Combining lectures with webpage support and independent study

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Report of an experience

Official degrees (BSc)
Large group size (50 – 100+ students)
Base teaching method:
  lectures and
  laboratory sessions
Proposal: supplement these
  with the use of a web page
  that provides supporting
  material

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Just take profit of whatever tools become available

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Supporting web page - Overview

- "Logistics" of the course
- Exercises and activities
- Bibliography
- Content
- Interactive material to support learning

Supporting web page (1)

- "Logistics" of the course:
  - Academic information
  - Calendar & timetable
  - Rules
  - Announcements
  - Calls for practical sessions and exams
  - Results of assessment

Support for absent students as well as those attending classes

Centralized point of information
Supporting web page (2)

- Suggested exercises and activities.
- Bibliography (including internet links), both general and specific for each lesson or topic.
- Summaries or content of the subject matter.
- Copies of graphical material used in class.

Support for (self-) learning

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Supporting web page (3)

- Interactive material to support learning:
  - 3D molecular models (guided and interactive)
  - Animations
  - Self-assessment tests (formative, with feedback provided automatically)

All kinds of content (true multimedia)

More student-centered learning

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Format: open web pages (1)

- We chose open access web pages
- Benefits:
  - Sharing of resources with the community
  - Easier accessibility
  - Simple maintenance
  - Both on-line and off-line
  - More flexibility in design and content

Format: open web pages (2)

- Limitations/Drawbacks:
  - No close tracking of the students
  - But this is not intended in our set-up (basically due to high numbers of students and non-compulsory activity)
  - Mostly one-way delivery

- But …
Format: open web pages (3)

- But there are routes for communication and feedback
  - Contact forms
  - e-mail

- All this relies, however, on student’s initiative and motivation

Examples

- (Standalone resources)
  - Molecular models (guided tutorial)
  - Animations: 1 2
  - Tutorials

- (Course-related pages)
  - Course support: information, calendar, chapter-by-chapter bibliography and links, activities, contact the instructor...
  - Self-assessment (2-7, 9-2, 9-3, 9-10, 13-91)
Results (1)

- Success?
  Mostly unknown, little feedback from students.
  - It’s difficult to raise enthusiasm and explicit comments
  - A good feeling, though

- And... Google ranking
  - at least success outside

Results (2)

- Along the years, it seems students are more accepting and using system (different system)

- Still, frequently they are used to the technologies *but only for entertainment, not for work; they need stimulus for this –and training–

More or less computer-savvy. Not really proficient in serious use. (Most often they have received no training in computers.)
Results (3)

- Despite all the enthusiasm for e-techniques, our perception of the students' reality indicates that the face-to-face lecture format can hardly be abandoned.

Results (4) – another example

- "Wet" labs and virtual labs – combination is possible and desirable.
  - 3rd year in Pharmacy: wet lab
    - DNA purification
    - digestion with restriction enzyme
    - gel electrophoresis
    - (applied to cloning plasmid)
  - 4th year in Pharmacy: dry lab
    - digestion with several restriction enzymes
    - gel electrophoresis
    - (applied to RFLP polymorphism detection)
Key variables (1)

- Many reports of excellent and brilliant initiatives in teaching innovation.
- But in deciding their adoption and design, one must consider:
  - group size
  - student’s responsibility in their learning
  - bare interest in learning

Key variables (2)

- Some facts that may play against this:
  - load of work from different subjects, higher with active learning strategies
  - students’ diverse (social) interests competing with study
  - low motivation
  - the lack of a culture of effort
Some reflections (1)

- In attempting to improve our teaching and the efficiency of students learning, redesign of teaching methodology is a common goal.
- When confronting this task, some doubts may arise.

Some reflections (2)

- Should we –or not– enforce student’s responsibility?
- Are we generating a “kindergarten effect”? i.e. miseducating the students, being complacent, too permissive or letting them be naive
- Will the offer of on-line support material reduce the index of assistance to the classroom?
Summary :: My conclusion

- The web page is an excellent option to support teaching and learning
  - most flexible & versatile
  - saves work: write once, use in many ways, grow progressively
  - covers different student situations / needs
- Choosing the right tools must be a balanced decision

Addresses

- [http://www2.uah.es/bioquimica/f-bmig/](http://www2.uah.es/bioquimica/f-bmig/)
  - Supporting web page for Molecular Biology and Genetic Engineering, BSc. Pharmacy
  - Support materials for teaching and learning B&MB
  - A CD-ROM compilation of materials
  - Spanish & some Portuguese
  - 7th edition (one every year)
  - 31 authors, 19 universities, 5 countries
  - Free, Creative Commons Licence
  - ¡Están convidados a unir-se!
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Thank you

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