Manual:
Implementing Outcome-Based Education (OBE) using Student-Centric Learning (SCL)

Masoom Hamdard
Higher Education Development Project (HEDP) - Ministry of Higher Education, Afghanistan
2/21/2016
# Table of Contents

Introduction ........................................................................................................................................ 3

The Rationale: .................................................................................................................................... 3

What is Outcome-Based Education (OBE)? ......................................................................................... 4

Constructive Alignment: ..................................................................................................................... 4

Traditional vs the Outcome-based Approach: ....................................................................................... 5

How to design a course using Outcome-Based Education approach? .................................................. 6

Factors affecting the success of OBE: .................................................................................................. 6

What are Learning Outcomes? ............................................................................................................ 9

Why Develop Learning Outcomes: .................................................................................................... 10

How to develop Learning Objectives: ................................................................................................ 11

Use active verbs in the statements for learning objectives: ............................................................... 12

Teaching and Learning Activities: ...................................................................................................... 14

What actually is Student-Centered Learning? ..................................................................................... 14

Why Students-Centered Learning? .................................................................................................... 15

Qualities of Effective Teacher: .......................................................................................................... 15

How to build positive classroom environment: .................................................................................. 19

Teaching and Learning Methods: ....................................................................................................... 19

Outcome-based Assessment: ............................................................................................................. 20

Types of Assessment Methods: .......................................................................................................... 21

Grading: ............................................................................................................................................... 23

Continuous Quality Improvement: ..................................................................................................... 25

Reference / Recommend Readings: ..................................................................................................... 26

Annex: .................................................................................................................................................. 27

Annex I: Teaching and Learning Methods/Activities - Suitable for Small Groups ......................... 28

Annex II: Example of Course Description Sheet ............................................................................... 33

Annex III: Format for a lesson plan .................................................................................................... 36

Annex IV: Various Assessment Type .................................................................................................. 37

Annex V: Assessment- Open-Ended Questions Vs Limited-Choice .................................................. 38
Introduction

This manual is prepared for academic staff of Afghanistan based universities and intends to a) provide theoretical underpinnings behind the Outcome-Based Education (OBE) and Student-Centered Learning (SCL), b) serve as a guide for implementing OBE applying SCL in the context of Afghanistan universities, and c) assist academic staff in sustaining and continuously improving the teaching and learning process.

The Rationale:

a) A global trend in Outcome-Based Education:
Twenty first century’s students as well as market demands have pushed educationalist to think about setting clear standards for observable, measurable outcomes through which student’s performance can be empirically measured. Globally many universities have shifted towards performance based education; however its implementation in all universities and disciplines was successful. In Western Australia, Kentucky, Washington State and Oklahoma in the United States met failure in the implementation of outcome based education mainly due to poor and vague learning goals. The outcome-based learning framework adopted by Zayed University (ZU) in the United Arab Emirates and many other universities in the world was successful.

b) Afghanistan’s universities need to positively respond to the 21st century’s higher education requirements. With growing technological innovations and its application in the higher education sector as well as the changing trend from teacher-centered to student-centered and outcome-oriented teaching/learning has triggered re-engineering of the curriculum, the teaching and learning approaches, and the way students are assessed.

c) The Ministry of Higher Education of Afghanistan under its strategic plan (2016-2020) has emphasized on equipping all teaching staff with the latest pedagogical and instructional skills that is required in modern ways of teaching and learning. The Ministry, in its quest to achieve regional higher education quality assurance standards (such as Asia-Pacific Quality Assurance Network), is planning to work on multiple fronts for raising capacity of entry level teaching staff, mid-career teaching staff, and senior teaching staff. A proposal is to make an obligatory outcome-based education and students-centered learning certification for newly hired teaching staff, link OBE-SCL certification to the promotion (integrated in the performance appraisal) of mid-career teaching staff, and organize mandatory OBE-SCL trainings for the senior teaching staff.

d) Producing skilled professionals/researchers to meet the market’s workforce demands. To have better career opportunities for students, modern universities are focused on providing skilled professionals to the market that are equipped with the technical knowledge in their own disciplines and have soft skills such as communication, IT, networking etc.
What is Outcome-Based Education (OBE)?

Outcome Based Education is defined as;

“An educational process which is based on trying to achieve certain specified outcomes in terms of individual student learning. Thus, having decided what are the key things students should understand and be able to do or the qualities they should develop, both structures and curricula are designed to achieve those capabilities or qualities. Educational structures and curriculum are regarded as means not ends, if they do not do the job they are rethought” (Willis and Kissane, 1995).

OBE emphasizes on setting clear standards for observable, measurable outcomes through which student performance can be empirically measured. OBE promotes educational revitalization and addresses the following key questions:

- What do you want the students to learn?
- Why do you want them to learn it?
- How can you best help students learn it?
- How will you know what they have learnt?

OBE has the following four main activities:

- Curriculum Design
- Teaching and learning process
- Assessment and Evaluation
- Continuous Quality

Constructive Alignment:

What we teach, how we teach and how we assess ought to be aligned with the intended learning outcomes, such that they are fully consistent with each other;

OBE is about constructive alignment that means that learning objectives, curriculum, teaching and learning activities, and assessments are all directed towards the intended outcomes of the course/programme. The emphasis of constructive alignment in OBE is on student’s learning, but it does not mean that something transmitted from teacher to learner, but is something learners have to create for themselves.

Teaching is simply a catalyst for learning. In modern education, the teacher’s role is to get students to engage in learning activities (keeping constructive alignment) that are likely to result in achieving the desired learning outcomes. It is noteworthy that what a student does is more important in determining what is learned than what the teacher does.
The figure below illustrates the constructive alignment, where learning objectives or learning outcomes are first set, then followed by teaching and learning activities, and then assessments accordingly.

**Traditional vs the Outcome-based Approach:**
Outcome based education is seen a paradigm shift in the higher education that is student focused and outcome orientated. The table below provides a comparison of the traditional teaching approach and the outcome-based approach.

<table>
<thead>
<tr>
<th>Outcome-Based Approach</th>
<th>Traditional Teaching Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner/student-centered</td>
<td>Teacher-centered</td>
</tr>
<tr>
<td>Teacher’s role as partner/facilitator</td>
<td>Teacher’s role as instructor</td>
</tr>
<tr>
<td>Focus on learner’s output</td>
<td>Focus on teacher’s input</td>
</tr>
<tr>
<td>Flexible and empowering</td>
<td>Rigid and controlling</td>
</tr>
<tr>
<td>Emphasis on progress and overall learning</td>
<td>Emphasis on products</td>
</tr>
<tr>
<td>Learning outcomes/Learning programmes are seen as guides</td>
<td>Course objectives/Syllabus is seen rigid &amp; non negotiable</td>
</tr>
<tr>
<td>that allows teachers to be innovation and creative in</td>
<td></td>
</tr>
<tr>
<td>achieving learning outcomes</td>
<td></td>
</tr>
<tr>
<td>Criterion-reference assessment</td>
<td>Norm-referenced assessment</td>
</tr>
<tr>
<td>Ability building and skills development</td>
<td>Content-based and content delivery</td>
</tr>
</tbody>
</table>
How to design a course using Outcome-Based Education approach?
The following steps could help in developing a course using outcome-based approach.

1. Gather information on the university resources, faculty and course content expectations, and your students and their learning needs.
2. Decide upon the goals (desired learning outcomes/performance indicators) for the course and specific learning objectives for students. A tip is to ‘begin with the end in mind’.
3. Select content, learning activities, teaching methods, materials including fundamental concepts on the topic, and media that are appropriate and relevant to those goals and objectives.
4. Develop student assessment methods that directly reflect the learning objective and helps you in testing whether learning outcomes are achieved or not.
5. Implement the course plan (see Annex III), creating a learning environment and a community of learners.
6. Revise the plan after assessments and evaluations, incorporating feedback from students and peers as well as self-reflection.

Factors affecting the success of OBE:
Some factors that need to be considered for the success of OBE are as follow;
- What the student is to learn must be clearly identified
- The student’s progress is based on demonstrated achievement
- Multiple instructional and assessment strategies/methods (see Annex IV) need to be available to meet the needs of the each student
- Adequate time and assistance need to be provided so that each student can reach the maximum potential (Towers, 1996)

Tips for Successful Implementation of OBE
- Come up with a set of Generic Learning Objectives/outcomes at institute level
- Develop programme learning outcomes that map onto the generic learning outcomes
- Design course learning outcomes based on the programme learning outcomes
- Ensure that teaching and assessing strategies are aligned with the course learning outcome
Case Study- Managerial Accounting at The Lingnan University in Hong Kong

With Outcome-based education approach in mind, the Lingnan University in Hong Kong has designed an introductory course in Managerial Accounting.

A brief course description:

- This course is a foundation core course for all students in the first year of study for the Bachelor of Business Administration Degree.
- This course introduces the scope and purpose of Managerial Accounting.
- This course discusses the design of cost system and how to use Managerial Accounting information for planning, control and decision-making.
- This course emphasizes the development of accounting measurement tailored for internal uses for business enterprises.
- While Financial Accounting demands consistency in its measurement to facilitate comparison, Managerial Accounting is more concerned with customizing measurement to provide maximum relevancy for the purpose of management.

Learning Objectives:

Learning Objectives are mapped against Bloom’s Cognitive Domain (Bloom 1956).
- List and describe major objectives of managerial accounting activity.
- Describe the behavior of variable and fixed costs, distinguish between product costs and period costs, and employ economic concepts in classifying costs.
- Accumulate production costs and assign those costs to a firm’s products under job costing, process costing, and activity-based costing systems.
- Apply cost-volume-profit analysis.
- Prepare budgets.
- Set standards and analyze material, labor, and overhead cost variances.
- Evaluate performance of organizational units.
- Prepare and evaluate analyses of various special decisions.
- Determine the price for a firm’s products or services.

Teaching and Learning Activities:

Having designed the learning objectives, the instructor now needs to design suitable teaching/learning activities that will facilitate students’ achieving the learning objectives. The point here is what the instructor/teachers wants students to learn, not how the instructor/teacher is going to teach. Ideally a teacher will develop a matrix indicating teaching and learning activities against each learning objective.

Teaching Activities: Lecture, case study discussion, group game, case write-up, debates

Learning Activities: Reading problem-based case study, participant in a play dough experiment on processing costing, computational-type cases (using various methods to differentiate fixed, variable and mixed costs), case write-up (students are asked to write analysis report to a CEO to compute breakeven etc.), debate with peers, critique and analyze.
### Assessment:

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Description</th>
<th>Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case discussion</td>
<td>Students are expected to read textbook material and prepare for case discussion.</td>
<td>Evaluated according to: identification of case issues, Communication of argument, problem solving skills, critical thinking skills</td>
</tr>
<tr>
<td>Project</td>
<td>Students are asked to submit a written case analysis.</td>
<td>Evaluated according to: All of the above plus writing skills</td>
</tr>
<tr>
<td>Debate</td>
<td>Students are asked to make a decision and defend it.</td>
<td>Evaluated according to presentation of arguments</td>
</tr>
<tr>
<td>Examination</td>
<td>Two examinations throughout the term, each with 20 Multiple Choice questions and four long questions.</td>
<td>MC questions are composed of both conceptual and computation questions. Long questions are composed of ethical issues, computations and theory-type questions.</td>
</tr>
</tbody>
</table>

Instructors/teachers used a range of authentic assessment tasks that demanded not only understanding of content but also a range of abilities such as language use, information processing, critical thinking, problem solving, and decision making. Outcome-based education encourages self-reflection and helps develop students’ capacity for inquiry.
What are Learning Outcomes?

Learning outcomes are the anticipated knowledge, skills and/or qualities that a student may exhibit by the end of a discrete learning period.

A learning outcomes answers the question: “What is it that your students should be able to do at the end of the hour/lecture that they could not do before?”. It provides a clear guidance for the planning and development of the teaching process, including the design and organization of materials, the selection of the most appropriate teaching methods, as well as providing a measure for quality assurance (Biggs, 2003).

A learning outcome makes clear the intended learning outcome or product of instruction, rather than what form the instruction will take. Learning outcomes are designed at three levels, a) at degree level, b) at programme level and c) at course level. The degree level outcomes work as umbrella for the programme level outcomes, and course level outcomes are aimed to achieve programme level outcomes.

As a first step the university or faculty academic committee/board should set out programme learning outcome, that is basically answering 'why are we conducting this study programme; what knowledge and skills our graduates should have?". The answer will help in designing degree level expectations, the following seven elements are often considered in developing programme level outcomes;

- Depth and breadth of knowledge
- Knowledge of methodologies
- Scientific research skills
- Application of knowledge
- Communication skills
- Awareness of the limits of knowledge
- Autonomy and professional capacity
- Employer’s demands (see box for skills employers seek)

Degree Level Expectations-align with institutional academic plan
Programme Level Outcomes-reflects departmental vision and characteristics of ideal graduate
Course Level outcomes/Objectives

Top 10 Skills that Employer Seek
- Communication skills
- Team working skills
- Integrity
- Intellectual ability
- Confidence
- Character/personality
- Planning & organization skills
- Literacy
- Numeracy
- Analytical and decision making skills
It is very important to have coherency in the degree level expectations, programme level outcomes, and course/lesson outcomes. As shown in the figure below, individual course units within each semester/modules need to contribute (directly or indirectly) to at least some of the programme level learning outcomes. Similarly the combination of all individual course learning outcomes should accomplish the overall programme outcomes and ultimately helps in achieving the expected graduate profile.

Why Develop Learning Outcomes:
Learning Outcomes are important because;

- Students can see how the material is related to their educational goals or to any other goals they can recognize as being important.
- Your tests will correspond to the stated learning objectives. (Once you have written your learning objectives, you have defined your assessment materials)
- Students know what to study and what they are expected to be able to do after the instruction.
- Your course is organized (With objectives, the topics fit together and have direction)

In short, learning outcomes communicate what the instructor is trying to teach; what the students are expected to be able to do; how their achievement will be measured; and what will be accepted as evidence that they have achieved the learning goals.

Learning Objectives & Learning Outcomes

Learning Objectives are statements that describe specific instructional goals containing verbs that are observable and measurable.

Learning Outcomes are Broad goals that describe what the learners are supposed to know, be able to do, or value.
How to develop Learning Objectives:

Learning objectives focus on student performance. Action verbs that are specific, such as list, describe, report, compare, demonstrate, and analyze, should be used to describe the behaviors students will be expected to perform. There are various levels of learning objectives; some are only simple recall or memorizing of a definition, others are higher level that requires problem solving or evaluation.

One popular categorization scheme for types of objectives is Benjamin Bloom’s (1956) Taxonomy of Objectives for the Cognitive Domain, which includes the following levels:

- **Knowledge** - it is primarily concerned with students’ ability to memorize or recall certain specific facts.
- **Comprehension**: this level of learning objectives usually involves the ability to interpret, paraphrase, and extrapolate, thus demonstrating students’ basic understanding of ideas that they did not originate.
- **Application**: It includes activities in which the student applies concepts and principles to new and/or practical situations.
- **Analysis**: this level is generally concerned with breaking down a piece of information into its constituent parts, differentiating and denoting.
- **Synthesis**: it involves the blending of elements and parts to form a whole. Students should be able to create a structural pattern that was not previously present.
- **Evaluation**: this is the highest level of the learning objectives, at this level students might judge the value of a work, the logical consistency of written data, or the adequacy of someone else’s conclusions.

At university level learning objectives should always include some higher-order objectives and not center exclusively around retention and understanding. Yet it is understood that in most curricula there are

---

Tips for developing learning outcomes

- **Attractive**: it reflects the interest of the target audience
- **Comprehensible**: it is meaningful and students know the meaning
- **Attainable**: it is manageable allotted time and student can learn to achieve them
- **Coherent**: the leaning outcomes maps with the programme/overall learning outcomes (Baume, 2005)
- **Assessment**: think about appropriate assessment methods that would help in figuring out whether the learning outcomes are achieved or not
foundational knowledge and comprehension requirements that must be achieved before higher-order objectives can be addressed.

**Use active verbs in the statements for learning objectives:**

For writing effective learning objectives, educationalist suggests the use of **action verbs** that clarify what the learner will do to demonstrate understanding. Some verbs are more commonly used with certain levels of learning objectives which are demonstrated in the table below. You can certainly look for other verbs that may better describe what you want from your students to accomplish in your discipline.

<table>
<thead>
<tr>
<th>Bloom's level of learning</th>
<th>Skills students should demonstrate</th>
<th>(Sample) Action verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Memorization</td>
<td>Define, list, name, describe, tell, identify, show, label, quote (tell the “who,” “when,” “where”) etc</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Understanding</td>
<td>Explain, describe, summarize, interpret, contrast, predict, distinguish, estimate, give examples etc</td>
</tr>
<tr>
<td>Application</td>
<td>Using</td>
<td>Relate, determine, apply, demonstrate, calculate, examine, modify, discover, show</td>
</tr>
<tr>
<td>Analysis</td>
<td>Taking apart</td>
<td>Identify, analyze, explain, arrange, discriminate etc</td>
</tr>
<tr>
<td>Synthesis</td>
<td>Putting together</td>
<td>Integrate, modify, rearrange, plan, create, design, compose etc</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Judging</td>
<td>Decide, rank, convince, judge, summarize, evaluate etc</td>
</tr>
<tr>
<td>Creating/Designing</td>
<td>Creating</td>
<td>Develop, design, create, produce</td>
</tr>
</tbody>
</table>
EXAMPLES

Bad learning objective:
In this course, students will be exposed to a variety of factors that contributed to the climate change.

Worse learning objective
In this course, I will introduce and explain a variety of factors that contributed to the climate change.

Learning objective:
By the end of this course, students are expected to explain the natural and human-induced factors that contributed to the climate change by contributing to in-class discussions and writing a research paper.

Learning outcomes:
- By the end of this course, students will be able to explain the natural and human-induced factors that contributed to the climate change.
- By the end of this course, students will be able to synthesize information from a variety of sources and express arguments, both orally and in written form.

<table>
<thead>
<tr>
<th>Good and Bad Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bad Learning Objectives</strong></td>
</tr>
<tr>
<td>By the end of this course;</td>
</tr>
<tr>
<td>Students will become familiar</td>
</tr>
<tr>
<td>with plant and animal species</td>
</tr>
<tr>
<td>in Eastern Afghanistan.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>By the end of this course;</td>
</tr>
<tr>
<td>Students will appreciate the</td>
</tr>
<tr>
<td>ethical responsibilities of</td>
</tr>
<tr>
<td>research conducted in the</td>
</tr>
<tr>
<td>social sciences.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Teaching and Learning Activities:

While designing teaching and learning activities, teachers must keep in mind that all students can learn and succeed, but not all in the same time, in the same way or in the same pace.

Multiple teaching and learning activities are necessary to achieve the intended outcomes, since students have different learning styles, it is therefore suggested to choose appropriate teaching and learning methods (See Annex I) that will foster student’s engagement in the learning process rather than them (students) listening to the lectures passively. Such activity-based teaching and learning methods promote 'Student-Centered Learning' (Attard et al., 2011). Hence Student-Centered Learning (SCL) is termed as a mean for the implementation of Outcome-based Education.

What actually is Student-Centered Learning?

Student-Centered Learning (SCL) is the vehicle through which Outcome-Based Education (OBE) is delivered.

Student-centered learning is an instructional approach in which students influence the content, activities, materials, and pace of learning. This learning model places the student (learner) in the center of the learning process (as shown in the figure). The instructor provides students with opportunities to learn independently and from one another and coaches them in the skills they need to do so effectively. The SCL approach includes such techniques as substituting active learning experiences for lectures, assigning open-ended problems and problems requiring critical or creative thinking that cannot be solved by following text examples, involving students in simulations and role plays, and using self-paced and/or cooperative (team-based) learning. Properly implemented SCL can lead to increased motivation to learn, greater retention of knowledge, deeper understanding, and more positive attitudes towards the subject being taught (Collins & O’Brien, 2003).

SCL is about active participation of students in the classroom, and that active participation can be achieved if the content/curriculum, instructions strategies, teacher’s interaction with the students, teaching and learning methods, assessments, and the environment are all directed towards students learning.

SCL, if properly implemented, triggers student’s interest in the teaching and learning activities, and leads to a long lasting and in-depth understanding of the study materials.
Why Students-Centered Learning?
Research indicates that those teachers who adapt to student-centered learning are energized by the response and active participation of the students, as well as it lead to improved student learning and performance. Teaching should no longer be seen as a ‘one way process’ from teacher to learner. Real education can only come about through discussions, projects and challenging the critical mind. SCL foster teaching and learning activities that reduces work-load on teachers and limits its role as facilitator or guide towards students learning, as shown in the picture "Less us (teachers), more them (students)".

The benefits of the application of students-centered learning are that it;
- Provides substance and arrange teaching activities in line with the learners
- Provides training in thinking process, management, and how to face and respond in various situations
- Enables learners to think critically
- Both learners and teachers may learn together, and long term retention of knowledge
- Increases student engagement with the content

Qualities of Effective Teacher:

The quality of teaching is to be judged by the quality of learning that take place

The role of teacher/instructor in the application of SCL is very important, teacher creates an environment that:
- Fosters students learning
- Accommodates various teaching and learning methods
- Fosters students to accept responsibility for learning
- Aligns learning outcomes/objectives, teaching & learning approaches and assessments consistently
- Applies multiple teaching techniques appropriate for student learning goals
- Creates activities in which students interact with the material, the teacher and each other
- Inspires and encourages student ownership of learning
For the successful implementation of SCL, teachers play an important role. The qualities that effective teachers possess are illustrated in the figure below;

**Qualities of Effective Teachers**

Effective teachers deploy new and creative approaches to everyday instruction.

- **Creative:** (risk taking, originality, curious, Problem Solving)
- **Communicative:** (knowledgeable, listener, engagement, humor)
- **Effective Teacher**
- **Passionate:** (enthusiastic, excitability, positive, energetic)
- **Authentic:** (caring, empathetic, openness, reflective)
- **Committed:** (purposeful, organized, motivated, resilient)

For teachers teaching in a creative and adventurous profession, passion is not an option. It is essential to high quality teaching.

Teachers have become facilitators of learning by stimulating creativity, self-learning and critical thinking instead of transmitters of knowledge, and this is how it should be because no matter what you do as a teacher, you cannot claim to be teaching unless learners are learning.

The goal of having all students succeed in achieving a set of meaningful learning outcomes implies that teachers must be innovative and creative in order to develop ways of helping students to achieve the learning goal. However, there is no doubt that OBE will require teachers to have a very thorough understanding of what they are teaching, and the insight to relate their prime subject matter to other learning areas. It is just not possible to take an integrated outcomes-based approach to teaching if you do not have a deep understanding of what you are teaching.
If teachers want all students to learn well and to achieve specific outcomes, there are certain instructional procedures that must be followed:

- Teachers must prepare their students adequately so that they can succeed. This requires teachers to understand exactly what they want students to learn, to anticipate learning weaknesses of students and address them accordingly. One of the most common reasons that students are not successful is that they do not have the necessary prerequisite knowledge and skills at the start of the instruction period.
- Teachers must create a positive learning environment in which students know that they will be helped in their learning no matter how easy or difficult they might find the learning process.
- Teachers must help their students to understand what they have to learn, why they should learn (including how certain knowledge/skills will help them in the future), and how they will know when they have learned it. Do not assume that students will see the relevance of what you are teaching just because only you (teacher) know why you are doing it. And never teach anything for which you can see no useful purpose.
- Teachers must use a variety of methods of instruction in order to help each student to learn. You should not assume that all students can learn equally well from one particular teaching strategy/method, and you should not assume that any particular teaching strategy is a suitable way to help students achieve all learning outcomes.
- Teachers must provide students with sufficient opportunities to practice using the new knowledge and skills that they gain, so that under the teacher’s guidance they can explore and experiment with their new learning, correct errors and adjust their thinking, and provide feedback.
- Teachers must help each student to bring each learning episode (lesson or group of lessons) to a personal closure so that they are aware of what they learned and where it is leading them. Do not assume that students can do this without your guidance.

If teachers want to successfully implement OBE-SCL, they need to look at it from their students’ perspective. Consider for a moment the questions that students might ask about any particular lesson (beyond the obvious “Is it in the exam?”).
Some basic questions might be;

- What do I have to learn?
- Why do I have to learn it?
- What will I be doing while I am learning?
- Will it be interesting and useful?
- How will I know that I am learning what I should be learning?
- Will I have any say in what I learn?
- How will I be assessed?

If teachers can answer these questions for their students then it will lead to an effective outcomes-based approach using SCL in teaching.

To program effectively, teachers need to consider both short-term and long-term outcomes so that the knowledge, skills and attitudes that help students to learn day by day will integrate to become desirable long-term outcomes. It is important that teachers start by considering the long-term outcomes and work backwards to specify the short-term outcomes that will guide their unit and lesson planning. The alternative of starting with the fine detail (planning lesson by lesson without an overall framework) is unlikely to produce an integrated and meaningful end result.

### Delivering SCL as Individual Teacher

Sometime it is difficult to go through major changes in the whole faculty's curriculum while some individual teachers might be interested in delivering SCL based on outcome-based education.

They can start with a short-circuit approach;

1. Identify set of outcomes which may be most appropriate for the graduate that is produced by a given study programme
2. Develop learning objectives for your course using Bloom's taxonomy
3. Work out how teaching and learning activities could be built-in to a lesson, using SCL methods to achieve either all or few outcomes in the expected graduation profile
4. Identify resources (articles, text books, lecture notes) to implement the mentioned teaching learning activities using SCL
5. Design assessment methods to test whether learning outcomes are achieved or not
How to build positive classroom environment:
- Arrive a few minutes early to chat with students about the course assignments or campus events
- Attempt to learn students’ names
- Acknowledge and praise students’ good contributions in class.
- Be tolerant of students’ viewpoints.
- Step away from the lectern, and walk toward the students particularly those asking questions
- Stay after class to answer questions.
- Invite students to stop by to discuss their performance on tests, quizzes, and assignments
- Consider holding extra help or review sessions outside of regularly scheduled classes, especially to prepare for exams.
- Obtain early feedback from your students about your teaching. This will give you time to make changes in your class

Teaching and Learning Methods:
Teachers could think of applying a number of teaching and learning methods that could help in achieving the learning outcomes. Educationalist suggests using multiple teaching and learning methods that reflects learning abilities of diverse group of participants. Some common strategies that promote OBE using SCL are;

- Ask students to read a section or chapter of a book before conducting the lesson
- Organize the class as teams and ask students question on the content using quizzes and organise educational games that would help in building communication skills and team work or other expected outcomes
- Give short interactive lecture to highlight what is studied before and what is expected in this lecture and how it fits in the overall programme. This help student to place this lecture course in their overall degree programme.
- Give assignment or examples from day-to-day situation, so that students can relate theories to practice.

What if you do not know the answer to a student’s question?

Good teacher's approach:
“That’s a good question! Let me see what I can find and I’ll get back to you,” and then be sure to find an answer for the next class meeting

Teaching and learning methods in the class should be aligned with the overall learning outcomes but the size of the class should also be considered. Teaching and learning methods that are effective in the small groups might not be very useful in large classroom.

The table (in Annex I) provides a list of different teaching and learning methods, its description and its usefulness for various learning outcomes.
Outcome-based Assessment:

Assessment of student achievement is an important aspect of Outcome-based education. Assessment process must be aligned with the learning outcomes. Assessment should support the learners in their progress and validate the achievement of the intended learning outcomes at the end of the lecture/course/module. Assessment methods should be adapted depending on the kind of outcomes that it is aimed to appraise.

In contrast to traditional norm referenced testing which is designed for the purpose of comparing students with one another, criterion referenced assessment is a form of assessment in which judgments are made about learners by measuring their work against set criteria that are independent of the work of other learners.

**Features of Outcome-Based Assessment**

- Must be aligned with the outcomes that are being measured
- Should focus on the knowledge and skills that are most important for learners to learn
- Should be designed to engage learners in a higher-order thinking (such as understanding of the concepts)
- Should be comprehensive to address all the important outcomes
- Procedures should be fair and reliable (Killen. 2007)
Criteria are specified in terms of the outcomes set for a course. By putting in time and effort at the beginning of a course, reflecting on and specifying criteria and communicating these clearly to students, one is in a better position to facilitate learning by giving learners feedback on the extent to which they have, or have not, met those criteria (Rhodes University, 202).

A very important aspect of outcome-based assessment is the feedback mechanisms. Feedback from assessment enables the lecturer involved to provide as much guidance to learners as possible. This feedback guides learners on their strengths and weaknesses and advises them on how to progress.

Traditional assessment methods such as assignments, multiple choice and exams may still be appropriate to assess some of the outcomes we wish our students to demonstrate. However, we need to question whether these methods are broad enough and whether they cater sufficiently for the range of outcomes and the diverse learning styles/strengths of our students.

Types of Assessment Methods:

There are a number of assessment methods that are listed and described in Annex IV. The type of assessment methods are designed either to help students to learn and develop (formative assessment-providing feedback to students) or to determine the level of achievement (summative assessment-through grading). The choice of assessment method (limited choice, open-ended, essay, presentation, case studies, oral examination, projects, and portfolio) should be based on the type and level of learning objective (Bloom's Taxonomy Levels) that are subject to assessment.

The choice for a certain type of assessment also depends on;

- Learning objectives and teaching/learning activities
- When you are testing (entry/mid-term/final)
- Time needed and time available to construct the assessment
- Time needed and time available for review and correction
- Time available to take the test

### Setting Assessment Criteria

Assessment criteria are developed in relation to the outcomes set for the course. In the interests of transparency, fairness and student motivation, assessment criteria should be communicated explicitly to students so that they know exactly what is required. The following questions may assist you in evaluating the process of setting criteria:

- What are the learning outcomes for this component? What criteria do learners have to meet and what evidence of their achievement do they need to apply to be proficient and competent?
- Are these criteria made known to learners in advance?
- What opportunities do you give the learners to assess their progress in situations where you are able to inform them of their weaknesses and guide them towards improved achievement?
- Are the criteria capable of distinguishing clearly between the learner who is not yet competent and the learner who is able to demonstrate sufficient mastery to move to the next level of competence in the discipline?
The choice for assessment method could also be decided based on limitation or pros and cons of each assessment method. The table below illustrates how limited choice question and open-ended questions are addressing various assessment related issues.

<table>
<thead>
<tr>
<th>Assessment related Issue</th>
<th>Limited Choice Questions</th>
<th>Open-Ended Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of learning objective</td>
<td>Recall, comprehension</td>
<td>Problem solving, synthesizing</td>
</tr>
<tr>
<td>Content coverage</td>
<td>Wider sample</td>
<td>Greater depth</td>
</tr>
<tr>
<td>Practice and reward of writing and reading</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Reward of creativity and divergent thinking</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Feedback to instructor and student</td>
<td>Limited but fast</td>
<td>Thorough but slow</td>
</tr>
<tr>
<td>Length of exam (time to complete)</td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>Size of class (size of students)</td>
<td>Larger</td>
<td>Smaller</td>
</tr>
<tr>
<td>Reliability in grading</td>
<td>Very reliable</td>
<td>Requires work to become reliable</td>
</tr>
<tr>
<td>Exam construction and grading time</td>
<td>Long/Short</td>
<td>Short/Long</td>
</tr>
<tr>
<td>Test reusability</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Prevention of cheating (see Box on type of cheating/plagiarism on next page)</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

Assessment Matrix

The assessment matrix provides an example of how the marks/points/score weight is distributed among various levels of learning. This type of exercise helps teachers to link exam questions to the learning objectives.

<table>
<thead>
<tr>
<th>Level/LO</th>
<th>Knowledge</th>
<th>Insight</th>
<th>Application</th>
<th>Integration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Objective #1</td>
<td>Question 1</td>
<td></td>
<td></td>
<td></td>
<td>10 %</td>
</tr>
<tr>
<td>Learning Objective #2</td>
<td></td>
<td>Question 3</td>
<td></td>
<td></td>
<td>30 %</td>
</tr>
<tr>
<td>Learning Objective #3</td>
<td>Question 2</td>
<td></td>
<td></td>
<td></td>
<td>20 %</td>
</tr>
<tr>
<td>Learning Objective #4</td>
<td></td>
<td></td>
<td>Question 4</td>
<td></td>
<td>40 %</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>100 %</td>
</tr>
</tbody>
</table>
Similarly the merits and demerits of other assessment methods are demonstrated in the table below:

<table>
<thead>
<tr>
<th>Assessment Types</th>
<th>Merits</th>
<th>Demerits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Closed questions</strong></td>
<td>Easy to correct</td>
<td>Takes time to construct</td>
</tr>
<tr>
<td>(multiple choice, yes/no)</td>
<td>Easy to analyse</td>
<td>Lot of questions needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Test reproduction</td>
</tr>
<tr>
<td><strong>Open questions</strong></td>
<td>Not much time to construct the test</td>
<td>It takes time to correct</td>
</tr>
<tr>
<td></td>
<td>Beyond level of reproduction</td>
<td>Good model answers are needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(less reliable)</td>
</tr>
<tr>
<td><strong>Oral exam</strong></td>
<td>Interactive test</td>
<td>Less reliable (criteria needed)</td>
</tr>
<tr>
<td></td>
<td>Extra information</td>
<td>Takes time to test</td>
</tr>
<tr>
<td><strong>Paper/Cases/Group</strong></td>
<td>Activates / Motivates</td>
<td>Takes time to correct</td>
</tr>
<tr>
<td><strong>assignment</strong></td>
<td>Tests writing skills</td>
<td>Less reliable (criteria)</td>
</tr>
<tr>
<td></td>
<td>Test collaboration</td>
<td>More supervision needed</td>
</tr>
</tbody>
</table>

**Grading:**
The assessment of courses should typically comprise rating or grading scale, each of which have a few rating/grading points. Each rating point should have a label and a descriptor so that both the teacher and students are clear when and why should a particular rating be given for a particular student's performance. For example, a 2-point rating/grading scale can be developed to assess 'student's written assignment', where the labels for each of the two ratings are: Satisfactory=Pass, Unsatisfactory=Fail (the assignment needs further improvement). This type of rating/grading is commonly used for giving feedback to students (formative assessment).

Similarly for summative assessment the rating/grading could be much wider to (A+; A; A-; B+; B; B-; C+; C; C-; D+; D; D-; F). The reason for this is that these assessments are on relatively small subject areas that requires only a relatively small effort by the students. Hence, to avoid all students getting high grades on such small subject areas, the bar for superior performance should be set at a higher level than usually consider in a traditional system of education.
In outcome-based assessment, a number of multiple assessment as well as learning methods are employed, therefore the proportion/percentage of marks awarded for each assessment activity should be relatively small. For instance:

- Individual assignment could be awarded 10% of the whole module assessment.
- Group project and presentation, for instance could be 15%.
- Active participation in the field work could be 10%.
- Written exam 65%.

---

**Cheating and Plagiarism**

**Plagiarism:** Using another’s work from print, web, or other sources without acknowledging the source; quoting from a source without citation; using facts, figures, graphs, charts or information without acknowledgement of the source.

**Cheating:** Copying from another student’s paper or receiving unauthorized assistance during a quiz, test or examination; using books, notes or other devices (e.g., calculators, cell phones, or computers) when these are not authorized; procuring without authorization a copy of or information about an examination before the scheduled exercise; unauthorized collaboration on exams.

**Unauthorized Group Work:** Working with another person or persons on any activity that is intended to be individual work, where such collaboration has not been specifically authorized by the instructor.

**Multiple Submission** - Submitting the same paper for credit in two courses without instructor permission; making minor revisions in a credited paper or report (including oral presentations) and submitting it again as if it were new work. It is each instructor’s responsibility to make expectations regarding incorporation of existing academic work into new assignments clear to the student in writing by the time assignments are given. (FSU, 2010)

---

**Grading Scale**

(Example from the OBE-SCL manual developed for SriLanka)

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>98.0-100%</td>
<td>A+</td>
</tr>
<tr>
<td>94.0-97.9%</td>
<td>A</td>
</tr>
<tr>
<td>92-93.9%</td>
<td>A-</td>
</tr>
<tr>
<td>90-91.9%</td>
<td>B+</td>
</tr>
<tr>
<td>86-89.9%</td>
<td>B</td>
</tr>
<tr>
<td>84.0-85.9%</td>
<td>B-</td>
</tr>
<tr>
<td>82.0-83.9%</td>
<td>C+</td>
</tr>
<tr>
<td>78.0-81.9%</td>
<td>C</td>
</tr>
<tr>
<td>76.0-77.9%</td>
<td>C-</td>
</tr>
<tr>
<td>74.0-75.9%</td>
<td>D+</td>
</tr>
<tr>
<td>70.0-73.9%</td>
<td>D</td>
</tr>
<tr>
<td>68.0-69.9%</td>
<td>D-</td>
</tr>
<tr>
<td>Below 68.0%</td>
<td>F</td>
</tr>
</tbody>
</table>
Continuous Quality Improvement:
The education process of teaching, learning and assessment requires continuous improvement to maintain quality and to accommodate new knowledge and approaches. Some prestigious universities have their own strong internal and external review system ensuring higher quality of education, while other universities the quality and continuous improvement is trigged by Quality Assurance and Accreditation standards.

Ideally, it is the responsibility of the internal and external quality assurance units to have a close check on whether continues improvements in higher education are taking place against the certain target/indicators, and based on that judgment the universities/faculties/prorammes obtain their accreditation from recognized quality assurance & accreditation agencies. Even though university in Afghanistan are yet to develop fully functional internal quality assurance, the Ministry of Higher Education has obtained membership of APQN (Asia Pacific Quality Network), that is a triggering element which will hopefully accelerate the process of both internal and external quality assurance.

In the context of OBE-SCL, the student's evaluation of the courses and programme, and self-reflection of the teachers as well as quality of the graduates, plays an important role in determining the quality review of the academic programmes. The quality of graduates could be determined by ascertaining whether the graduates or the students have achieved the appropriate learning outcomes stipulate by the curriculum and whether such achievements of learning outcomes has led to a tangible improvement in the employment statistics of the graduate or not. If these outcomes have not been achieved, then the educational process needs to be reviewed to find out how the programmes could be further improved.
Reference / Recommend Readings:


FSU, (2010). Instruction at The Florida State University, 6th Edition- Center for Teaching and learning


Annex:
## Annex I: Teaching and Learning Methods/Activities - Suitable for Small Groups
(source: Implementing OBE-SCL in Sri Lanka [www.hetc.ik](http://www.hetc.ik))

<table>
<thead>
<tr>
<th>Teaching Methods</th>
<th>Brief Description</th>
<th>Suitable for Assessing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small group discussion (SGD)</strong></td>
<td>Students in groups of 5 to 15. Seated in a circle along with the tutor, discuss a given topic (e.g., global warming) or a question related to subject matter to achieve a set of learning objectives. Ideally the topic / question should generate diverse opinions/answers which may even complete with each other. Some opinions/answers may be more suitable than others, given the situation. Given another situation, the other answers may be more suitable. Within a group, students appointed a chairperson and a reporter/secretary. The chairperson is responsible for the overall conduct of the session, while the reporter keeps a summary of the important deliberation. The tutor facilitates the discussion, which is commonly known as “brainstorming”. There can be a tutor for each group or several groups can be facilitated by one tutor as a “roaming facilitator.”</td>
<td>Intellectual skills, communication skills, teamwork, leadership, problem solving, ethics and attitudes</td>
</tr>
<tr>
<td><strong>Team exercise/Group activity/Project work</strong></td>
<td>The process is similar to small group discussion described above, except that the task to the students is not mainly related to addressing an issue through discussion, but more related to developing/building/constructing/designing a model, strategy, proposal, equipment or piece of work.</td>
<td>Intellectual skills, teamwork, creativity, leadership, communication skills, (numeracy)</td>
</tr>
<tr>
<td><strong>Problem-based learning (PBL)</strong></td>
<td>A variety of small group discussion where a group of students attempt to solve a problem, presented as a written scenario, a picture, a video, etc. By doing so, students achieve new learning, usually it has two sessions. During first session the students try to solve the problem with their existing knowledge. At the end of this session the student generate their own learning objectives. These objectives should be related be related to gaps in their knowledge that they identified during the first session. Then they break out to learn more to achieve the learning objectives. After a few days to one week they reconvene and pool the new learning that they achieved. Then, they apply this new learning to the original problem. So, the two main differences between an SGD and PBL are that: (1) the PBL has more than one session (typically two), and (2) in PBL the students themselves generate their learning objectives, rather than a teacher/course stipulating the learning objectives for them.</td>
<td>Intellectual skills (especially problem solving and subject knowledge), communication skills, teamwork, leadership, personal and professional development, ethics and attitudes</td>
</tr>
<tr>
<td>Teaching Methods</td>
<td>Brief Description</td>
<td>Suitable for Assessing</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Assignment</td>
<td>An Assignment can be any piece of work, such as preparing a written piece of work or delivering an oral presentation for given a topic/question, where the students will have to search for new knowledge before completing, Assignments can also be given to individual students.</td>
<td>Intellectual skills, personal and professional development, (teamwork)</td>
</tr>
<tr>
<td>Case Studies</td>
<td>Case studies are scenarios (either real-life or hypothetical) that will enable the students to apply the important principles of learning. Students in groups will try to interpret the key events in the case study by applying the theoretical principles to the case study.</td>
<td>Intellectual skills, teamwork, personal and professional development</td>
</tr>
<tr>
<td>Concept mapping/mind mapping</td>
<td>The students graphically display their understanding of the key principle of learning by interconnecting the said principles using arrows. The principles can be either depicted in words or pictorially. This can also be an important learning aid for SGDs and PBLs.</td>
<td>Intellectual skills, creativity, communication skills, teamwork, IT skills</td>
</tr>
<tr>
<td>Tutorial worksheets</td>
<td>The teacher prepares a sheet which contain important subject material, however, with blanks. The students in groups fill these blanks. Or within the same sheet the tutor could ask illuminating questions that the students should discuss and answer.</td>
<td>Intellectual skills, teamwork, communication skills</td>
</tr>
<tr>
<td>Just-in-time learning</td>
<td>A few hours before a lesson (e.g. practical class, lecture), students are given a task to find the important pre-requisites for the lesson. Students come to the lesson with what they found, and the teacher elucidates the important findings before the lesson proper begins.</td>
<td>Intellectual skills, personal and professional development, teamwork, communication skills</td>
</tr>
<tr>
<td>Inquiry-based learning</td>
<td>The teacher presents a real or hypothetical issue/problem/event, related to which the students start asking questions; e.g. why and how. They learn by trying to find answers to these questions, it is said that traditionally we teach the “what” (e.g. layers of earth) whereas in inquiry-based learning students learn the “what” by asking the questions “why” and “how” for a given phenomenon (e.g. learning the layers of the earth by trying to explain how and why an ‘earthquake’ takes place)</td>
<td>Intellectual skills, personal and professional development, teamwork, communication skills</td>
</tr>
<tr>
<td>Computer simulation and games</td>
<td>Students in groups or individually could work on interactive computer simulations or games to understand and further clarify the difficult-to-understand concepts. These are usually expensive to develop, but there may be open sources through which free software could be downloaded.</td>
<td>Intellectual skills, It skills, teamwork, personal and professional development</td>
</tr>
<tr>
<td>Teaching Methods</td>
<td>Brief Description</td>
<td>Suitable for assessing</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Writing with peer review</td>
<td>Students write answers to a given question individually. Each student then narrates the answer to the group. The other group members provide feedback to the answer. The tutor comments on the answer as well as the feedback given by the students.</td>
<td>Intellectual skills, personal and professional, ethics, communication skills</td>
</tr>
<tr>
<td>Groups tests/quizzes</td>
<td>Tests and quizzes can not only be used for exams purposes; they can also be used as learning tools. The teacher could project a question to which groups of students could find the answer. Once the students have answered the teacher gives the correct answer and feedback for the student answers. Sometimes the entire lesson could be covered using questions and answers. Quizzes could also be arranged as a game. A variant of group tests is to give the same test twice - first the students answer individually and next the students answer the same test as a group.</td>
<td>Intellectual skills, teamwork, personal and professional development, IT skills</td>
</tr>
<tr>
<td>Random Calling</td>
<td>Students are given a group task and all students must come prepared with the answer. The answer could be a written assignment or an oral presentation. The teacher randomly calls a student to present the answer. Then the teacher gives feedback on the answer. All the other students should submit their answer/printouts of the presentation to the teacher</td>
<td>Intellectual skills, IT skills, personal and professional development, teamwork, communication skills</td>
</tr>
<tr>
<td>Debates</td>
<td>About 8 students are divided into two groups and a debate topic is given. One group will propose the topic, while the other will oppose. Usually the topic should be a controversial topic, a dilemma or an issue that has no clear answer, but many possibilities; e.g. global warming. The students are given time to prepare for the topic, either to propose or oppose it. In the day of the debate each member of the two teams will speak alternatively - one member from one group followed by another member from another group. The team leaders have two times to speak - at the beginning and at the end. The other students. After the debate, could be asked to write a short summary of the debate (the points for and against the topic) and submit to the teacher.</td>
<td>Intellectual skills (including subject knowledge and arguing a case). Communication skills, teamwork, personal and professional skills, IT skills, ethics and attitudes</td>
</tr>
</tbody>
</table>
# Teaching & Learning Methods

## Suitable for Large Groups

<table>
<thead>
<tr>
<th>Teaching/Learning Methods</th>
<th>Brief Description</th>
<th>Suitable for Assessing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quizzes</strong></td>
<td>This is the same as described above but the students could answer the question individually or with their classmates.</td>
<td>Intellectual skills, personal and professional development, IT skills, communication skills</td>
</tr>
<tr>
<td><strong>Random calling</strong></td>
<td>This is the same as described in the table above</td>
<td>Intellectual skills, IT skills, personal and professional development, communication skills</td>
</tr>
<tr>
<td><strong>One minute paper</strong></td>
<td>Students are given a question to write a shot answer (not exceeding a few sentences), usually at the end of the class: e.g. summarize the key points, write arguments in bullet form for a given scenario.</td>
<td>Intellectual skills, personal and professional development</td>
</tr>
<tr>
<td><strong>Buzz groups</strong></td>
<td>Throw a question or an issue during a lecture and ask the students to discuss the answer with their neighbor to the left (or right); i.e. the students will discuss the answer in pairs. This discussion generates a buzz....hence it name. Then the teacher gives the answer or explains the possible answer.</td>
<td>Intellectual skills, communication skills, personal and professional development, ethics/attitudes</td>
</tr>
<tr>
<td><strong>Snow balling/syndicate groups</strong></td>
<td>First the students are asked to think of the answer to a given question/issue on their own. Next the students are asked to discuss the answer with their neighbor, as in buzz groups. Then two pairs get together and discuss their answers in a group of four. Two groups of four, next team up together to discuss their answer, and process goes on till about the group size swells up to 16. Then each group of 16 will present what they discussed in plenary. The teacher gives feedback on the group presentation of answers.</td>
<td>Intellectual skills, communication skills, personal and professional development, teamwork, leadership, ethics/attitudes</td>
</tr>
<tr>
<td><strong>Fish bowl</strong></td>
<td>This can be well implemented in a traditional theatre-style, tiered and semi-circular lecture hall. However, it also can be implemented in other lecture halls with flatter floors. The students in the first row will engage in active discussion on a given topic, while the students in the second row critically comment on the discussion. At an appropriate point, the students in the two rows exchange their seats, so that the first row becomes the second row and vice versa. Students in other rows could observe and take down notes on the discussion.</td>
<td>Intellectual skills, communication skills, personal and professional development, teamwork. Leadership, ethics/attitudes</td>
</tr>
<tr>
<td>Teaching Methods</td>
<td>Description</td>
<td>Suitable for Assessing</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>-----------------------</td>
</tr>
</tbody>
</table>
| **Team-based learning** | Team-based learning classically has several steps.  
- Preparation: students are given reading material, days ahead of the class, to prepare for the class  
- Individual Readiness Assurance Test (iRAT): at the beginning of the class, based on the reading material given before the class, the teacher gives the students a short test, to be answered by the students individually.  
- Team Readiness Assurance Test (tRAT): the same test is now taken by the students as groups or teams. For this purpose the classroom (e.g. lecture theatre) is now changed into several small groups.  
- Plenary explanation the teacher discusses the answer to the question with short explanation on the difficult to understand areas as a mini-lecture discussion. Teacher invites questions from the students, especially on the difficult to understand areas.  
- Team exercise: once all the content has been clarified and assimilated by the students, the teacher gives an exercise/project for the students. The students reconfigure themselves into groups to carry out this exercise. Typically the exercise involves applying the theory learned during the class to a practical situation. All the teams could carry out the same exercise or different.  
As it can be noticed from the foregoing, the students constantly changed from a lecture theatre style configuration to a small group learning configuration, and vice versa. This change in the classroom from one configuration to another to suit the learning activity is called “flipped classroom”. | Intellectual skills, personal and professional development, communication skills, teamwork, leadership, ethics and attitudes, IT skills. |
Annex II: Example of Course Description Sheet  
UNESCO-IHE Institute for Water Education, Delft, the Netherlands. [www.unesco-ihe.org](http://www.unesco-ihe.org)

Module ES7MW: Environmental Planning and Implementation

<table>
<thead>
<tr>
<th>No</th>
<th>Subject/Topic</th>
<th>Lecture</th>
<th>Workshop</th>
<th>Laboratory or Fieldwork</th>
<th>Exercise</th>
<th>Fieldtrip</th>
<th>Contact Hours</th>
<th>Study Load Hours</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sustainable Development</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>10</td>
<td>Hoekstra</td>
</tr>
<tr>
<td>2</td>
<td>Environmental Planning Processes and Tools</td>
<td>6</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td>10</td>
<td>22</td>
<td>Hamdard &amp; van der Kwast</td>
</tr>
<tr>
<td>3</td>
<td>Environmental Economics</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td>42</td>
<td>Bijlsma</td>
</tr>
<tr>
<td>4</td>
<td>Environmental Assessment (EIA/SEA)</td>
<td>10</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td>18</td>
<td>38</td>
<td>Clouting, Hamdard, Vis</td>
</tr>
<tr>
<td>5</td>
<td>Environmental Policy enforcement</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>21</td>
<td>Douven, Guest lecturer, Hofstra</td>
</tr>
<tr>
<td>6</td>
<td>Fieldtrip</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>6</td>
<td>Hamdard</td>
</tr>
<tr>
<td>7</td>
<td>Exam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Totals</strong></td>
<td><strong>37</strong></td>
<td><strong>22</strong></td>
<td></td>
<td><strong>6</strong></td>
<td><strong>142</strong></td>
<td></td>
<td><strong>66</strong></td>
<td></td>
</tr>
</tbody>
</table>
MASTERS PROGRAMME  Environmental Science

Academic Year: 2012/2014  
Specialisation: ES-EPM, ES-WQM, WM-WQM  
Co-ordinator: Masoom Hamdard MSc, MA

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Planning and Implementation</td>
<td>ES7MW</td>
<td>5</td>
</tr>
</tbody>
</table>

**Target Group**  
Young and mid-career professionals (scientists, decision-makers) with a background in environmental management, water management and / or watershed management.

**Prerequisites**  
Affinity with environment policy and enforcement, development economics, and preferably experience in water management arena. Good command of English.

**Learning Objectives**  
After successful completion of this module participants will be able to:

- Describe and explain the underlying principles of advance environmental planning theory
- Explain the process of spatial planning at different administrative levels with relation to water and environmental planning/management.
- Explain principles, processes and methods of environmental assessment (EIA-SEA) and be able to apply them in water related plans, programmes and projects
- Apply and discuss economic valuation methods and instruments used in environmental planning and implementation
- Analyse gaps and constraints in the implementation of environmental plans, and identify and explain methods and tools for the implementation of environmental plans.

**Syllabus**  
The concepts and principles of sustainable development will be discussed. Environmental management will be addressed in relation to economic development and poverty alleviation. Also risk assessment and uncertainty analysis will be discussed. Environmental planning tools such as Decision Support Systems, Ecosystem services value mapping and spatial dynamic indicator for decision support will also be discussed. A number of policy implementation tools will be introduced such as valuation of natural resources and economic policy tools, and environmental assessments (EIA and SEA). Finally, policy enforcement, monitoring and evaluation will be discussed as an essential element in achieving environmental policy goals.

**Didactics**

**Subjects**
- Sustainable development
- Environmental planning process and tools such as spatial decision support
Lectures are used to convey the basic subject matters. A group game is used to increase (practical) understanding of sustainable development and common pool resource use.

Through an essay assignment, students learn how to develop and present a case in the context of environmental economics. Through a number of group exercises (discussions, poster making) students are brought together to discuss and develop opinions about articles related to the subject matter. Through a one-day fieldtrip participants get exposure to the practical perspectives of the subject matter.

Assessment
1) Written examination – 55%
   - Strategic Environmental Assessment
   - Sustainable Development
   - Environmental Information Management - Environmental Policy Enforcement

2) Assignments – 45%
   - Environmental Economics 30%
   - Environmental Impact Assessment 15%

3) Exercise – 0%
   - Sustainable Development
   - Environmental planning tools and processes

Lecturing Materials
UNESCO-IHE Lecture Notes and other relevant lecturing materials will be provided.

Lecturing Staff
Co-ordinator: Masoom Hamdard

UNESCO-IHE Lecturers: Clouting, Douven, Hamdard, van der Kwast, Maarten Hofstra

Guest Lecturers: Bijlsma, Hoekstra, Schijf, Vis,
Annex III: Format for a lesson plan

Learning objective(s) for this lecture:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning objective</th>
<th>Teacher activity</th>
<th>Student activity</th>
<th>Teaching aid</th>
<th>Time</th>
</tr>
</thead>
</table>

**Explanation**

**Topic:** The topic that is the focus of this part of the class

**Learning Objectives for this topic:** the learning objective of this specific topic; what you want the students to achieve

**Teacher Activity:** What the lecturer will be doing.

**Student Activity:** What the students will be doing

**Teaching Aids:** White board, overhead projector, handout, pc projector, written assignment, flip chart, objects used to illustrate something etc.

**Time:** Duration of this part of the class
Annex IV: Various Assessment Type

<table>
<thead>
<tr>
<th>Type of Assessment</th>
<th>Brief Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Assessment</td>
<td>Gathers tangible evidence of what learners have and have not learned based on learner performance that demonstrates the learning itself; can be related to standards, or quantitative.</td>
<td>Examples are classroom assignments, presentations, test results, projects, logs, portfolios, and direct observations</td>
</tr>
<tr>
<td>Indirect Assessment</td>
<td>Gathers evidence about how learners feel about learning and their learning environment rather than actual demonstrations of learning outcome achievement.</td>
<td>Examples are surveys, questionnaires, interviews, focus groups, and reflective essays.</td>
</tr>
<tr>
<td>Qualitative Assessment</td>
<td>Uses flexible, naturalistic methods and is usually analyzed by looking for recurring patterns and themes.</td>
<td>Examples are reflective writing, notes from focus groups, interviews, and observations, and online discussion threads.</td>
</tr>
<tr>
<td>Quantitative Assessment</td>
<td>Uses structured, predetermined response options that can be summarized into meaningful numbers and analyzed statistical.</td>
<td>Examples are test scores, rubric scores, and survey ratings.</td>
</tr>
<tr>
<td>Formative Assessment</td>
<td>The gathering of information about student learning during the progression of a course or program and usually repeatedly to improve the learning of those students.</td>
<td>Examples are reading the first lab reports of a class to assess whether some or all students in the group need a lesson on how to make them succinct and informative.</td>
</tr>
<tr>
<td>Summative Assessment</td>
<td>Done at the conclusion of the course or an activity or plan to determine or judge learner skills and knowledge or effectiveness of a plan or activity.</td>
<td>An example is examining student final exams in a course to see if certain specific areas of the curriculum were understood less well than others, as well as for the purpose of assigning grades.</td>
</tr>
</tbody>
</table>
# Annex V: Assessment - Open-Ended Questions Vs Limited-Choice

<table>
<thead>
<tr>
<th>Issue</th>
<th>Limited Choice Questions</th>
<th>Open-Ended Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of learning objective</td>
<td>Recall, comprehension</td>
<td>Problem solving, synthesizing</td>
</tr>
<tr>
<td>Content coverage</td>
<td>Wider sample</td>
<td>Greater depth</td>
</tr>
<tr>
<td>Practice and reward of writing and reading</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Reward of creativity and divergent thinking</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Feedback to instructor and student</td>
<td>Limited but fast</td>
<td>Thorough but slow</td>
</tr>
<tr>
<td>Length of exam (time to complete)</td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>Size of class(size of students)</td>
<td>Larger</td>
<td>Smaller</td>
</tr>
<tr>
<td>Reliability in grading</td>
<td>Very reliable</td>
<td>Requires work to become reliable</td>
</tr>
<tr>
<td>Exam construction and grading time</td>
<td>Long/Short</td>
<td>Short/Long</td>
</tr>
<tr>
<td>Test reusability</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Prevention of cheating</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>