Institutional culture and medical students training: friends or foes?

Dre Anne Baroffio
Institutional culture and student experiences of the learning environment

- Students perceptions of the Learning environment in 28 medical schools (US and CND) differ across schools after 1 year

- The culture of a medical school plays a significant role in student perception of their learning environment

Variance in student perception:

- 90% local culture
- 10% student characteristics

Skochelak et al (Academic Medicine 2016)
Outline

- From institutional culture to students training
  - Elements from the scientific literature

- Geneva medical school: from educational context to students learning
  - Context, students, perception and learning approaches
From institutional culture to students training

Elements from the scientific literature
Perceived learning environment and academic performance

- Student perception of the learning environment impacts their academic performance

Wayne et al, 2013
Performance and learning approaches

- Students’ use of deep learning approach predicts academic performance
- Students scoring higher on high stakes clinical performance exams used deeper approaches than students scoring lower

May et al, 2012; Salamonson et al, 2013; Feeley & Biggerstaff, 2015
What are learning approaches?

- Deep and surface learning

<table>
<thead>
<tr>
<th>Deep approach</th>
<th>Surface approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand meaning</td>
<td>Reproduce content</td>
</tr>
<tr>
<td>Relate information to prior knowledge</td>
<td>Memorize</td>
</tr>
<tr>
<td>Looking for underlying principles</td>
<td>Rote learning</td>
</tr>
<tr>
<td>Critically evaluate knowledge and conclusions</td>
<td>Study to pass the test</td>
</tr>
<tr>
<td>Intrinsic interest</td>
<td>Fear of failure</td>
</tr>
</tbody>
</table>

Marton and Säljö, 1976; Biggs et al, 2001; Trigwell et al, 2005
Approaches to learning and learning

Students characteristics

Learning approaches

Outcomes of learning

Teaching context
Teacher
Institution

Factors impacting learning approaches

- Student factors
  - Initial approach to learning
  - Learning habits and preferences
  - Intellectual ability
  - Personality
  - Motivation

- Perceived contextual factors
  - Workload
  - Teaching
  - Clarity of goals
  - Learning activities
  - Relevance to professional practice
  - Assessment

- Contextual factors
  - Teaching methods
  - Teacher
  - Assessment
  - Subject
  - Feedback
  - Institutional characteristics

Learning approaches

---

Baeten et al., Educational Research Review 2010
Factors impacting learning approaches

Student factors
- Workload
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- Clarity of goals
- Learning activities
- Relevance to professional practice
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Perceived contextual factors
- Initial approach to learning
- Learning habits and preferences
- Intellectual ability
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Contextual factors
- Teacher
- Assessment
- Subject
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- Institutional characteristics

Learning approaches

Deep
- Workload
- Teaching
- Clarity of goals
- Learning activities
- Relevance to professional practice
- Assessment

Surface
- Lectures
- MCQ
Factors impacting learning approaches

- Workload
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- Clarity of goals
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- Initial approach to learning
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Student factors

Perceived contextual factors

Learning approaches

↑deep

Contextual factors
Factors impacting learning approaches

- Workload
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... overload

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... self-learning

- Initial approach to learning
- Learning habits and preferences
- Intellectual ability
- Personality
- Motivation

... deep

- Student factors
- Contextual factors

Learning approaches
Geneva medical school: from educational context to students learning
Geneva medical school: from educational context to students learning

Methodology
Where are the data coming from?

- Systematic evaluation of the teaching program by the students (Teaching units and Tutors)
  A Baroffio, NV Vu, M Gerbase (2013)

- Master thesis
  Ch. Gallay (2010)

- CAPA study
  M Abbiati, A Baroffio, M Gerbase (2016).
## CAPA study

<table>
<thead>
<tr>
<th>Location</th>
<th>Study Type</th>
<th>Year(s)</th>
<th>Cohorts</th>
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<tr>
<td>Geneva (CH)</td>
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### Measures

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</tr>
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<td>grades</td>
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# CAPA study

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Geneva medical school: from educational context to students learning

Elements of the educational context
Contextual factors

- **Selection**
  - Free admission
    - Selection (pass-fail) at the end of the 1st year

- **Reformed curriculum**
  - Student-centered learning environment
    - Integrated multidisciplinary thematic units
    - Lectures and Problem-based learning
First study year: integrated lectures

Longitudinal integration

Progressive/Cumulative Integration

Diseases

Organs systems

Organs/Tissues

Cells

Molecules

Linking Cases
Second and third study years: integrated Problem-Based-Learning (PBL)

Clinical problem (PBL)  Myocardial infarct  Prevention of myocardial infarct
Clinical skills training  Heart auscultation
Community dimension  

Anatomy  Biochemistry  Histology  Physiology  Pathology  Genetics

PBL: “A learning method based on the principle of using problems as a starting point for the acquisition and integration of new knowledge.”

H.S. Barrows 1982
Geneva medical school: from educational context to students learning

Selection: are we missing suitable students?
## Measures

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<th>Students’ features</th>
<th>Odds ratio of being selected (LL;UL 95% CI)</th>
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<tbody>
<tr>
<td>Deep approach</td>
<td>0.798 (1.1 - 1.9)</td>
</tr>
<tr>
<td>Conscientiousness</td>
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</tr>
<tr>
<td>Task stress coping</td>
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<tr>
<td>Surface approach</td>
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<tr>
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</tr>
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<td>Motivation to care</td>
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<tr>
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<td>Aptitude medical studies</td>
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Cohort 2011; n=347; Principal component analysis: KMO=0.654; p<0.001
## Entering students

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Abbiati, Baroffio, Gerbase (2016)
Geneva medical school: from educational context to students learning

How do students perceive their educational context?
Perception of the educational context

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<thead>
<tr>
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<th>LYON</th>
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DREEM: tool to measure student perception of their educational context
Perception of the educational context

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**TOTAL DREEM SCORE**

- **excellent**
- **more positive than negative**
- **plenty of problems**
- **very poor**

- yr 1 traditional lectures Lyon
- yr 1 integrated lectures Lausanne
- yr 1 integrated lectures Geneva
- yr 2-3 integrated PBL Geneva

*** indicates statistical significance.
Geneva medical school: from educational context to students learning

Do context and perceived context influence students’ learning approaches?
Modelization

Students’ perception of learning approaches

Integration: integr vs traditional lectures

predicted variables

Format: PBL vs lectures

Path analysis; n=1412

- learning
- teacher
- academic
- atmosphere
- social

learning approaches

- deep
- surface
Modelization

Integration: integr vs traditional lectures

Students’ perception of learning approaches

- learning
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Format: PBL vs lectures

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Students’ perception of learning approaches

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surface
Results: students’ perception of the learning context impacts their learning approaches

Integration: integr vs traditional lectures

Students’ perception of learning approaches

- learning
- teacher
- academic
- atmosphere
- social

Path analysis RMSEA=0; CFI=1

Format: PBL vs lectures
Results: integration and PBL impact learning approaches (direct effect)

Students’ perception of learning approaches

- learning
- teacher
- academic
- atmosphere
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Integration: integr vs traditional lectures

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learning approaches

deep

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Path analysis RMSEA=0; CFI=1
Results: integration and PBL impact learning approaches (indirect effect)

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Students’ perception of learning approaches

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Deep

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Results: integration and PBL impact learning approaches (indirect effect)

Students’ perception of learning approaches

- Learning
- Teacher
- Academic
- Atmosphere
- Social

Integration: integr vs traditional lectures

Format: PBL vs lectures

Path analysis RMSEA=0; CFI=1
Results: deep approach

Students’ perception of

- learning
- teacher
- academic
- atmosphere
- social

Integration: integr vs traditional lectures

Format: PBL vs lectures

Path analysis RMSEA=0; CFI=1
PBL evolution and practice

« … indications that PBL does encourage a deep approach to learning » (Dolmans et al, 2015)

« PBL has evolved into a genus with many species » (Taylor and Miflin, 2008)

« …the problems encountered in educational practice usually stem from poor implementation of PBL. …the way PBL is implemented is not consistent with the current insights on learning » (Dolmans et al, 2005)
Evolutionary trends of PBL practices throughout the preclinical program

Data:
- Survey of teachers (n=235)
- Students’ evaluation of program and teachers (n=828)

Baroffio, Vu, Gerbase (2013)
Students’ analysis

Tutorial
- ↓ Tutorial length
- ↓ Preparation for self-study

Self study
- Workload, lack of time
- Extensive readings, no personal search, no synthesis
- ↑ reporting length

Reporting
- ↑ reporting length
- ↓ Discussion of group process

Tutor’s lack of leadership
- Tutor’s lack of leadership

Imprecise learning objectives
- Recitation of knowledge, use of summaries and notes
- ↑ reporting length

Lack of coherence of assessment with PBL
- ↓ Feedback received by students
- ↓ Discussion of group process

- Gallay (2010)

qualitative analysis of focus groups and survey on the PBL process (n= 215 students from the 3rd to the 6th year)
Students’ analysis

- Tutor’s lack of leadership
- Imprecise learning objectives
- Lack of coherence of assessment with PBL

Do you think that PBL, such as it is practiced today, fosters long-term memory?

- not at all
- rather not
- rather yes
- entirely

Gallay (2010)
Geneva medical school: from educational context to students learning

Friends or foes?
Friends of our students’ learning

Perceived contextual factors
- Workload
- Teaching
- Clarity of goals
- Learning activities
- Relevance to professional practice
- Assessment

Student factors
- Initial approach to learning
- Learning habits and preferences
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- Motivation

Contextual factors
- Teaching methods
- Teacher
- Assessment
- Subject
- Feedback
- Institutional characteristics

Learning approaches
Foes of our students’ learning

**Student factors**
- Initial approach to learning
- Learning habits and preferences
- Intellectual ability
- Personality
- Motivation

**Contextual factors**
- Teaching methods
- Teacher
- Subject
- Feedback
- Institutional characteristics

**Perceived contextual factors**
- **Workload**
- Teaching
- **Clarity of goals**
- Learning activities
- Relevance to professional practice
- **Assessment**

**Learning approaches**
Factors of the institutional culture impact students training

Contextual factors

Perceived contextual factors

Student factors

Learning approaches

Academic performance

Professional practice and development
Friends and foes

«The wise learn many things from their enemies» (Aristophane)
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