed points of data collection more closely to prevent overlap as well as to make use of possible synergy between data collection points so that we can make more use of the data we already collect. However, beyond that, there are some key aspects of the programme that may benefit from more specific attention when it comes to data collection on those domains. The ones we would currently consider are listed below.

- Curriculum how students assess the curriculum as a whole (and its constitutive parts), both in terms of courses on offer, coherence (and diversity), overall quality of courses (per field?), and possibilities for effective course planning may be somewhat lacking. This is assessed to some degree in the Capstone Survey (which focuses more on the core of the programme), but it may be worthwhile to see whether this needs to be expanded.
- Workload students have complained about a high workload at UCM in the past. Empirical evidence for this would be beneficial to that discussion.
- General periodical evaluations (a kind of UCM barometer) both points above as well as several of the data collection points that are currently on-going might be merged into a broader data collection amongst students (and staff?) at UCM. This could also include aspects relevant for accreditation that we do not currently assess (such as the quality of the building, rooms, etc., course load, coherence of the programme, overall quality of the staff (academic and support), etc.
- Effectiveness of admissions procedure in terms of student performance during the programme this may be achieved by better linking both types of data instead of added data collection points. As mentioned above, ROA will be working on this data in the near future, and we would like to maintain close ties to their research.
- Incoming exchange students evaluations, though to some degree this is covered by course evaluations already. It is also not essential for things like accreditation.
- Alumni data these are available on a more central university/faculty level, and on an adhoc basis through Luminous. Beyond that, it may be worthwhile to see whether we want to approach this more systematically.



Data about	Gathered amongst	Collected in	Involved office(s)	Types of data
Students	Students; office/admin data	SAP; Capstone survey; Freshmen survey; OAA survey	Admissions; OSA; OAA	Administrative data; Surveys (paper; not mandatory; partly anonymous).
Courses	Students; coordinators; Office/admin data	EC survey; Course evaluations; office data	EC; OSA; BoSaR	Evaluation forms (paper; mostly closed scale questions; anonymous and voluntary response); Survey amongst coordinators (Qualtrics; open & closed questions; mandatory response); performance per course of students (grades, success rates, etc.).
Semester abroad	Semester abroad students; Exam Office	IRO survey; conversion table	IRO; BoSaR; Exam Office	Survey (Qualtrics; open & various types of closed questions; mandatory response); Exam office admin data.
Teaching	Coordinators	EC survey	EC; BoSaR	Survey (Qualtrics; open & closed questions); mandatory response.
Advising	Students	OAA survey	OAA	Survey (paper; mostly scale; not mandatory).
Alumni	Alumni	Alumni master orientation survey	ΟΑΑ	Survey (online; open & closed questions).
Admissions	Office data	Admissions Office data	Admissions Office	Office administrative data stored in separate Excel files; no unified/cumulative dataset yet.
Scheduling & procedures	Office data; students	OSA survey; office data; scheduling data;	OSA	Short paper questionnaire (1 closed 2 open questions);



Data about	Gathered amongst	Collected in	Involved office(s)	Types of data
		switch/withdraw forms; special request forms; SAP		office data





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