Developing course material - TA Special

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In Essentials, we have seen...

- The responsibilities of a teaching assistant
- The curricular framework and its implications on course design
- Some tips and tricks for clear and useful content
- Basic sources of support
Part 1: What makes a course good for its students?
- Attributes of a good course and what hinders their achievement
- Focus on student learning: deep vs. surface learning
- Focus on the issue of employability

Part 2: The curricular framework
- Focus on learning outcomes: practice writing learning outcomes
- Course design models

Part 3: Presentation by Dr. Mary Cryan on developing scripted lab exercises:
- Relationships to lectures
- “Scripting” where relevant information is listed for each task
- Using this in an environment where there is support from demonstrators
Schedule

- Part 5: Developing course material for labs, tutorials and coursework (3 groups)
  - Criteria for choosing tasks
  - Types of tasks, when to use them
  - Matching tasks to learning outcomes
  - Some advice for developing course material
  - Evaluating course material
Part 1: What makes a course good for its students?
Attributes of a good course

Using the provided post-it notes, provide 2 separate words to complete the sentence:

A good course should be ..........(for/ by its students)
Attributes of a good course

- Interesting
- Inspiring
- Engaging
- Motivational
- Useful, rewarding
- Achievable
- With real-life applicability
- Research-informed
- Cutting edge
- Adapted to its students

...
Issues affecting a good course

In small teams, write down what you think affects the 2 most important attributes of a course for the class; share between teams
Surface vs. Deep Student Learning

- Could anyone explain these notions?
Surface vs. Deep Student Learning

- **Surface learning** is:
  - Focused on meeting the demands of the course
  - Strategy: remembering and reproducing information
  - May not involve understanding
  - Most students just want to pass, although some aim for high marks through the development of good time management.

- **Deep learning** is:
  - Focused on understanding
  - Strategies: reading in depth, discussing with others, relating new to old knowledge
  - Students may not be interested in high marks, unless achieving approach used.

From Toohey (1999) pp.9-10
The issue of employable students

- Employers looking more and more for “T-shaped” people (i.e. people with both depth and breadth in their skills)
One of our university’s aims is to ‘produce graduates fully equipped to achieve the highest personal and professional standards’.

The Strategic Plan 2012-16 describes some of the important steps:

- ‘embed[ding] graduate attributes and employability in all our curricula, and equip[ping] our students to compete in the global marketplace’
- ‘producing graduates with socially and economically valuable attributes and expertise’
- ‘increas[ing] student satisfaction with the opportunities and support for developing their graduate attributes and employability’
- ‘equip[ping] our graduates with the expertise and graduate attributes they need to achieve their full potential within the global community’
- ‘brokering strategic partnerships between academics, industry, specialists and other institutions to enhance the development of graduate attributes in all students’

From http://www.ed.ac.uk/employability/staff-information/strategic/strategic-plan
Define what it means to be a graduate of our university, including skills, abilities, attitudes, approaches that were developed through learning and reflection.

Must be considered in the design of programmes and courses

Are governed by the HEA “Student employability profiles”

Spend a few minutes to browse through the “Graduate attributes” website and the “Graduate attributes summary” document
Spend a few minutes to browse through the document to understand what the university aims to achieve and how
Part 2: The curricular framework
Learning and teaching is driven in many countries by a curricula based on aims and learning outcomes.

**Aims** = broad statements defining the purpose of a course, module or learning activity; written from the perspective of the teacher (enable, support, facilitate, etc.)

**Learning outcomes** = specific statements about the observable effects of the course, module or learning activity on students, i.e. what the students should know or be able to do; written from the perspective of the students (discuss, describe, calculate, etc.)

Learning outcomes should be **SMART**: specific, measurable, achievable, realistic & relevant, time limited.

Adapted from Morris and Murray (2005), pp. 21-22.
Focus on learning outcomes

Using Bloom’s taxonomy (Bloom et al. 1956, from Butcher et al. (2006) p. 47) and working individually onto the ‘Course design plan’ handout, built a list of 3 learning outcomes for your next tutorial/lab
Focus on learning outcomes

What kind of learning outcomes (you could think of verbs) would ensure your students passing from a surface to a deep learning approach?
Relationship learning objectives-learning

From Biggs (2003) p. 27
The Theory of Constructive Allignment (Biggs 2003)

- Is a widely adopted curricular framework; main ideas:
  - The learner should be seen at the centre of learning and teaching; what he/she does is important!
  - Aims and learning outcomes, learning & teaching activities and assessment should be aligned to provide transparency.
The Theory of Constructive Alignment (Biggs 2003)
A course design and review model
(Dennis 1990)

Dennis (1990), taken from Butcher et al. (2006) p. 22
A course design and review model (Dennis 1990)

- Places aims and learning outcomes in the centre
- Content is chosen based on them, and its availability feeds back into them
- Teaching and learning methods, how they are sequenced and timed and how students are organised are then chosen based on and influence content
- There must clear links between aims and learning outcomes and assessment, and between teaching and learning methods and assessment
- Assessment informs the evaluation of the course, but also the review of its appropriateness, relevance, quality of material, etc.
- The rationale (i.e. the why?) informs the aims and learning outcomes, but must also be revisited from time to time (i.e. is this still valid?)

From Butcher et al. (2006) pp. 21-23
Part 3: Presentation by Dr. Mary Cryan
Part 4: Developing tasks for labs, tutorials and coursework
Criteria for choosing tasks

In small groups, discuss what criteria would you use for deciding on tasks
Some criteria for choosing tasks

- Course learning outcomes, to help students achieve/check their goals
- (for lab/tutorial tasks) Intended assessment, to offer clear progression opportunities
- Course content (lectures, past tutorial/lab tasks) and activities, to maintain consistency and -for coursework- be fair
- The academic profile of the students (year, specialism, knowledge of prerequisites and related courses, etc.)
- The skills intended to develop in the students
- (for lab/tutorial tasks) The average number of students in a lab/tutorial
- Your perceived difficulty of the different notions of the course
Some criteria for choosing tasks

- (for lab/tutorial tasks) The duration of a tutorial/lab
- Realistic preparation time at home vs. usefulness
- The availability of current research and industrial/commercial applications in the area
- Expectations on student progress given by time in the semester
- (for coursework tasks) Whether the assessment is formative or summative
- Difficulties that students had according to feedback from tutors, demonstrators, markers in the current and past years
- Your own collected feedback through communication with students
Choosing the breadth and depth of the content (Harden’s guides)

- Mainstream
- Precursor (to later part of the course)
- Opportunistic (develops both core knowledge and additional skills)
- Supportive (illustrates/enhances other course aspects through realistic examples)

Choosing usefulness vs. time available

- Essential (the basics)
- Should (broader and deeper grasp of the topic)
- Could (more detail, examples, applications)
- Nice

Possible types of tasks in tutorials, labs and coursework

In small groups, make a list of possible types of tasks in tutorials OR labs OR coursework, and WHEN you would propose them
Some possible types of tasks in tutorials

- Theoretical questions (open ended, multiple choice, T/F, filling gap, etc.)
- Problem solving exercises (with variations that problems presented before class, in early stages of class, as preparation for class)
- Mini presentations
- Springboard seminars (discussing an explanation, video/audio recording, demonstration with some questions in mind)
- Post-lecture tutorials (students asking questions about the lecture, maybe by bringing their annotated lecture handouts)
- Case studies (based on actual practice, could be complex, interdisciplinary)

Some possible types of tasks in tutorials

- Simulation (less detailed versions of actual practice)
- Games (even less detailed, with precise rules)
- Syndicate (different groups working on different sections on a topic and presenting their views)
- Commenting on a colleague’s work
- Summarising lessons learned

Any others? USE YOUR CREATIVITY

Some possible types of tasks in labs

- Programming exercises (problem solving)
- Individual use of pen and paper to e.g. plan solution (problem solving)
- Projects, with topics offered to student and/or chosen by student
- Watching online videos
- Student demonstrations

Any others? USE YOUR CREATIVITY

Some possible types of tasks in coursework

- Theoretical questions (open ended, multiple choice, T/F, filling gap, etc.)
- Problem solving
- Projects
- Case studies
- Simulation
- Games
- Essays
- Literature reviews
- Blogs
Some possible types of tasks in coursework

- Opinion argumentation
- Presentations
- Commenting on other colleagues’ work
- PeerWise questioning

Any others? USE YOUR CREATIVITY
Matching tutorial, lab or coursework tasks to learning outcomes

Using the “Course design plan” handout, start from each of your 3 learning outcomes to individually decide on tasks for a tutorial OR lab OR piece of coursework. Share your ideas within your small group.
Some advice for developing course material for tutorials/labs

- Always start from the course learning outcomes (which you may need to break down into more specific ones) and NOT from what you know.
- Read lectures to be aware of how things were presented to students.
- Be aware of (plans for) how the coursework will look.
- Use language which is adapted to the level of the students: for beginners, introduce any new jargon first, give examples, provide templates in labs, repeat information from lectures/tutorials or at least reference them; do less of this as they progress.
- Consider the level of difficulty of the tasks and adapt it to the students.
- Aim for more practice and less memorisation of information, to develop deep learning (avoid having too many theoretical questions).
Some advice for developing course material for tutorials/labs

- For practical exercises, make them as related to real life as possible to maintain interest; keep them varied

- Depending on preparation requirements (before, during), consider limiting amount of tasks to available time or separating compulsory from optional tasks

- Think about the presentation of the tasks on paper:
  - The aims of the task should be visible at a glance (think of structuring the text, using bold or capital letters to indicate important information)
  - The size of a task should not be overwhelming or encourage missing information (think of limiting the amount of text, having white space, using bulleted lists to simplify, referencing other documents rather than repeating, using appendices)
  - Ordered lists can help with problem solving
Some advice for developing course material for coursework

- Also start from the course learning outcomes
- Prepare the marking scheme in advance so that it gives more credit to important learning outcomes and less to less important ones
- Consider how the coursework will fit with the rest of the course components (do the necessary reading of lectures, tutorial and lab sheets)
- Develop broad statements about general expectations (marking scheme, if possible, grade descriptors, expected working time, word limits, deadlines, penalties, feedback etc.)
- Regarding the amount of tasks, consider the students’ available time (what is realistic, considering course aims and learning outcomes but also time of deadline)
Some advice for developing course material for coursework

- Regarding **language**, it’s even more critical to be clear in order for students to understand requirements: keeping phrases short, introducing new terms
- Consider the **level of difficulty** of the tasks and adapt it to the students
- Aim for more practice and less paraphrasing of information, to encourage deep learning
- For practical exercises, make them as related to real life as possible to maintain interest
- Offer varied types of tasks
- Same advice for the presentation of tasks
General tips for developing course material

- Consult with the CO before making any decisions
- Get his/her approval for any new content before providing it to the students
- Collaborate with the CO and course colleagues to ensure consistency between the content and methods of other course components (lectures, tutorials, labs)
- The different course components should complete each other to help students towards achieving the learning outcomes
Evaluating course material

- Courses should undergo a continuous development
- Be available for student questions and feedback on material
- Communicate with the course team to identify tasks which:
  - Have language problems: lack of clarity, ambiguity
  - Are too difficult for the students (unrealistic), may need to be split into more tasks, have more examples, be explained more in lectures.
  - Are too easy for the students, and maybe should be skipped for the future
  - Are not considered interesting enough
- Observe coursework results and attendance rates in tutorials and labs
- Be prepared to improve material before and after tutorials/labs/cw deadlines
Resources

- Slides and other resources on Informatics homepage - Staff Intranet - Student Services - Teaching Support - Training
- “Designing courses” material on the “IAD Resources on Tutoring and Demonstrating” channel in Learn
- General texts on course material development and course design:
Resources


On Employability:

- University of Edinburgh Employability Information for Staff, with sublinks “Graduate Attributes”, “Strategic Implementation” (including “Strategic Plan 2012-16”) and “Employability in the Curriculum”.

- University of Edinburgh “Graduate Attributes” website