HOW OUR TEACHING AFFECTS THE WAY STUDENTS LEARN

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How does our teaching affect the ways students learn?

- Do faculty have different teaching philosophies and approaches?
  – are some better than others?
- We know students have different learning approaches
  – are some better than others?
- Are there links between teaching philosophies and learning approaches?
- Can you change teaching philosophies and learning approaches?
  – if so, how?

For each item below indicate your agreement, with 5= Strong agreement to 1=Strong disagreement

1. I structure the course to help students do as well as possible on the exam.
2. I encourage students to restructure their existing knowledge and develop new ways of thinking about the subject.
3. In this course I concentrate on covering the information that might be available from a good textbook.
4. I make available opportunities for students in this course to discuss their changing understanding of the subject.
5. I feel I should know the answers to any questions that students may put to me during the course.
6. I feel a lot of teaching time in this course should be used to question students' ideas.

Fox's four teaching approaches

- **TRANSFER** - Knowledge passed from one vessel to another ("imparting", "conveying")

- **SHAPING/MOULDING** - Teacher as sculptor ("developing", "producing", "modelling")

- **TRAVELLING** - Terrain to be explored with expert guide ("leading", "guiding")

- **GROWING/HORTICULTURAL** - Learner development, both cognitive and emotional (encouraging", "facilitating", "nurturing")

Bloom's levels of learning

Knowledge	Recall of facts or concepts
Comprehension	Understanding facts or concepts
Application	Using facts/concepts to solve new problems
Analysis	Identifying component parts/inter-relationships
Synthesis	Integrating components into new whole
Evaluation	Judging and comparing

Students' Approaches to Learning
(Marton and Saljo, 1976)

APPROACH	MOTIVATION	PROCESSES
DEEP ("Meaning Orientation")	Intrinsic: interest in learning for its own sake	Incorporates new ideas with existing knowledge, own experience
SURFACE ("Reproducing orientation")	Extrinsic: fear of failure	Rote learning from syllabus
Non-Academic	Peer affiliation	Disorganized

Preferred learning outcomes

- **Faculty**
  - Critical thinking
  - Analytical, problem-solving skills
  - Synthesis, creativity
- **Employers (e.g. Conference Board of Canada)**
  - Academic: communication, thinking, learning
  - Personal management: attitudes, responsibility, adaptability
  - Teamwork
- **Educators**
  - Learning to learn (lifelong, life-wide, independent learning)
  - Reflective practice
  - Anticipatory/participatory

MEANING ORIENTATION (DEEP)

I often find myself questioning things that I hear in lectures or read in books

I try to relate ideas in one subject to those in others

I am usually cautious in drawing conclusions unless they are well supported by evidence

REPRODUCING ORIENTATION (SURFACE)

When I'm reading I try to memorize important facts which may come in useful

I prefer courses to be clearly structured and highly organized
I suppose I am more interested in the qualifications I'll get than the courses I'm taking

NON-ACADEMIC ORIENTATION
I often find myself wondering whether the work I do here is really worthwhile

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Factors that promote deep learning

- ☑ **Good teaching:** staff are well prepared, confident
- ☑ **Openness to students:** staff friendly, flexible, helpful
- ☑ **Freedom in learning:** students have a choice in what they study
- ☑ **Clear goals and standards:** assessment standards, expectations are clearly defined
- ☑ **Vocational relevance:** courses are seen as relevant to future careers
- ☑ **Social Climate:** good relations between students, staff (social, academic)
- ☒ **Workload:** heavy demands for content coverage, many assessment tasks
- ☒ **Formal teaching:** perception that formal classes (vs. individual study) are main source of learning

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EMPIRICAL STUDIES OF LEARNING AT UNIVERSITY

Students over time
Watkins and Hattie (1981, Australia)
Effects of learning climate
Entwistle and Ramsden (1981: 2000+ students in 66 UK departments)
Influence of teachers
Kember (1977, Hong Kong)
Effects of institution
Astin (1993: 20,000 students, 25,000 faculty in 200 US colleges)
Pascarella and Terenzini (1991: meta-analysis of 2,600 US studies)

Factors that encourage cognitive development

- **Astin 1993**
  opportunities for faculty/student interaction
  opportunities for student/student interaction
  But not teaching hours
- **Pascarella and Terenzini, 1991**
  Teacher rapport
  Active learning
  Feedback to students
- **Kember and Gow, 1994**
  interactive teaching methods

Ideas about learning from first-year Arts and Science students

- THEMES
  - learning for *problem-solving and decision-making*
  - *experiential or "life-wide" learning*
  - *integration* of knowledge from different fields
  - learning as a *social and emotional* process
  - *curiosity and engagement* as a condition for learning
  - and *independent, self-directed learning*
- EXAMPLES
  - exposure to different perspectives and views
  - learning through living and experience, making connections, and hands-on life learning
  - elaborating on knowledge and thinking in new ways
  - learning to make wiser decisions
  - growing mentally and emotionally, interacting successfully, establishing a better sense of identity

Ideas about learning from entering Queen's engineering students

LEARNING:
- Is not memorization
- Involves discussing new ideas with others
- Entails acquiring knowledge and how to use it
- Is often social and takes place out of class
- Is a never-ending, lifelong process
- Means questioning what you see and hear
- Involves applying new facts and relationships to new situations
- Builds on what you know
- Is expanding your capability to act
- Requires appreciating different thoughts and bringing them together to solve problems

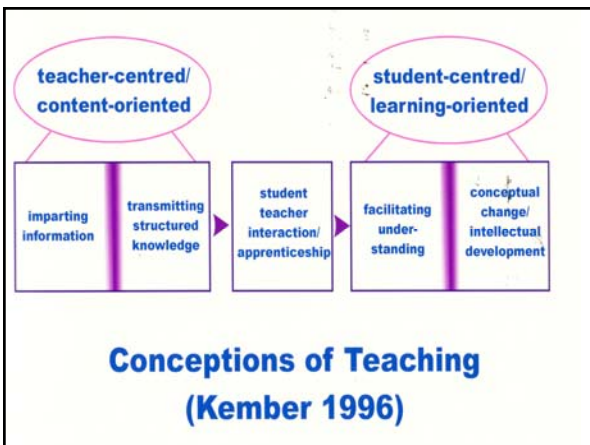## Ideas about learning from upper-year Arts and Science students

- transfer of knowledge
- understanding theories

Knowledge acquisition versus transformative learning

Add your scores for odd and even items
Items 1, 3, 5 = ITTF score; Items 2,4,6 = CCSF score

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teacher-centred/content-oriented — student-centred/learning-oriented

imparting information — transmitting structured knowledge — student teacher interaction/apprenticeship — facilitating understanding — conceptual change/intellectual development

Conceptions of Teaching
(Kember 1996)

TEACHING FOR DEEPER LEARNING: Instructional Methods

- **Encourage faculty/student interaction** (e.g. meet groups to plan projects, "personalize" teaching)
- **Encourage student/student interaction** (e.g. group projects, peer tutoring)
- **Use active and interactive teaching** (e.g. case studies, buzz groups)
- **Make links with what students already know to build on existing cognitive structures**
- **Allow student input into course goals and methods; be receptive and flexible**
- **Discuss/teach learning skills explicitly**
- **Link course topics to students' lives and career aspirations**

Assessment Methods
- Define assessment goals and tasks clearly, and ensure they are congruent
- Allow choice of assessment tasks
- Stress tasks that allow time for information gathering, depth, and reflection (e.g. projects vs. exams)
- Encourage collaborative projects
- Choose tasks that require integration of information from a range of sources
- Give full and constructive feedback on assignments, tests, labs

Organizational
- Cut down on lecture time and extend time for individual study and projects
- Ensure reasonable workload, if necessary by sacrificing content "coverage"

Suggestions for teachers

- Decide what sort of learning is important
- Match teaching methods to learning goals
- Devise learning tasks as well as teaching content
- Think early about assessment tasks and timely feedback on performance
- Consider the relationship between what you teach and what students learn (the "hidden curriculum")
- Stress learning process as well as content and encourage reflection about learning
- Plan workload for out-of-class learning
- Select appropriate learning level – challenging but not overwhelming
- Offer students learning choices
- Evaluate and reflect upon your teaching, and if possible discuss with colleagues

Seven principles for undergraduate education

- Good practice encourages student-faculty contact
- Good practice encourages cooperation between students
- Good practice encourages active learning
- Good practice gives prompt feedback
- Good practice emphasizes time on task
- Good practice communicates high expectations
- Good practice respects diverse talents and ways of learning

What has changed in university teaching

- Wider range of teaching methods, including many that stress research and inquiry skills
- Greater awareness of diversity and ethical issues
- Teaching is better documented and evaluated
- There are more conversations and more reflection about teaching and learning
- Growth of technology and distance education
- More students, more diversity, BUT larger classes and increased workloads for both students and faculty

What remains problematic

- Teaching is overwhelmingly **didactic** and reliant on traditional lectures which stress content "coverage"
- **Assessment methods** are often trivial and lack authenticity
- **Curriculum development** relies too much on disciplinary traditions and faculty preferences, rather than on student and societal needs
- The "tyranny of the academic disciplines" can mitigate against **integration of knowledge** and insights from different fields
- **Evaluation of teaching effectiveness** and learning outcomes is often superficial
- Teaching is increasingly **depersonalised**
- Too much time is spent in **formal classes** instead of independent study
- Evidence for **transfer of learning** to students' later lives is elusive

How we might do better

- Teaching methods that stress **student activity and task performance** rather than just acquisition of facts;
- Opportunities for **meaningful personal interaction** between students and teachers;
- Opportunities for **collaborative team learning**;
- More **authentic methods of assessment** that stress task performance in naturalistic situations, preferably including elements of peer and self-assessment;
- Making **learning processes more explicit**, and encouraging students to reflect on the way they learn;
- Learning tasks that encourage **integration of information** and skills from different fields;
- **Curriculum planning** that focuses on realistic student learning outcomes rather than disciplinary traditions and faculty preferences.