# Assessing, Testing, and Evaluating

**Elisa Giovannetti**
VU Amsterdam Medical

**Juan Rojo**
VU Amsterdam & Theory group, Nikhef

## University Teaching Qualification (fast track) Course
## VU Amsterdam, 24/09/2017

# Outline

- ☑ **General context of assessment activities**
- ☑ **Planning methods of assessment**
- ☑ **Methods of assessing learning**
- ☑ **Summary and discussion**

The following material is based on Chapter 7 of *"McKeachie's Teaching Tips: Strategies, Research, and Theory for College and University Teachers"*, 14th Edition.

# General context

- Every course must have some specific **method of assessment,** aiming to evaluate if students have satisfactorily achieved **its learning goals**

- Crucial to avoid using exclusively a **single assessment method** for all cases

  - ☑ Some students perform badly in written tests, while they perform better with assignments or small projects that they can work on their own

  - ☑ Better use variety of complementary assessment methods: ``***triangulation of data***''

- The specific assessment method adopted influences what the students learn

- Some learning goals, such as motivation and attitudes, **are not measurable by conventional tests**, and need other ways to gauge their development in the students.

- **Assessing is not limited to testing**: classroom, laboratory, and out-of-class activities should play an important role as well in the process: ``***embedded assessment***''

Assessment should not be limited to a method to grade students: it can and should be also a learning opportunity for the students (and their teachers).

# Planning methods of assessment

- First of all: list the main **learning goals** and **objectives** for the course
- Determine **which kind of assessment is most suitable** for each specific objective
- Consider a **variety of assessment methods:**
  - ☑ some students do well in **high-stakes tests** (like in the end-of-year exam)
  - ☑ others do better in **out-of-class assignments** or **short projects**
- Use assessment material with **greater relevance to the course contents** to increase the motivation of the students
- Possible pitfall of more innovative assessment methods: how to ensure the **same level of objectivity** as in a traditional test?

# Institutional purposes for course assessment

- Many institutions monitor **learning outcomes of their programs**

  ☑ More **challenging task** that monitoring at the level of individual courses.

- **Involvement of faculty** is critical here, but requires appropriate guidance from university management

- Faculty members can provide valuable data by incorporating **the assessment information from their courses into the overall process**

- Designing **assessment methods for the course that provide information useful for the improvement of a whole degree** or the university leads to a double benefit

- Specific preparation is required in order to design such tailored assessment methods.

# Institutional purposes for course assessment

- Many institutions monitoring **learning outcomes of their programs**

  ☑ More challenging task that monitoring at the level of individual courses.

- **Involvement of faculty** is critical here, but requires appropriate guidance from university management

- Faculty members can provide valuable data by incorporating **the assessment information from their courses into the overall process**

- Designing **assessment methods for the course that provide information useful for the improvement of a whole degree** or the university leads to a double benefit

- Specific preparation is required in order to design such tailored assessment methods.

# Methods of assessing learning

There exist different methods that can be used to assess learning, in other words, to evaluate if the original learning goals of the course have been fulfilled by the students.

- **Tests: in- and out-of-class**
- **Performance assessment**
- **Journals and research papers**
- **Portfolios**
- **Peer assessment**
- **Assessing group work**
- **Embedded assessment**
- …. many others!

# Tests: in- and out-of-class

- Tests represent an **unavoidable part of the assessment** of many courses, but often lead to frustration in students

- Many perfectly able students **underperform in tests**, even if they have appropriately achieved the learning goals of the course.

- Tests should focus on assessing **how students deal with the information that they have at their disposal**, not with the sheer fact of memorising a given chunk of information.

  ☑ Tests which are based on **simple fact recalling** are not appropriate anymore

- Tests should that emphasise **the student's abilities to use the acquired knowledge**, as opposed to just dump memorised information

  ☑ But also some students are more flexible than others at addressing novel situations, so one should **avoid the "happy idea"** tests which require a lot of intuition to tackle

- A **higher frequency of tests/quizzes** (meaning more than two per term) has been demonstrated to lead to an improved student performance.

It has been demonstrated that tests requiring inferences enhance learning more than those requiring memorized knowledge, and therefore should be used more often.

# Performance assessment

*Authentic assessment* favors problems that can be admit different alternative solutions, rather than those that can be solved in a fully algorithmic way.

- Focuses on assessing the degree with which students have grasped the learning objectives
  - ☑ proposing assignments that can be **addressed from different points of view**
- Exploit assessment methods **closely related to later use of learning**
  - ☑ simulations (computer and role-play), hands-on field or laboratory exercises, research project, juried presentations…..
- Downside: they require to devote a **significant amount of additional time**
  - ☑ Both from the point of view of **preparing** the assessment methods
  - ☑ and for **evaluating and marking** them in an objective and fair way

# Journals and research papers

- Demonstrate that students can **read, understand, and explain a real research paper**
- Powerful method to gauge if the students have properly grasped the learning objectives
- Specifically improves **critical reflection** and **self-awareness**, as well as direct motivation when demonstrating the **usefulness of the contents learned during the course**
- Valuable training preparation for **oral and presentation skills**

# Portfolios

- **Portfolios** not restricted to arts and architecture, they also make sense in **scientific subjects**
- Some courses involve creating a portfolio of **computer programs** as part of its assessment
  - Either  based on **commercial packages** such as Mathematica or Matlab, or in general-use computer languages such as **Python and C++**
- Skills in computer programming are a **highly valued asset both in academia and in private sector companies**: encourage them as part of the assessment of scientific subjects.

# Peer Assessment

- Fellow students **help each other** to provide feedback about some of the assessment tasks
- Difficult to implement unless for **relatively small groups**, and where moreover only when **their level and background** is rather similar
- Delicate issues like **plagiarism**, or **harassing,** when the topics of the assignment are sensitive. Should be limited to situations where it can really help to attain the LOs

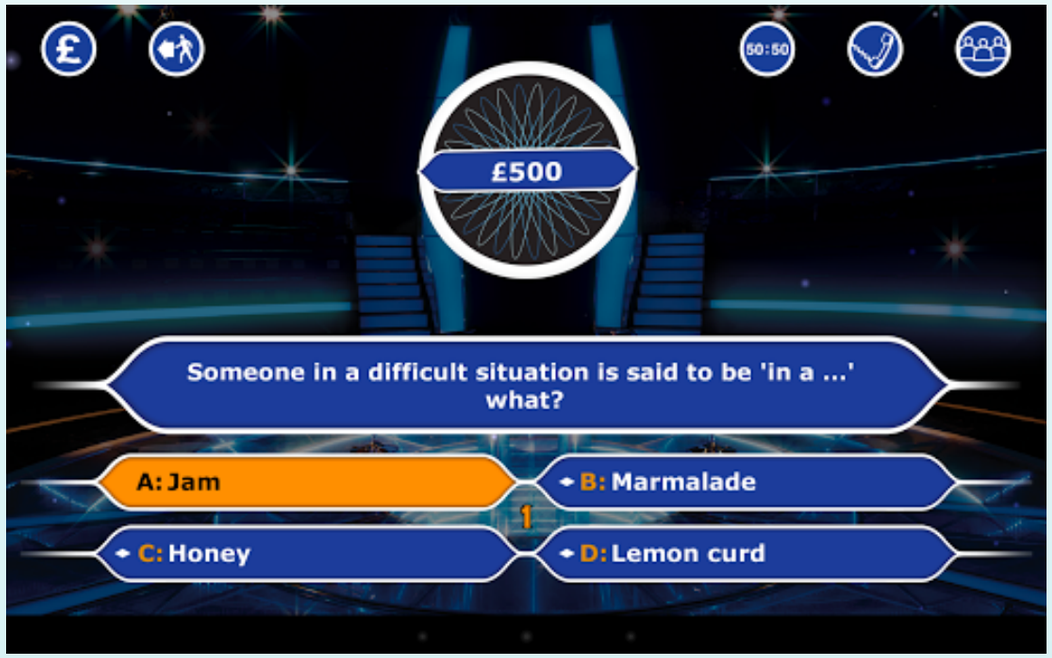
# Assessing group work

- Assessing team work individually is a **notoriously difficult task**
- Perhaps only meaningful method is a **common mark to the whole group**, but ensure that beforehand the group is well balanced (in terms of preparation, skills, and commitment).
- One suggestion has been to write individual reports, but this increases the workload while **reducing the overall quality of the final joint report**
- **Assessing each other's performance within a group** is highly delicate and difficult to be really objective

# Embedded assessment

Embedded assessment means that opportunities to assess student progress and performance are integrated into the instructional materials and are indistinguishable from everyday classroom activities.

- Design assessment methods that are integral part of the **standard classroom activities**
- One popular example: **personal response systems within the lecture**
  - ☑ but biased towards easy questions that can be quickly answered
  - ☑ does not allow detailed and nuanced answers to difficult questions.
- Information collected during course activities can also be used for assessment, such as laboratory notes or field trip reports

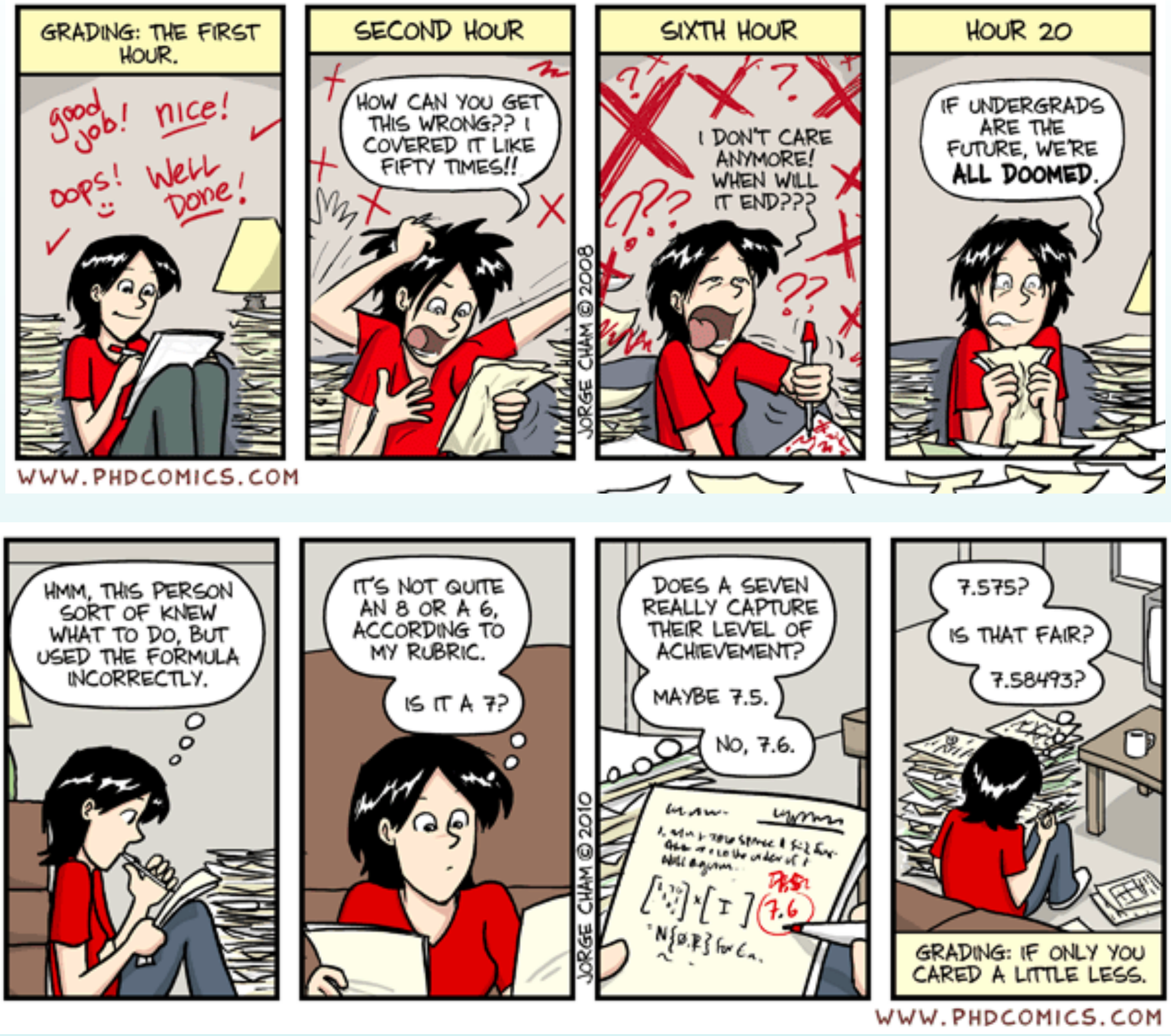


# The art of assessing: a summary

The primary goal of assessment is to provide feedback to both students and the instructors so that learning can be facilitated

- **Learning is more important than grading**
- The value of a **learning experience** cannot be reduced to a **single mark** at the end of course test.
- The **assessment process itself** should also be a learning experience.
- Providing **continuous feedback to the student's learning process** is very important, and cannot be restricted to the final grade
- A combination of **more traditional and more innovative assessment methods** is possibly the optimal combination.

# assessing: some food for thought



# assessing: some food for thought

All the principles stated above sound great in theory, but can then be realistically carried out?
What are the main concerns of experienced lecturers in this respect?

- The **many assessment methods** discussed here are all potentially useful both for the students and the instructors to **enhance learning output**, but are they realistic?
- How can **overworked lecturers** with several deadlines looming provide continuous, individual feedback and partial assessment to large groups of students?
- Here the contribution from **teaching and laboratory assistants** really instrumental
  - ☑ specially in **marking and related assessment tasks**
- Some **competition and tension** in the assessment process can be beneficial:
  - ☑ else, how can we claim that the students are prepared for the **real world**?
- A c**ombination of assessment methods**, traditional tests together with small projects and assignments to be carried out outside the classroom, is probably **best combination**
- Avoid grading the whole course based on **a single very final test!**

# Assessing the assessors

- Should we care about **student evaluations**?

- The subjective student satisfaction might very well not reflect objectively if the course has been useful for them

  - ☑ A light course with an easy exam might lead to a higher degree of satisfaction, but unlikely to lead to **higher chance of employability**

- Student evaluations have been shown to be **disproportionately biased against women and racial minorities**

- Crucial to devise **objective measurements of student satisfaction,** perhaps related to how well do they perform in follow-up courses and on their employability