Curriculum and Course Design

A Collaborative Project-based Approach Prepared by Dr. Raed Alkowni-ANU &

Dr. Joseph Lampert – NU

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Content

Introduction:

- What does curriculum mean?
- Teacher vs. learner -centered teaching
- Course Alignment
- The Key Elements Of The Curriculum:
 - aims and learning outcomes
 - content
 - teaching and learning methods
 - assessment
 - learning resources
- Monitoring And Evaluating The Curriculum

Our objectives today and tomorrow...

- Describe learner-centered teaching
- Identify and revise key elements of their own course designs
- Write intended learning outcomes (ILOs or learning objectives) for the course in a clear, specific, and meaningful way
- Plan a course that aligns outcomes, teaching methods, and assessment

Lísten to me Guys... Thís ís learner - Centered teaching approach Thus I need your active participation

What does curriculum mean?

- The word curriculum derives from the Latin *currere* meaning 'to run'.
 - This implies that one of the functions of a curriculum is to provide a template or design which enables learning to take place.
- *Curricula* usually define the learning that is expected to take place during a course or program of study in terms of **knowledge**, **skills** and **attitudes**, they should specify the main *teaching*, *learning* and *assessment* methods and provide an indication of the learning resources required to support the effective delivery of the course.

A curriculum is more than a syllabus

• A **syllabus** describes the content of a program and can be seen as one part of a curriculum.

 Most curricula are not developed from scratch and all operate within organizational and societal constraints.

Why do we need to know about	
course design?	

On a piece of paper, finish these sentences.

To me, "teaching" means...

To me, "learning" means...

Share with a colleague.

Faculty Approaches to Teaching

	Transmission	Acquisition	Engaged
Focus	Content -teacher	Content -student	Content- learning
Teaching intention	 To transfer or transmit the course content To get it out (& hopefully in) to students 	 Get course content out & 'in' to students Help students acquire content of course (tools, knowledge, skills) 	 Share course content with students Get students to reconstruct knowledge for themselves
Implicit assumption	 Teaching as monologue One dimensional, limited 	 Teaching as instruction (or explanation One-way, linear 	 Teaching as dialogue 2-way conceptual exchange & change
Relationship to learning	Teaching is separate from learning	Teaching causes learning	Teaching and learning are co-produced

Three Theories of Learning

	Behaviorism	Cognitive Constructivism	Social Constructivism
Knowledge	Stores of behavioral responses to external stimuli	Cognitive structure actively constructed by learners based on their pre-existing structures	Knowledge is constructed within socio-cultural meanings and narratives
Learning	Passive absorption	Individual, active discovery by learners	Integration of learners into a collaborative knowledge community enables the co-construction of knowledge
Teaching	Correct behavioral responses are transmitted by the teacher and absorbed by the student	Learning is facilitated by providing an environment that promotes discovery	Collaborative learning is guided and facilitated by the teacher; students learn in groups

Adapted from <u>http://gsi.berkeley.edu/teachingguide/theories/;</u> Light, Cox, and Calkins, 2009, 22-24.

How do students approach their learning?

Student Approaches to Learning

	Surface	Strategic	Deep
Intention	Cope with course requirements	Achieve high grades	Understand for oneself
Process	 Memorize facts and procedures routinely Study with little reflection Treat course as unrelated bits of knowledge Feel undue pressure/worry 	 Put consistent effort into studying Manage time well Focus on Assessment requirements and criteria Gear work to perceived teacher preference 	 Relate ideas to previous knowledge Look for patterns and underlying principles Check evidence re conclusions Become actively engaged

Reproducing

Organizing

Transforming

Student Approaches to Learning and Teacher Approaches to Teaching



Campbell et al., 2001; Trigwell, 1999; Sadlo & Richardson, 2003; Scouller, 1998

How does this framework for understanding approaches to teaching and learning resonate with your prior teaching and learning experience?

The course design can be summed up by the answers to four key teaching questions:

- 1. What learning outcomes do you want your students to achieve (intellectual, social, practical and personal) as a result of taking your course?
- 2. How will your course help your students achieve these learning outcomes?
- 3. How will you know if the students on your course have achieved these learning outcomes?
- 4. How will you know *if* and *how* your teaching has contributed to your students' learning outcomes?

In other words

1. What is your purpose in this course?

What do you hope to teach the students? What is the single most important thing you hope they will leave the course knowing or being able to do? Why are you teaching it? (This is not about what facts you want them to know at the end, but about what your larger or deeper objectives are for the course.)

2.What are your students' capacities and expectations and needs?

Who are your students? What do they know already, as they enter the course? How will you know what they know? What levels of sophistication can you expect? How much can you expect them to do? What courses have they taken? How much do they need to know at this level?

Aligning the Learning Experience



What do I want my students to achieve?

Who are my learners? What do they know already? Where are they going next?

How will I help my students meet the objectives? What am I teaching? How will I teach it? How will I add flexibility to address needs?

How will I know if my learners have met the objectives?

How can I determine the quality of my objectives, methods, & assessment?

Spencer, 2003; http://www.faculty.londondeanery.ac.uk/elearning/setting-learning-objectives/html2pdf

Constructive (vs. Reproductive) Alignment

- Learning experience (activities & assessment) is <u>aligned with</u> <u>course learning outcomes</u>
- Students <u>construct their own meaning</u> through learning experience



Key aspects of the curriculum

Major elements

- Aims / goals
- Learning outcomes / objectives (knowledge, skills and attitudes)
- Content
- Teaching and learning methods
- Assessment methods

Supporting elements:

- Learning resources

 (teachers, support staff, funding, books/journals,
 IT support, teaching
 rooms)
- Monitoring and evaluation procedures

• Define aims and objectives of the course

- learning in higher education = to acquire knowledge + skills + capabilities + attitudes + values
- <u>Aims (purpose) of the course</u>: general statements of educational intention, (what is in general terms that you are trying to achieve with this course?Your intentions as a scholar and teacher)
- Learning outcomes (objectives): specific statements of what students are expected to learn (in ideal case what should a student who took your course know and be able to do at the end of the course?) achievable and measurable

Aims vs. goals

- The aims and learning outcomes/objectives need to be developed in order to ensure that the goal of producing competent graduates is achieved.
- Aims describe what the teacher is trying to achieve (e.g. to encourage students to develop self directed learning skills) whereas **goals** usually describe what the course or organization is trying to achieve (e.g. to inculcate professional values and attitudes).

These terms are often used interchangeably.

What are learning outcomes?

- Until comparatively recently, published descriptions of university courses tended to refer mainly to content (i.e. *what it was that the teacher would cover*).
 - The focus was on what the teacher did, and goals were expressed in terms of the content, which the teacher would transmit.
- Current models of higher education, however, place the learner at the centre of the teaching and learning process and require that modules be described in terms of what it is that *the students should be able to do* when they have completed that module (Lea *et al, 2003*).

Why Use Learning Outcomes?

- Helps clearly define what you want learners to gain
- Provides clear direction for learners
- Guides teaching methods & assessment
- Models objective-setting for learners so that they can set their own
- Helps colleagues fully understand what learners are experiencing in your module/area



http://www.oucom.ohiou.edu/FD/writingobjectives.pdf

- When writing learning outcomes, they should:
 - be written in the future tense
 - identify important learning requirements
 - be achievable and assessable
 - use language which students can understand
 - relate to explicit statements of achievement

(ref: d'Andrea, V. in Fry, Ketteridge and Marshall, 1999)

Learning outcomes are commonly divided into:

 (i) subject-specific outcomes that relate
 specifically to the discipline and knowledge/skills

particular to it;

- (ii) generic (sometimes called transferable)
 outcomes that relate to any or all disciplines e.g.
 written, oral, problem-solving, information technology, and team working skills.
- Of course, these categories are not, necessarily, mutually exclusive.

- Learners should be made aware of the objectives at the start of the course or session, try not to cover too many outcomes in one session and try to be clear as to what you are aiming to achieve.
- We start to write learning objectives with a simple stem which describes what the student will be able to do as a result of our teaching intervention, such as:

"On completion of the session/course/program, the student/trainee will be able to":

- Then we write what they will be able to do, this is the learning objective itself and should always contain an operative word such as *perform or describe*.
- These words vary depending on whether the objectives are knowledge, skills or attitudinal objectives.
 - For example, we might use the terms define, list, name, recall or record for the 'knowledge level' of the cognitive domain, this is a lower level than say the 'analysis' level for which we might use words such as analyze, test or distinguish.
- Bloom's taxonomy is often used to classify these three domains.

Verbs appropriate to different levels of Bloom's (Revised) Taxonomy (after Anderson *et al.,* 2001).

Level

- Synthesis /Creation
- Evaluation
- Analysis
- Application
- Understanding
- Remembering

- **Examples of Appropriate Verbs**
- Hypothesize, Design, Construct, Plan, Invent, Devise.
- Judge, Test, Monitor, Detect, Co-ordinate.
- Differentiate, Discriminate, Distinguish, Deconstruct
- Apply, Use, Demonstrate.
- Clarify, Illustrate, Categorize, Predict, Compare, Contrast.
- Recognize, Identify, Define, Retrieve, Recall, Record.

When writing learning outcomes it may be helpful to bear the following points in mind:

- Avoid the use of the verb 'understand' as it is not specific enough for student to know what it means
- Don't just write them, use them in class
- When using them with students in class refer to them as 'you should be able to'
- Make them self-explanatory
- Review them annually as modules change
- Where at all possible, learning outcomes should be assessable capable of being assessed/examined

(ref: Race, 1999; Gosling and Moon, 2001)

Example Learning objectives/outcomes

On completion of the session the student will be able to:

- 1. describe the mechanisms controlling blood pressure
- 2. take an accurate blood pressure reading using a range of equipment

Learner-Focused Objectives Be clear and specific

Teacher focused:

Consider the level at which "This course will cover various theories of human development."

Learner focused:

"Students will become familiar with key theories of human development, acquiring an understanding of each theory's historical context, philosophical assumptions, and usefulness in practice. Students will analyze and contrast the theories, critique their relative strengths and weaknesses, and apply them to case studies to generate solutions for practice."

Go beyond list of course

you want students to

process information

themes/topics

Consider...

Teacher-Focused:

"This course will cover the basic evolutionary principles of linguistics, focusing on the study of sentence structure, meaning (semantics and pragmatics), phonetics and phonology."

Learner focused:

"Students will be able to identify and analyze evidence to reconstruct the evolution of language for problems in each area of linguistics (syntax, meaning, phonetics, and phonology."

Consider...

Teacher-Focused:

"This course will provide a basic knowledge of the immune response and its involvement in health and disease."

Learner focused:

"Students will be able to identify and analyze factors that support and compromise the body's immune response, and evaluate the treatments associated with common immune disorders.



Vague language

"Students will learn about the theme of violence in African literature."

Students will critique post-colonial theorists' positions on the necessity of violence in formerly colonized regions by evaluating alternatives to the use of violence.

Do students know what is expected?

weaker

"The exam will cover game theory, including the prisoner's dilemma."

stronger

"Students will analyze several scenarios, applying various strategies associated with the prisoner's dilemma, and evaluate the strengths and weaknesses of those outcomes." What are students being asked to do here?

weaker

"Students should be able to effectively prepare patient workups."

stronger

"Students should be able to prepare patient workups that include the following features: - Present illness organized chronologically, without repetition, omission, or extraneous information.

- A comprehensive physical examination with detail pertinent to the patient's problem."
What about this one?

???

"Students are expected to write a high-quality research proposal."

"Students will create a research proposal in which they generate questions, hypothesize outcomes, and evaluate the strengths of various scientific approaches to the question." Students are expected to participate in class.

"Students will contribute meaningfully to class discussion by identifying their own questions about the readings, by articulating their insights about the readings, and by respectfully responding to others' comments."

Your Course Alignment

- On your worksheet take 10 minutes to develop
 2-3 learning outcomes for a course you teach
- 2. Then spend ~ 20 minutes discussing in a small group of peers from similar disciplines.
- Then we will discuss and debrief as a large group.

End of Day One

Thoughts or questions after yesterday?

Aligning the Learning Experience



What do I want my students to achieve?

Who are my learners? What do they know already? Where are they going next?

How will I help my students meet the objectives? What am I teaching? How will I teach it? How will I add flexibility to address needs?

How will I know if my learners have met the objectives?

How can I determine the quality of my objectives, methods, & assessment?

Spencer, 2003; http://www.faculty.londondeanery.ac.uk/elearning/setting-learning-objectives/html2pdf

Course Content

- The **content** of parts of the curriculum has to be studied in relation to other parts so that the curriculum forms a coherent learning program.
 - It should comprise and <u>reflect a selection of knowledge</u>, <u>skills</u>, <u>values and attitudes</u> relevant and valued by the profession, subject disciplines and by the wider society.
 - The content is usually <u>derived from objectives</u> which form the basis for program development and can be **simply defined as the knowledge, skills, attitudes and values to be learned**.

Course Content

- We should check:
 - That the content reflects the job that the learners will be asked to do after training
 - That the content relates directly to the learning outcomes
 - That the total **time** given to each element of the course is appropriate and that the balance between theory and practice is appropriate
 - That the content is pitched at an appropriate level for the learners

From where your course content sources can be gotten!!

- Ideas about course content can be gathered from many sources:
 - previous courses or existing curricula at one's own organization;
 - national professional or discipline associations
 - textbooks;
 - other organizations' courses, which can often be found on the web and international bodies which have produced core curricula for their own subject

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Teaching And Learning Methods

- Once the objectives/ outcomes and broad content areas have been defined, this can then be <u>developed into a program of</u> <u>learning.</u>
- Obviously there will be constraints in terms of time allocation, teachers' availability and access to learning resources, but it is important for course planners to plan out a timetable for the course early on in the planning process.

- This should include allocating time for each element of the course and mapping out the sequence of learning in a logical manner which <u>enables students to</u> <u>progress throughout</u> the course.
- As we have said, curriculum development is an iterative process and there will be <u>many versions of timetables</u> and other course documents before the program is ready for implementation.

Choice Of Teaching And Learning Methods

- In many curricula, the choice of teaching and learning methods is not stipulated but it <u>is left up to the teacher to select</u> the method most appropriate to the subject and the intended learning.
- In some courses, the learning method is explicit in curriculum design and guidelines will probably need to be produced to support teachers and students during the learning process.
- The teaching and learning methods or learning experiences should be derived from the content and learning objectives in a meaningful way and the methods or the organization of experiences should facilitate the attainment of respective objectives in the cognitive, affective and psychomotor domain

What different kinds of teaching methods do you use?

Some Active Teaching Methods

Interactive lecture

- Mini discussion groups/pairs
 - Problem-solving groups
- Polling: Clickers/note cards
 - Students predict outcome
- Opportunities for critical thinking & response
 - Written response

Discussion

- Full group
- Small-group "feeders"
 - Round-robin
 - •Case studies
 - •Polls/surveys
 - Debate
 - Role play

Inquiry/Problem-based learning

- Answer or create real-world problems
- Work through ill-structured problems

- Use research methods
- Think critically to connect evidence and explanations

Active Learning Example: Political Science – large lecture

- Short required small-group meetings with instructor
- Short frequent assignments in place of midterm/final
- Lectures incorporate puzzle/problem; students engage in solving it by raising their hands, talking in small groups
- Students respond to critical thinking question at end of each class

E.g., Students read article, reconstruct the argument, spot errors in reasoning

E.g., After a discussion of Rawls's Theory of Justice, students work in small groups to discuss how his theory could be applied to evaluate the question of whether the state should provide universal health care for all citizens

E.g., After a discussion of Duverger's law that an American-style electoral system leads to a twoparty system, ask: Why don't India and Canada fit this law even though they have American-style electoral rules?

Active Learning Example: Statistics for Speech & Hearing Science

Students collect their own data on speech tasks in two groups (e.g., male and female)

• e.g., how long a person can sustain "ah," or verbal fluency (name as many animals as you can)

Then analyze to compare groups and discuss findings & strengths and limitations of study

- Can be done in class

- Can be done in groups

- Students see "up close" how findings emerge from research, become more intimately familiar with the notion of experimental design, practice critiquing research

Points to keep in mind are:

- How relevant are the teaching and learning methods to the content and learning outcomes?
- How are practical skills going to be taught and supervised?
- How are students supported in independent learning and study (e.g. self directed learning)?
- What resources are required and available to ensure effective teaching and learning?
- Does the teaching promote critical and logical thinking at the level of the learner?
- What are the constraints affecting the teaching and learning process?
- Are the teaching and learning methods appropriate for the selected assessment methods?

e-learning

- With developments in new technology, and *information technology* in particular, there are many more opportunities for course developers to introduce innovative teaching and learning methods.
 - This can enable learning to be more flexible, learners can study in their own time via the Internet or an Intranet, lectures may be given over the Internet or via videoconferencing reducing the need for students or trainees (and teachers) to travel.
- Open learning materials can be developed such as workbooks which can help to encourage self-directed study and reflective practice.

Back to your course alignment:

- On your worksheet take 10 minutes to write notes on the kinds of teaching and learning activities you could use to meet your learning outcomes
- Then spend ~20 minutes discussing in a small group of peers from similar disciplines.
- 3. Then we will discuss and debrief as a large group.

Aligning the Learning Experience



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Linking Learning Outcomes to Assessment

• Having established learning outcomes for a module, it is good educational practice to align the learning outcomes with assessment and teaching/learning strategies (Biggs, 2004; 2003)

Table 1: Alignment learning outcomes and assessment methods (Adapted from Biggs 2004)

Learning Outcomes: On completion of this module students should be able:	Assessment Methods	*Teaching/Learning Activities
To identify the main signs and symptoms of multiple sclerosis.	Multiple Choice Questions	Lecture on various signs/symptoms, In-class exercises/quizzes on terminology.
To formulate end products using selected ingredients	Food Formulation Project	Lectures and problem- based laboratory exercise.

Assessments

- In designing the assessment methods that **measure students' performance**, the <u>starting point should always be the stated</u> <u>learning outcomes.</u>
- Assessments must check that students have achieved the learning outcomes in various contexts and thus that the content has been covered.
- Teaching and learning methods must support the assessment strategy.
- An assessment blueprint (or matrix) is a helpful tool to map out coverage of core content and learning outcomes against the assessment methods.



Why do we assess our students?

Summative Assessment (for accountability)

- Performance measures
 - To pass or fail a student
 - To grade or rank a student
 - To predict success in future courses or employment

Less learner-focused

Formative Assessment (for improvement)

- Learning measures
 - To provide feedback to improve learning
 - To motivate students
 - To diagnose strengths & weaknesses
 - To help students develop selfassessment
- More learner-focused

What kinds of assessments do you use? Why?

Back to your course alignment:

- On your worksheet take 10 minutes to write notes on how you might assess whether your students are meeting your learning objectives/outcomes
- Then spend ~20 minutes discussing in a small group of peers from similar disciplines.
- 3. Then we will discuss and debrief as a large group.

Key aspects of the curriculum

Major elements

- Aims / goals
- Learning outcomes / objectives (knowledge, skills and attitudes)
- Content
- Teaching and learning methods
- Assessment methods

Supporting elements:

- Learning resources

 (teachers, support staff, funding, books/journals,
 IT support, teaching
 rooms)
- Monitoring and evaluation procedures

Learning resources required to deliver the curriculum

• Teachers, technical and administrative staff :-

- there should be sufficient staff to deliver and support the delivery and assessment of the course.
- Staff should be appropriately skilled (in pedagogical as well as technical areas) and qualified and should be aware not only of their own areas of the course but also of the course as a whole in order that they can contextualize the learners' learning experiences
- **Equipment**:- including IT and AV equipment, models and simulators, laboratory and clinical equipment, whiteboards, flip charts

• **Finances**:- the course will require adequate funding to sustain its activities

• Books, journals and multimedia resources:-

- lists of core textbooks for each part of the course and other resources including reference texts should be identified by teachers and purchased for use by learners.
- These should be supported by other resources such as journals (printed and online) and multimedia packages.
- The library will be the main support structure for these resources but additional resources may also be delivered through an Intranet or via departmental 'libraries'

• Teaching rooms, office space, social and study space:-

- there should be adequate provision to accommodate learners at all stages of the course as well as social and study space for students to spend time outside the classroom.
- There should also be sufficient space for teachers to prepare teaching and meet with students.

- Requirements for supervision and delivery of clinical teaching/placements :-
 - in courses for health professionals, these areas of the course usually comprise a large part of the curriculum.
 - Clinical teaching is often delivered by health professionals working in practice rather than linked to the educational institution and it is important to ensure that such staff are supported and trained to deliver the course.
- Other requirements which need to be considered include travel and accommodation arrangements for learners and teachers.

Monitoring and evaluating the curriculum

- Monitoring can be defined as a continuous or periodic check and overseeing by those responsible for the course at every level.
- It should focus attention on processes and performance with the objective of drawing attention to particular features that may require corrective action.
- It includes putting activities in place to ensure that input deliveries, work plans, expected output and other actions are proceeding according to plans.
- Monitoring should enable curriculum planners to detect serious setbacks or bottlenecks of the implementation process that may cause the program not to achieve expected learning outcomes.

Why do we need to evaluate our courses?

- Evaluation is a system of feedback, providing information to planners, teachers/trainers, students, parents and decision-makers.
- Evaluation is a process involving ongoing activities aimed at gathering timely information about the quality of a program.
- Evaluation will enable:
 - To identify successes and failures of the curriculum with a view to correcting deficiencies
 - To measure if stated objectives have been achieved
 - To assess if the curriculum is meeting the needs of learners, community etc
 - To measure the cost effectiveness of the curriculum

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Example: Reproductive Alignment


Example: Misaligned course

Students will be able to analyze how the lymphatic system structures affect the immune system Pre-Knowledge check Interactive Lecture Assigned readings Regular "2 minute" papers Case Studies Discussion 2 Exams, 3 quizzes MC questions that require students to demonstrate recall from lecture and readings

Learning Objective **——** Teaching Methods



Assessments

Course objectives and activities ask students to think critically, but graded assessments still focus primarily on recall

Example: Constructive Alignment

Students will analyze current threats to public health, evaluate short and long term prevention strategies, and create professional proposals

- Short interactive lectures (with case studies, discussion)
- Small groups ٠
 - Develop research question
 - Gather & analyze Ο existing data
 - Identify gaps in Ο research



Instructor feedback

summative

- Final group presentation
- Individual report

Learning Objective



Teaching Methods





Course is constructively aligned, and uses both formative and summative assessment

Reflecting on your course design...

• Thinking about the course alignment you have developed over the last two days, where do you see potential challenges and opportunities?

Transition: From Teaching Students to Facilitating Faculty

What ideas, approaches, or activities can we take from our discussions over the last two days to the design and implementation of the new faculty workshops this fall?

What if any differences are there between working with students and working with faculty?

Issues to consider...

 Peer facilitator: facilitate reflection and discussion among participants

 Ask them to draw on their own teaching and learning experiences

 Model good teaching practices: learning outcomes, active learning methods, assessment

• Use activities that are relevant to their own teaching

One model...

1. Begin with a question, prompt for discussion, or reflection on their experience

We asked: "What does learner-centered teaching mean to you?"

2. Synthesize with a principle or framework.

Student Approaches to Learning

	Surface	Strategic	Deep
Intention	Cope with course requirements	Achieve high grades	Understand for oneself
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	Reproducing	Organizing	Transforming

3. Illustrate with an example or model

What about this one?

???

"Students are expected to write a high-quality research proposal."

"Students will create a research proposal in which they generate questions, hypothesize outcomes, and evaluate the strengths of various scientific approaches to the question." 4. Activity to apply to their own teaching.5. Debrief and discuss.

Your Course Alignment

- On your worksheet take 10 minutes to develop
 2-3 learning outcomes for a course you teach
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Questions?

Thoughts?