

Institutional culture and medical students training: friends or foes?

Dre Anne Baroffio

FACULTÉ DE MÉDECINE



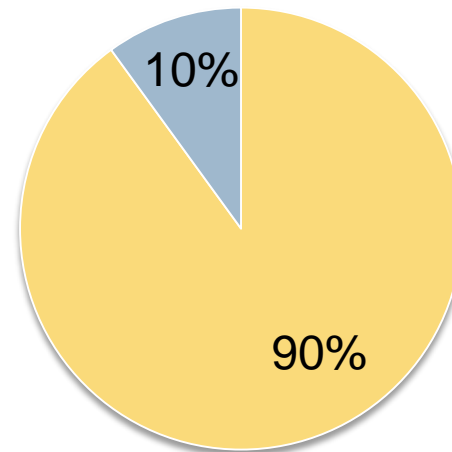
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Institutional culture and student experiences of the learning environment

- ▶ 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

■ local culture ■ student characteristics



Outline

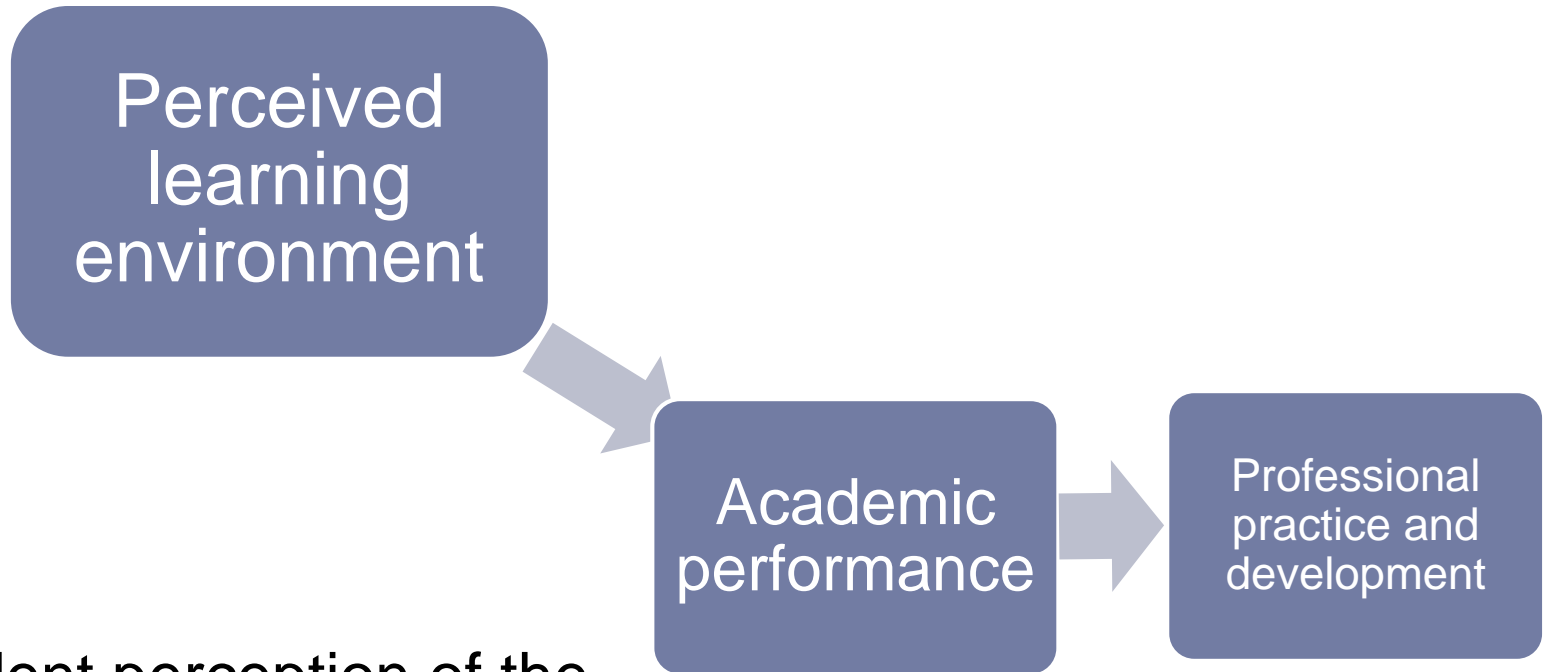
- ▶ From institutional culture to students training
 - ▶ Elements from the scientific literature
- ▶ Geneva medical school: from educational context to students learning
 - ▶ Context, students, perception and learning approaches



From institutional culture to students training

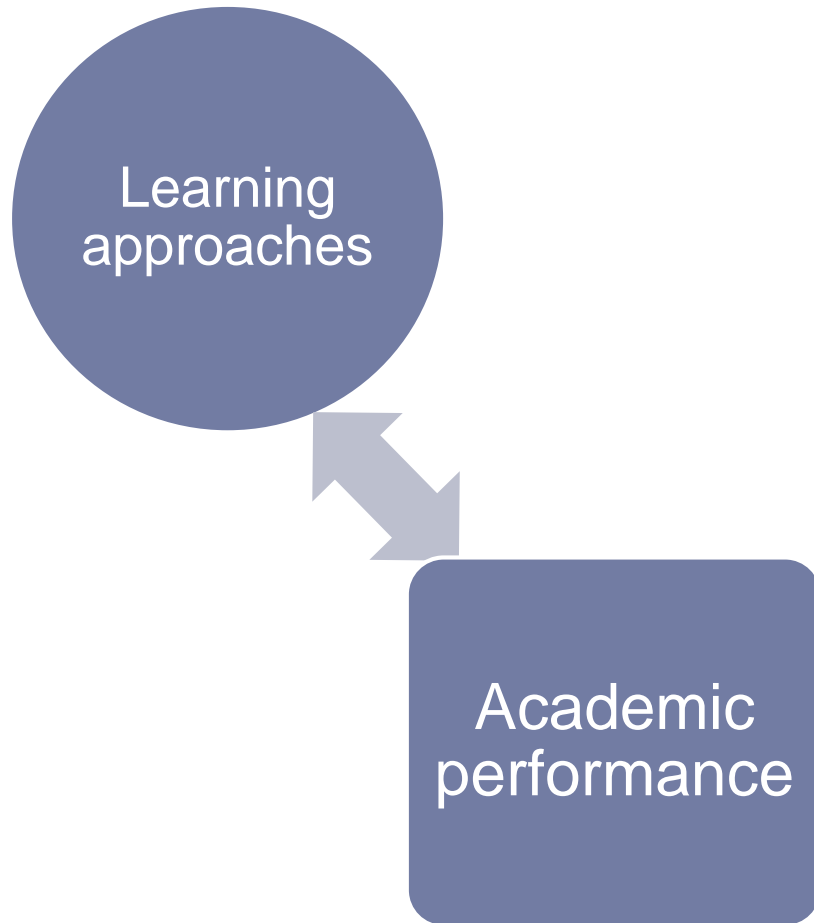
Elements from the scientific literature

Perceived learning environment and academic performance



- ▶ Student perception of the learning environment impacts their academic performance

Performance and learning approaches



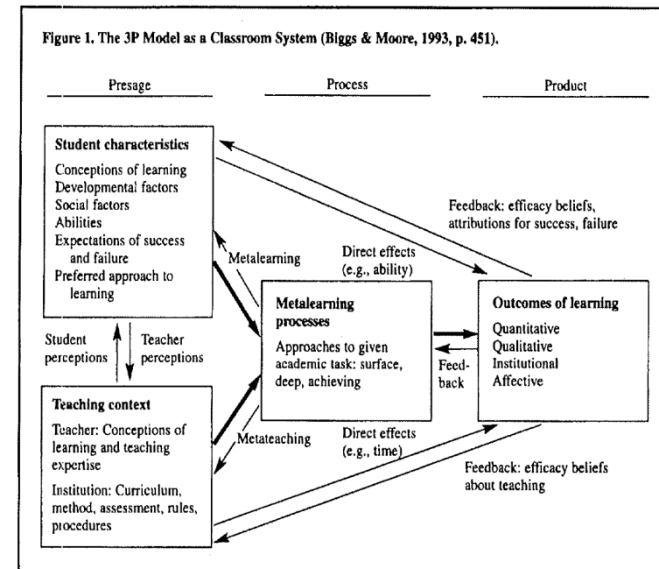
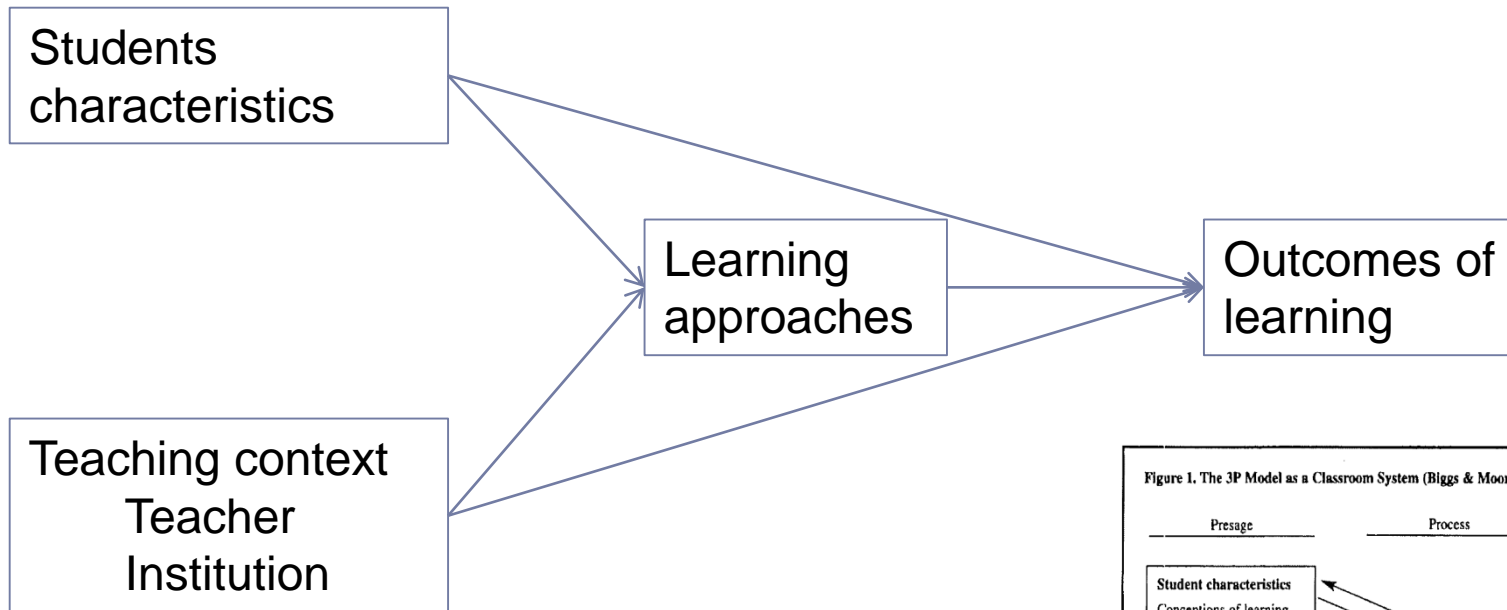
- ▶ Students' use of deep learning approach predicts academic performance
- ▶ Students scoring higher on high stakes clinical performance exams used deeper approaches than students scoring lower

What are learning approaches?

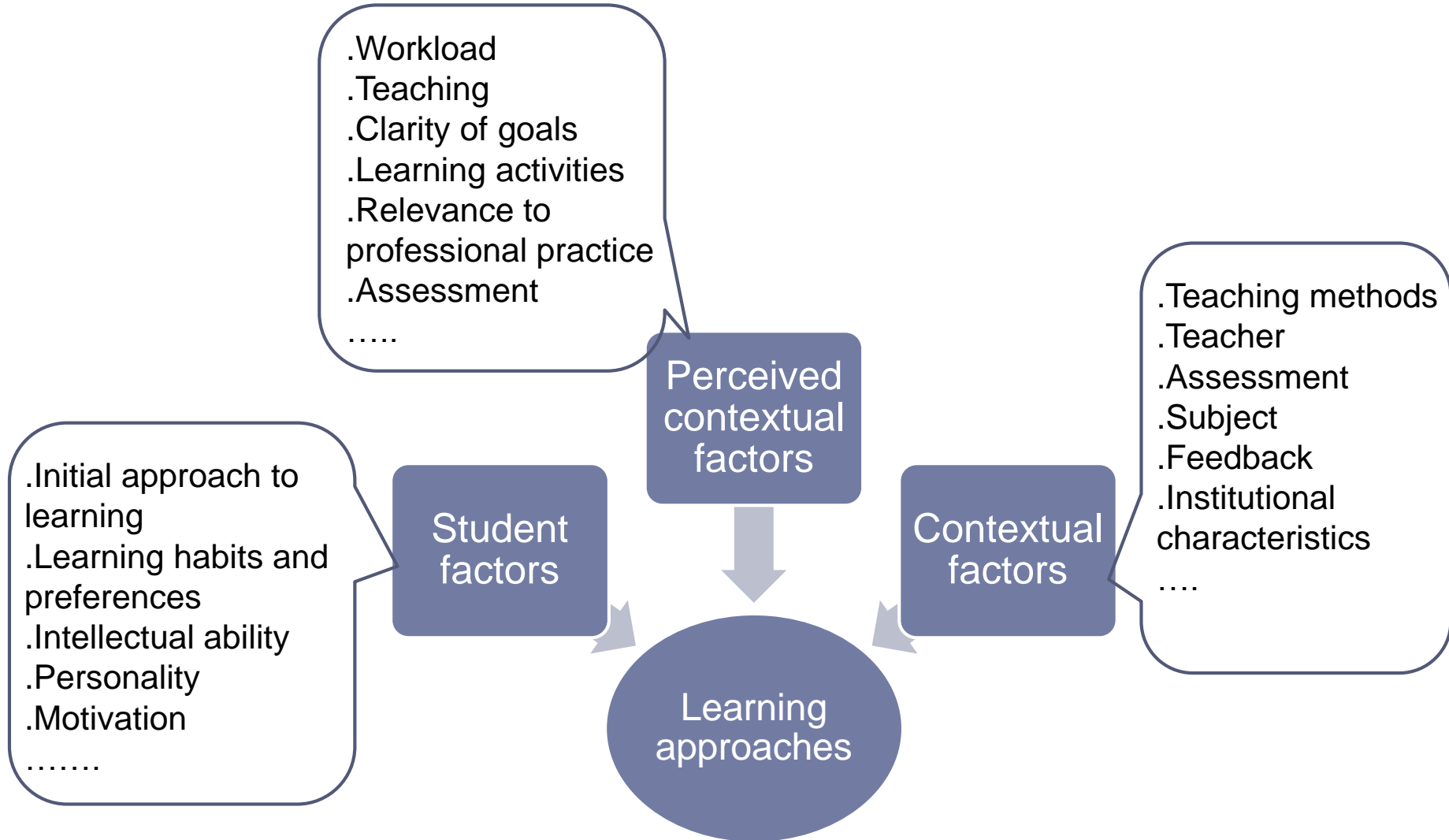
▶ Deep and surface learning

Deep approach	Surface approach
Understand meaning	Reproduce content
Relate information to prior knowledge	Memorize
Looking for underlying principles	Rote learning
Critically evaluate knowledge and conclusions	Study to pass the test
Intrinsic interest	Fear of failure

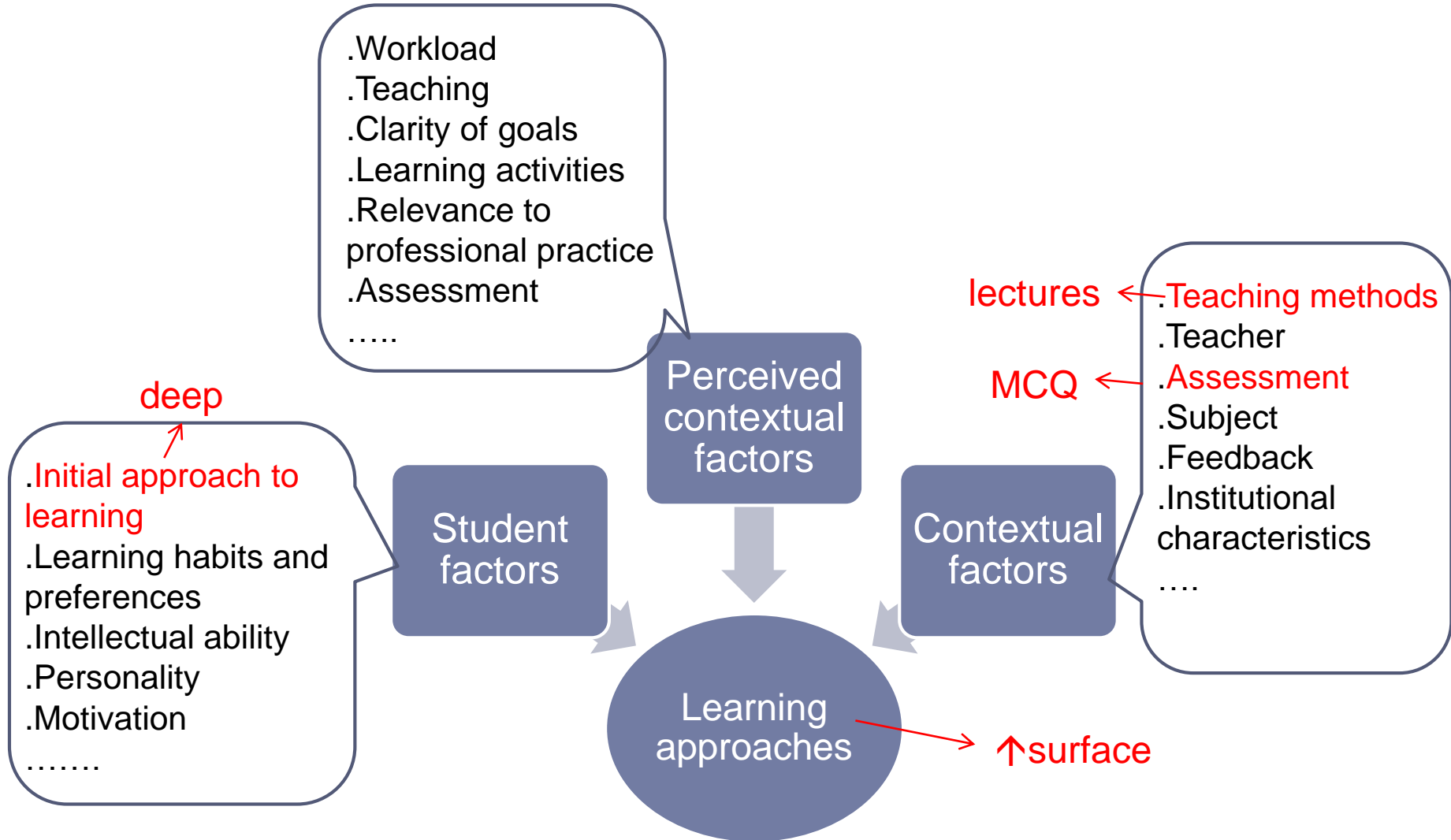
Approaches to learning and learning



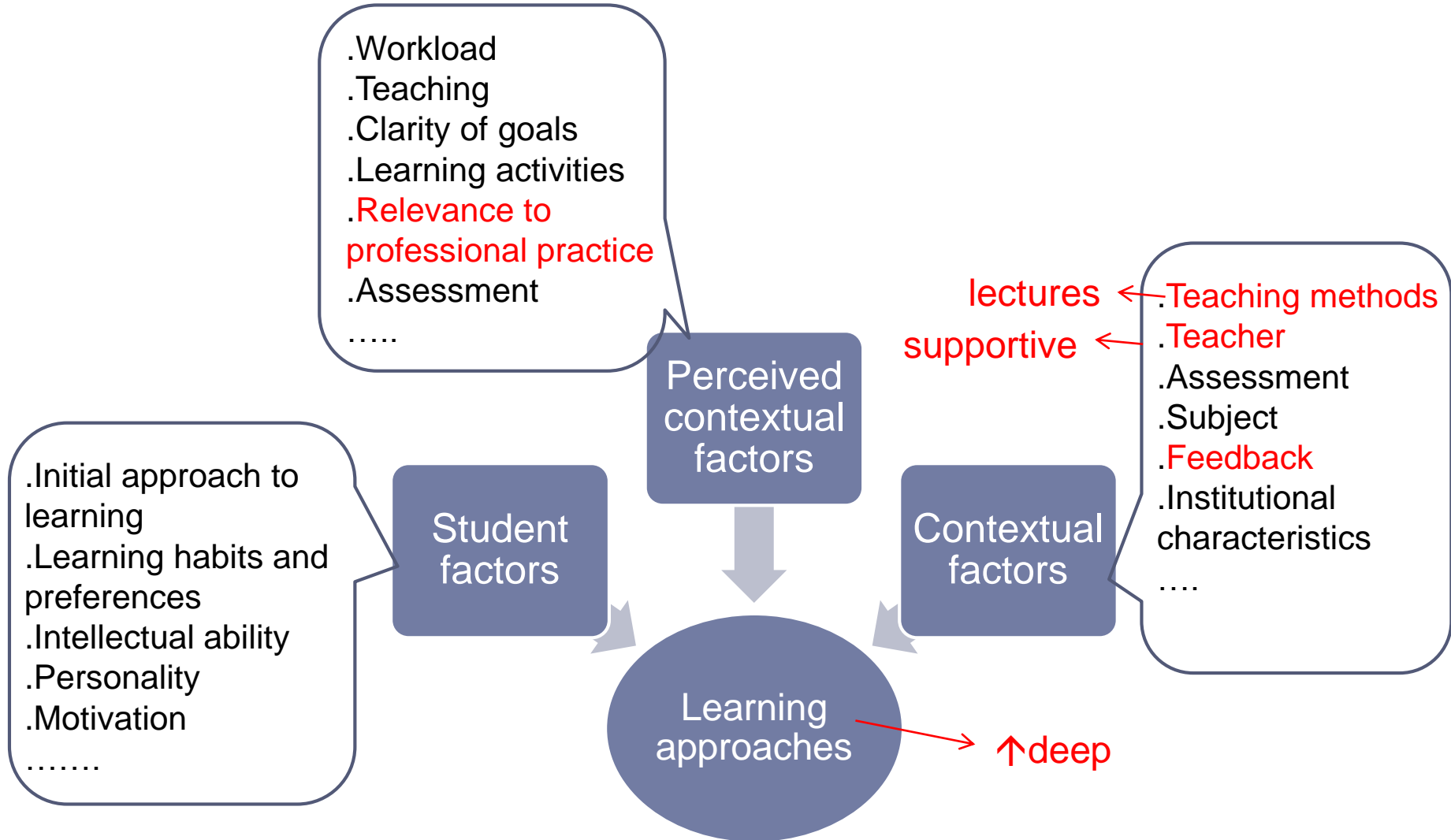
Factors impacting learning approaches



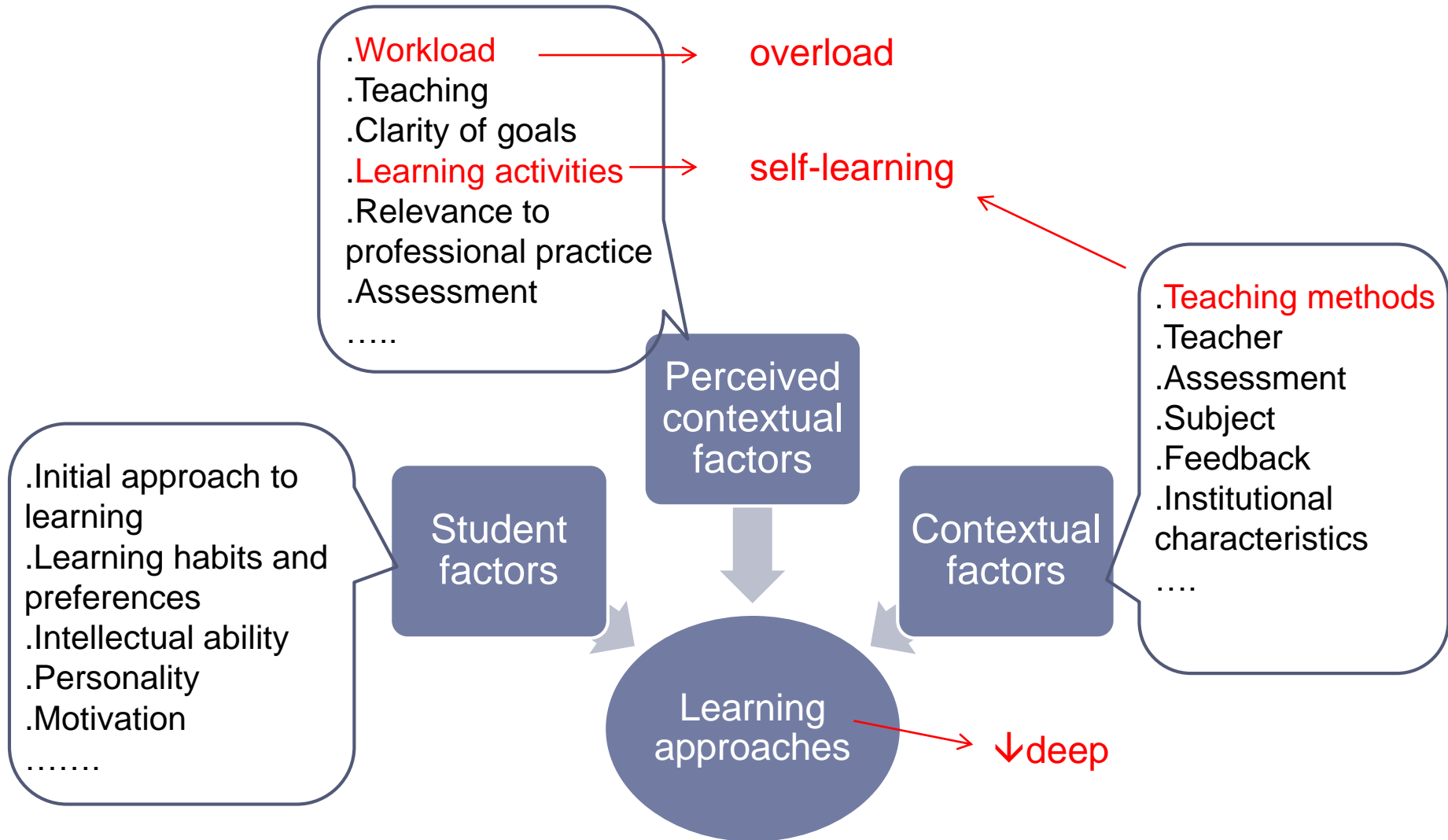
Factors impacting learning approaches

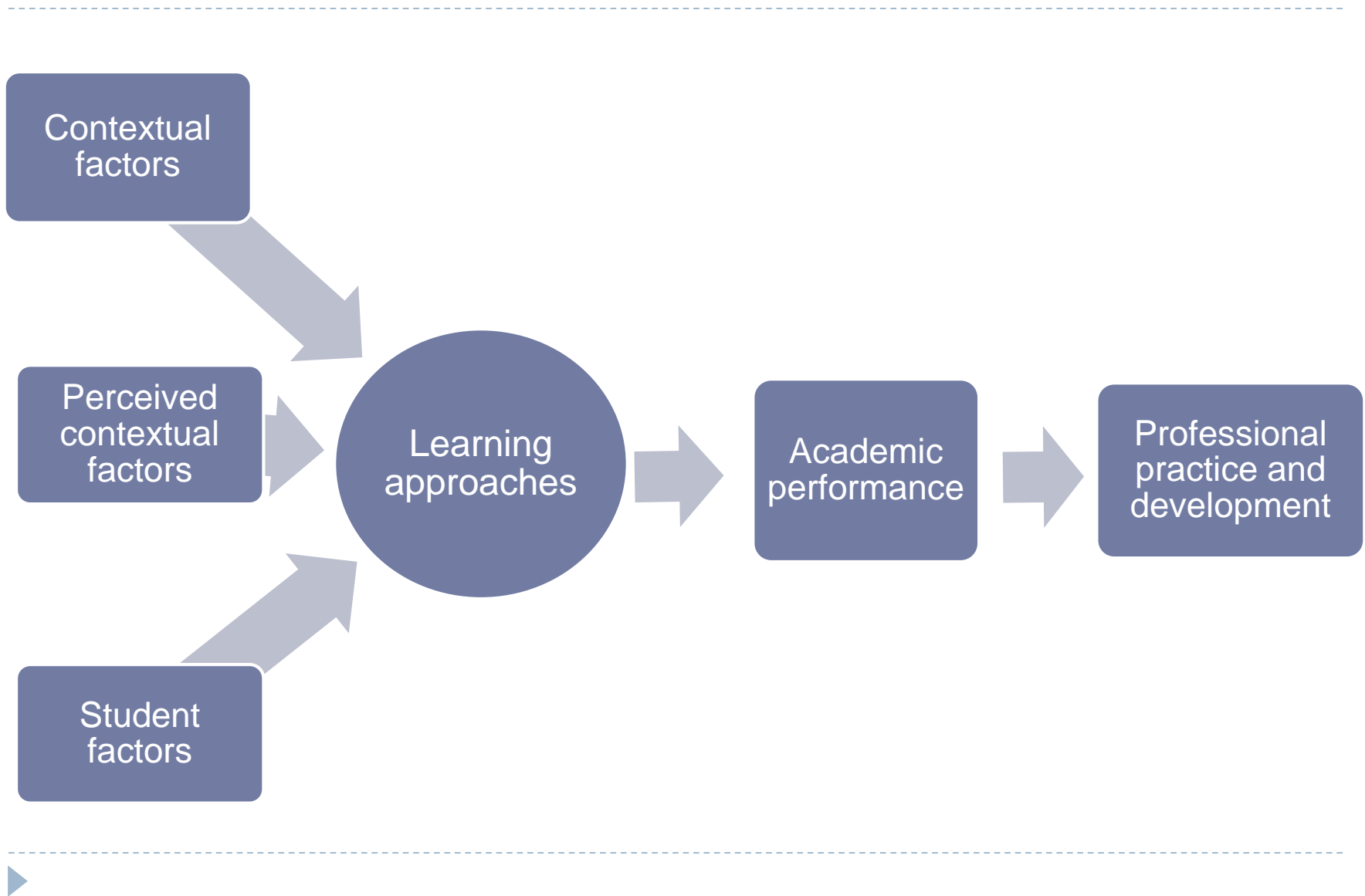


Factors impacting learning approaches



Factors impacting learning approaches





Contextual factors

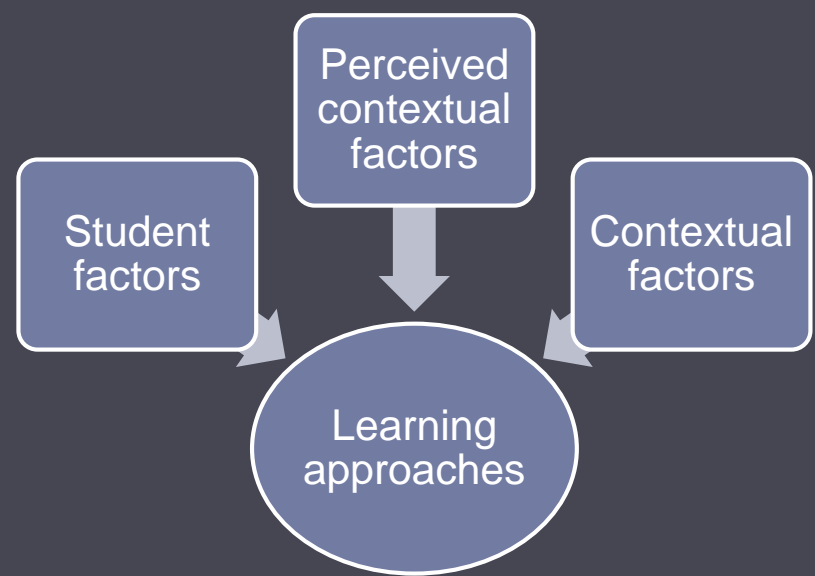
Perceived contextual factors

Student factors

Learning approaches

Academic performance

Professional practice and development



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).

Baroffio A, Abbiati M., Gerbase M.W., Gustin M.P. (2013, 2016).



CAPA study

	Transversal study	Longitudinal study
Geneva (CH)	Year 1 to 6 (2011-12)	Cohorts 2011 and 2012
Lyon (F)	Year 1 to 5 (2011-16)	
Lausanne (CH)	Year 1 to 5 (2015-16)	
Porto Allegre (BRA)		Cohort 2015
Strasbourg (F)	Year 1 to 6 (2016)	Cohort 2016

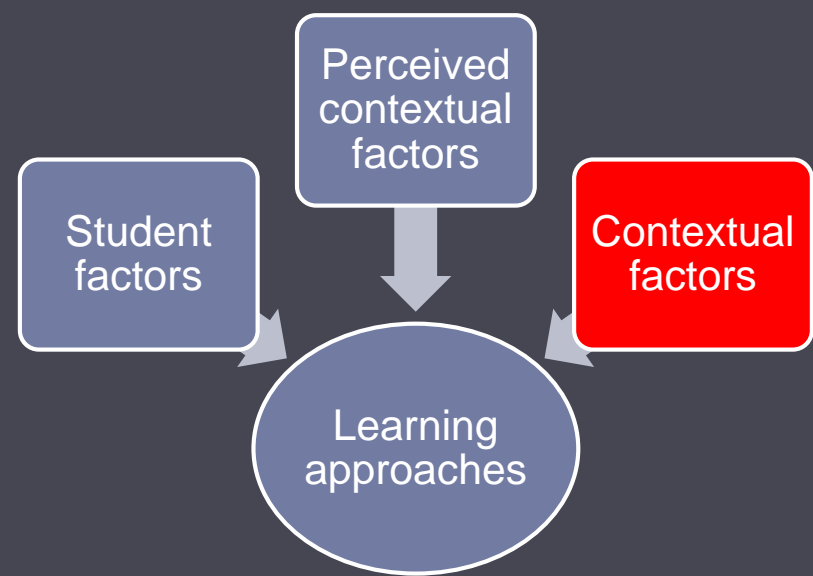
	Measures		Tools
Profile	socio-demographics		
	cognitive	Pre-med grade point average	
		Aptitude to medical studies	admission test
		Intelligence	RAVEN
		Learning approach	R-SPQ
	non-cognitive	Personality	NEO
		Empathy	JSE + EQ
		Stress coping	CISS
		Anxiety	AnxT
	values, motivations	Homemade scales	
Context	perception of the educational context		DREEM
Academic career	professional intentions	Practice type, specialty	
	grades		



CAPA study

	Measures		Tools
Profile	socio-demographics		
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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

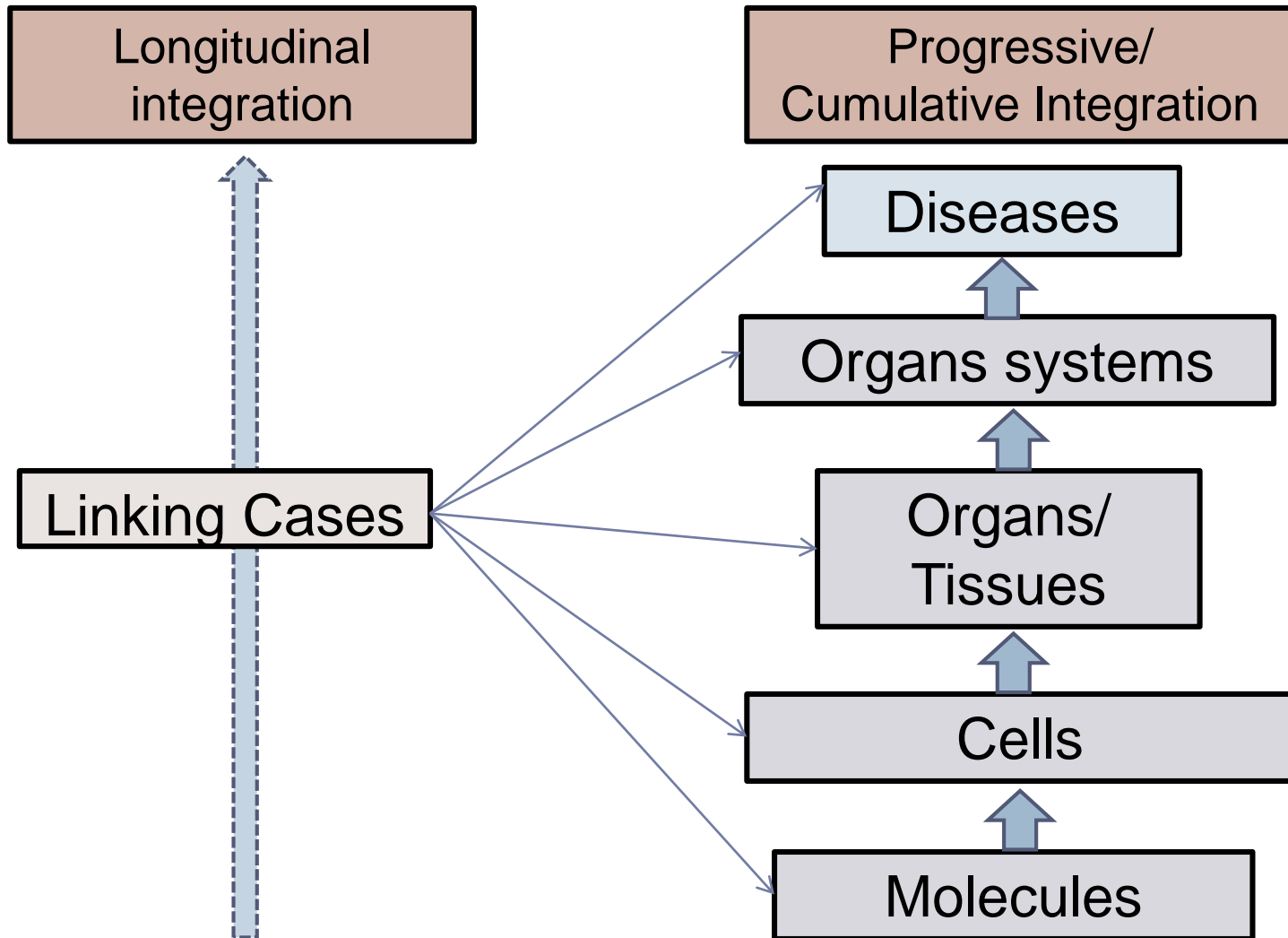
- ▶ **Reformed curriculum**

- ▶ Student-centered learning environment

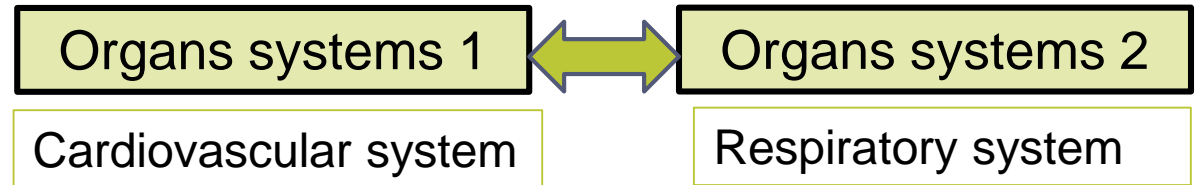
- Integrated multidisciplinary thematic units
 - Lectures and Problem-based learning



First study year : integrated lectures



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



Clinical problem (PBL)
Clinical skills training
Community dimension

Myocardial infarct
Heart auscultation
Prevention of myocardial infarct

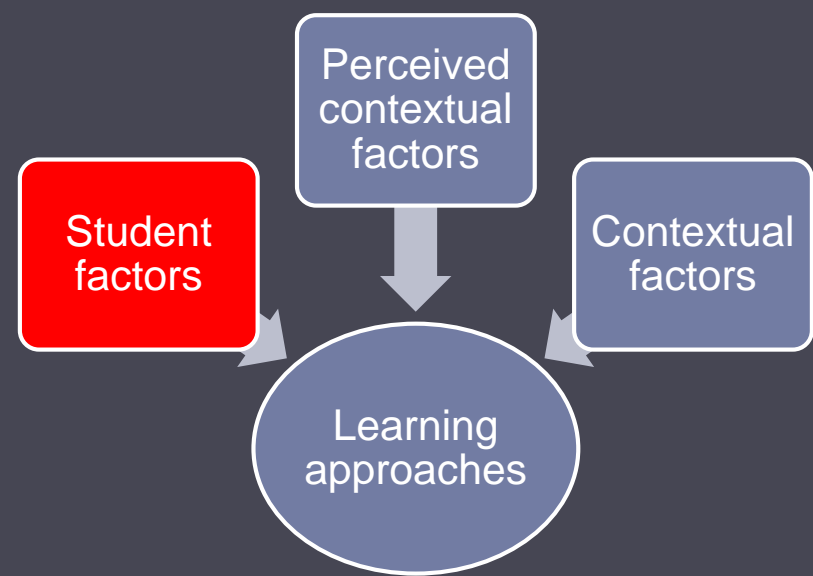


Anatomy
Biochemistry
Histology
Physiology
Pathology
Genetics
.....

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

Students' features

Deep approach

Conscientiousness

Task stress coping

Surface approach

Neuroticism

Emotional stress coping

Intrinsic motivation

Motivation to care

Agreeableness

Extraversion

Empathy

Aptitude medical studies

Openness to experience

Avoidant stress coping

Extrinsic motivation

▶ Cohort 2011; n=347; Principal component analysis: KMO=0.654; $p < 0.001$

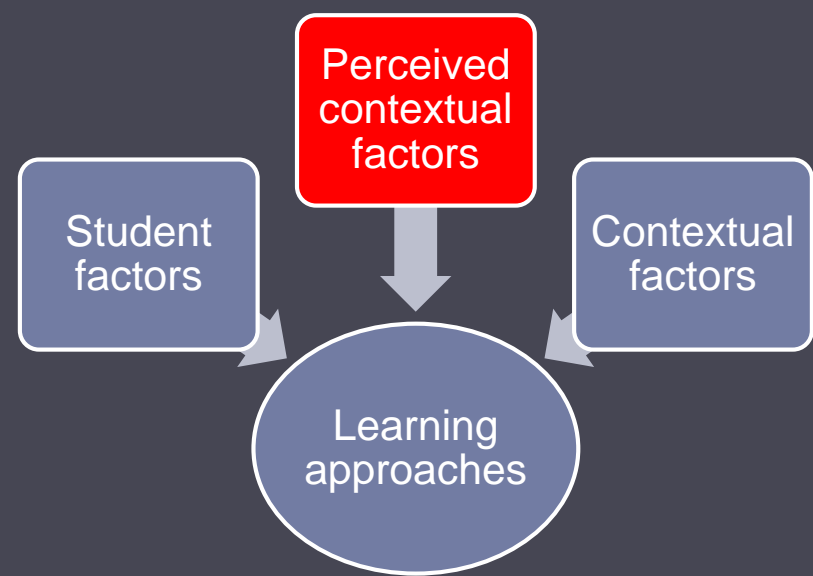
Entering students

Students' features	Higher component loadings	Facets (66 % variance explained)
Deep approach	0.798	Diligent (19%)
Conscientiousness	0.757	
Task stress coping	0.663	
Surface approach	-0.585	
Neuroticism	0.854	Emotional (14%)
Emotional stress coping	0.851	
Intrinsic motivation	0.843	Self- determined (11%)
Motivation to care	0.834	
Agreeableness	0.836	Sociable (8%)
Extraversion	0.515	
<i>Empathy</i>	<i>0.397</i>	
Aptitude medical studies	0.688	Intellectually flexible (7%)
Openness to experience	0.672	
Avoidant stress coping	0.716	Externally driven (7%)
Extrinsic motivation	0.613	

▶ Cohort 2011; n=347; Principal component analysis: KMO=0.654; p<0.001

Selected students

Students' features	Higher component loadings	Facets (66 % variance explained)	Odds ratio of being selected (LL;UL 95% CI)
Deep approach	0.798	Diligent (19%)	1.4 * (1.1-1.9)
Conscientiousness	0.757		
Task stress coping	0.663		
Surface approach	-0.585		
Neuroticism	0.854	Emotional (14%)	0.8 (0.6-1.2)
Emotional stress coping	0.851		
Intrinsic motivation	0.843	Self- determined (11%)	1.0 (0.8-1.4)
Motivation to care	0.834		
Agreeableness	0.836	Sociable (8%)	0.9 (0.7-1.2)
Extraversion	0.515		
<i>Empathy</i>	<i>0.397</i>		
Aptitude medical studies	0.688	Intellectually flexible (7%)	1.4 * (1.0-1.8)
Openness to experience	0.672		
Avoidant stress coping	0.716	Externally driven (7%)	0.9 (0.7-1.2)
Extrinsic motivation	0.613		



Geneva medical school: from educational context to students learning

How do students perceive their educational context?

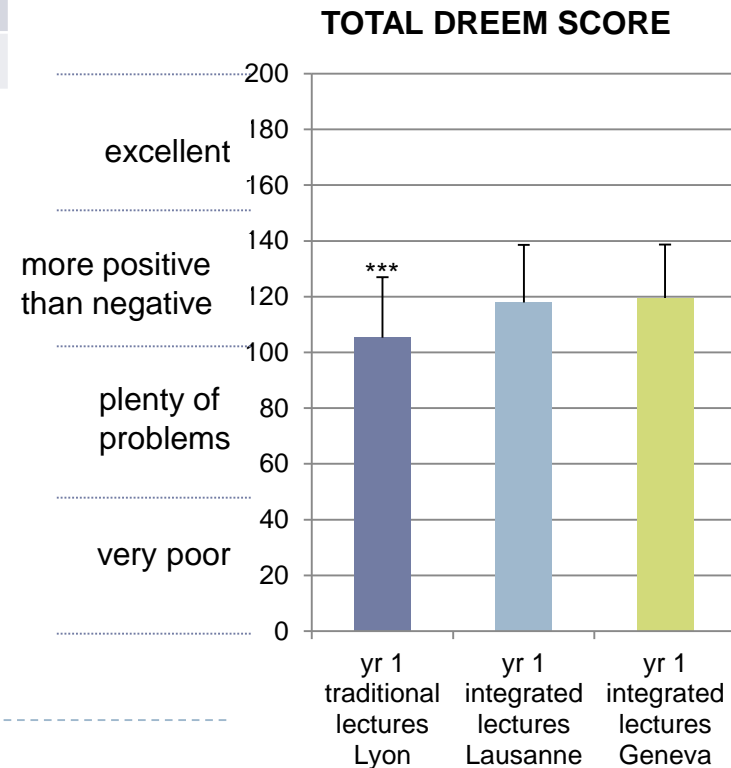
Perception of the educational context

	LYON	LAUSANNE	GENEVA
study year	1	1	1
curriculum	modules not integrated	modules integrated	modules integrated
learning format	lectures	lectures	lectures
assessment	MCQ	MCQ	MCQ
selection	21%	43%	32%
N	291	372	263



Perception of the educational context

	LYON	LAUSANNE	GENEVA
study year	1	1	1
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N	291	372	263



DREEM: tool to measure student perception of their educational context



Perception of the educational context

	LYON	LAUSANNE	GENEVA	GENEVA
study year	1	1	1	2-3
curriculum	modules not integrated	modules integrated	modules integrated	modules integrated
learning format	lectures	lectures	lectures	PBL
assessment	MCQ	MCQ	MCQ	MCQ + oral + OSCE
selection	21%	43%	32%	98%
N	291	372	263	486

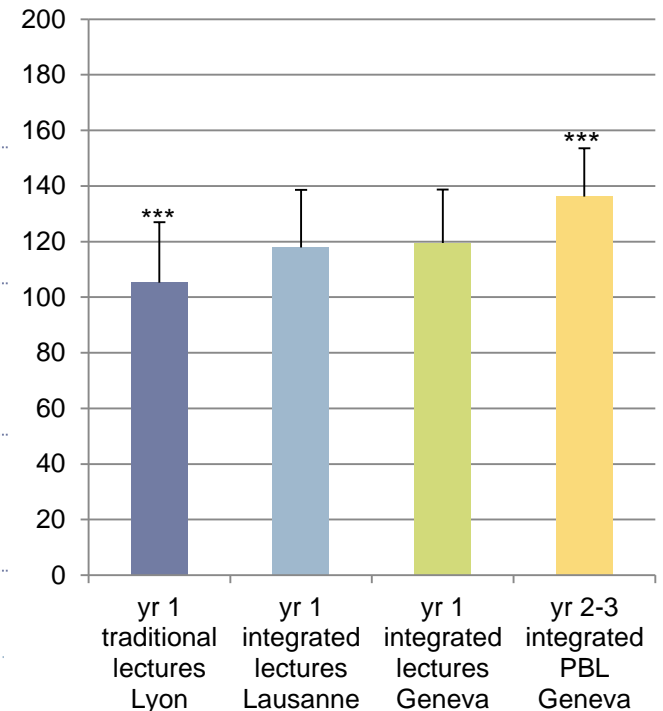
excellent

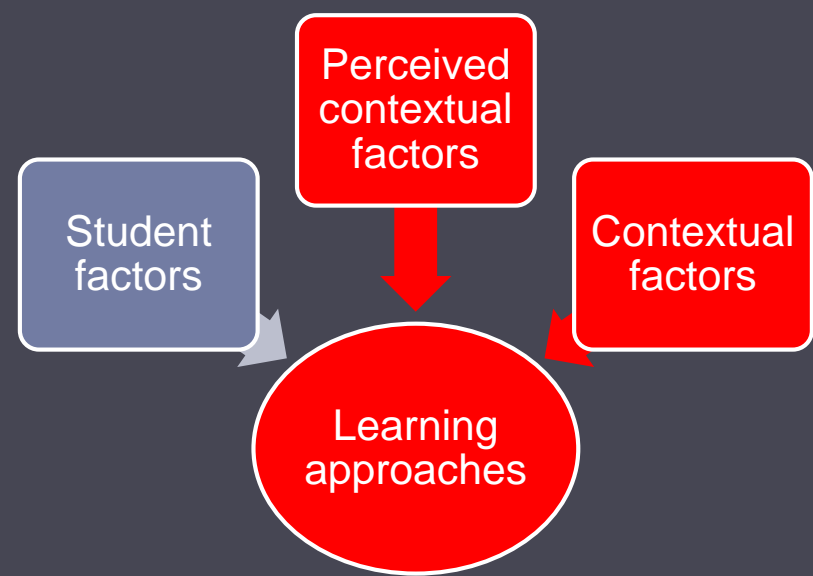
 more positive than negative

 plenty of problems

 very poor

TOTAL DREEM SCORE

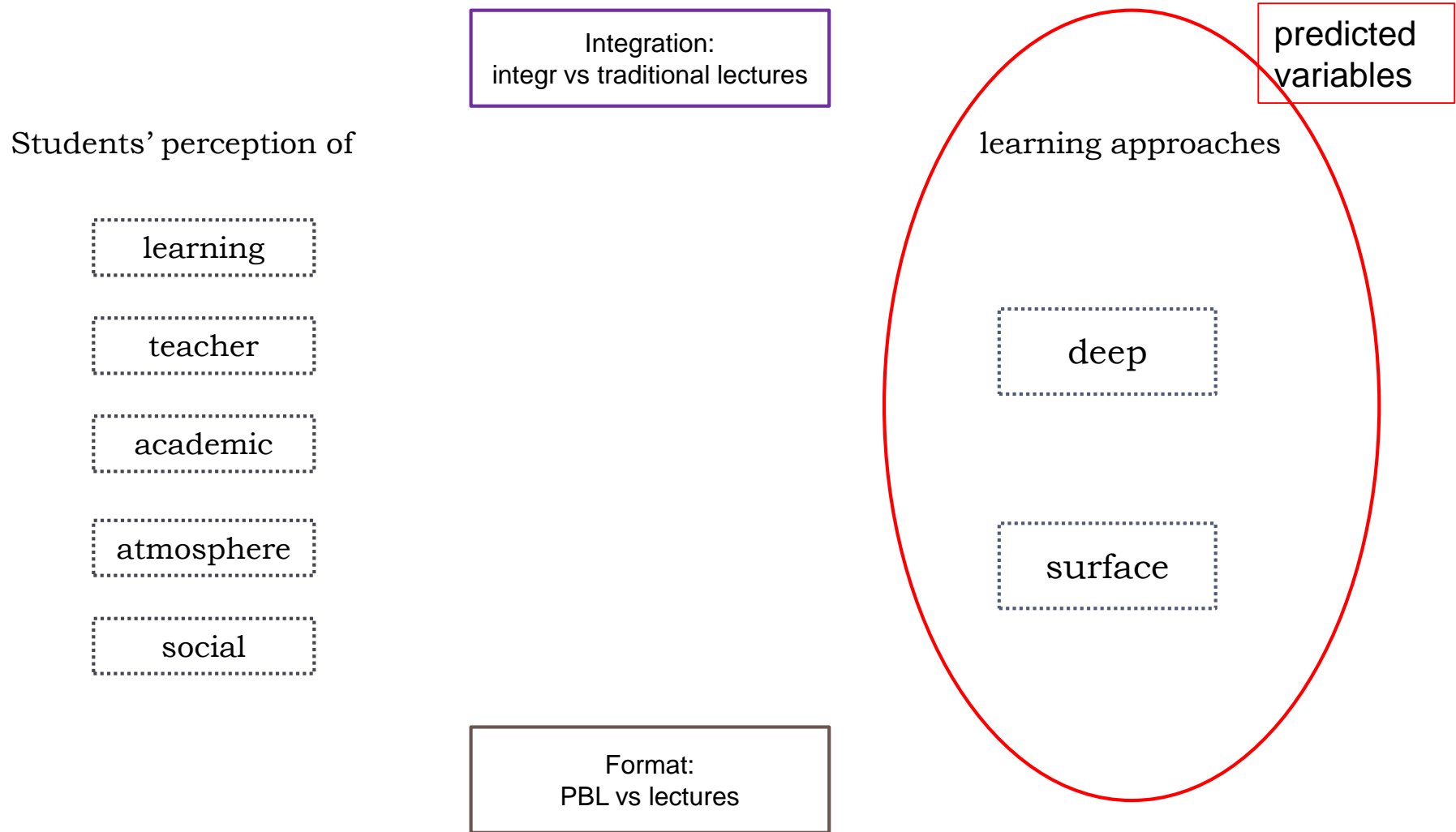




Geneva medical school: from educational context to students learning

Do context and perceived context influence
students' learning approaches?

Modelization

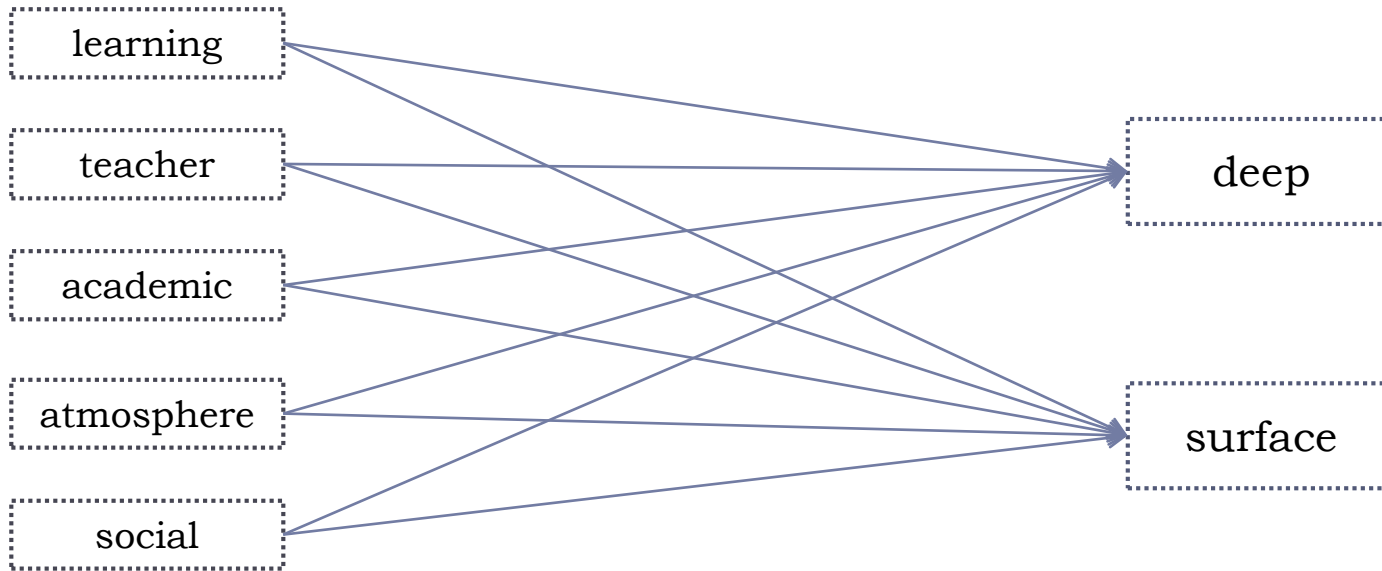


Modelization

Integration:
integr vs traditional lectures

Students' perception of

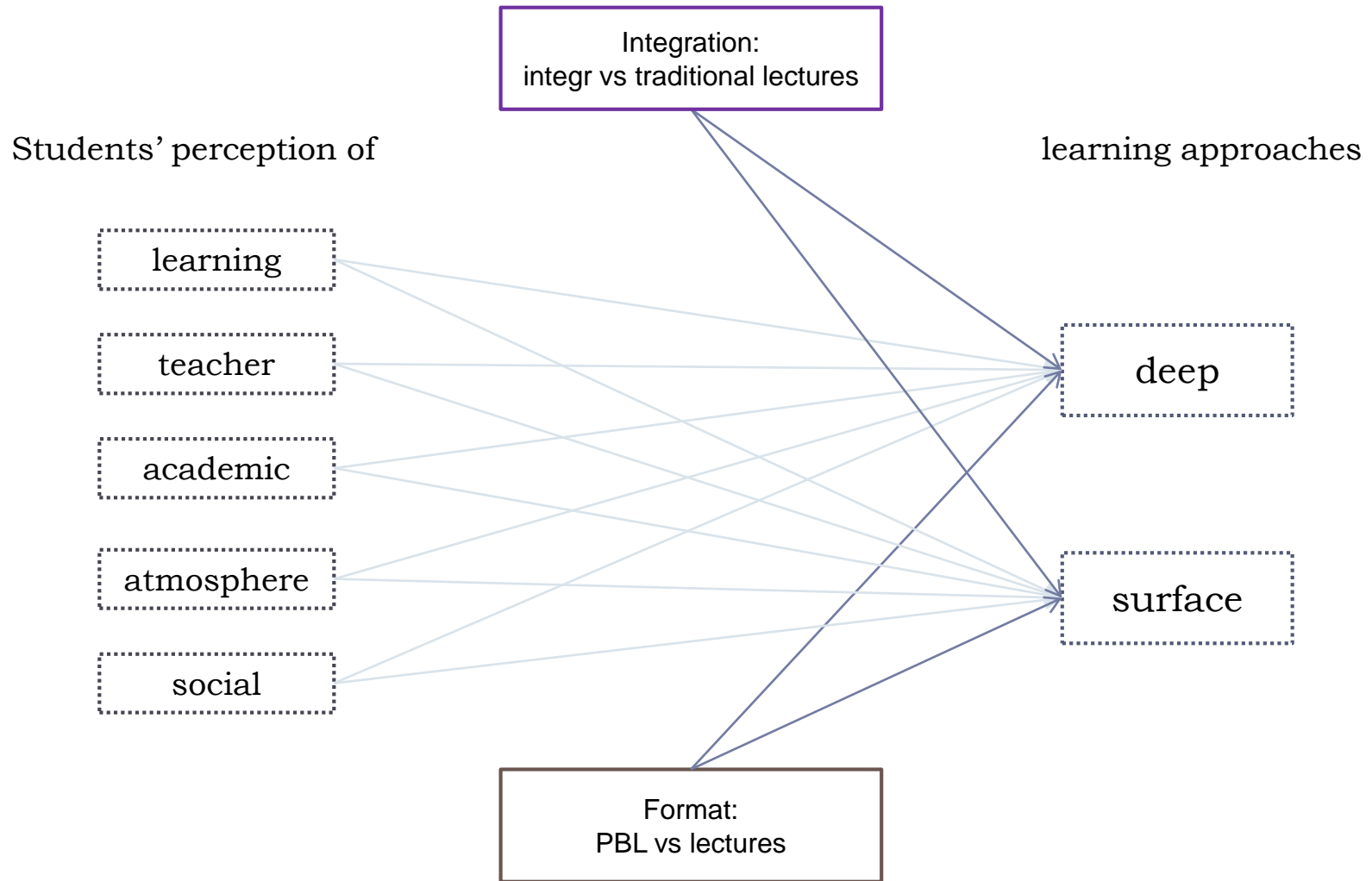
learning approaches



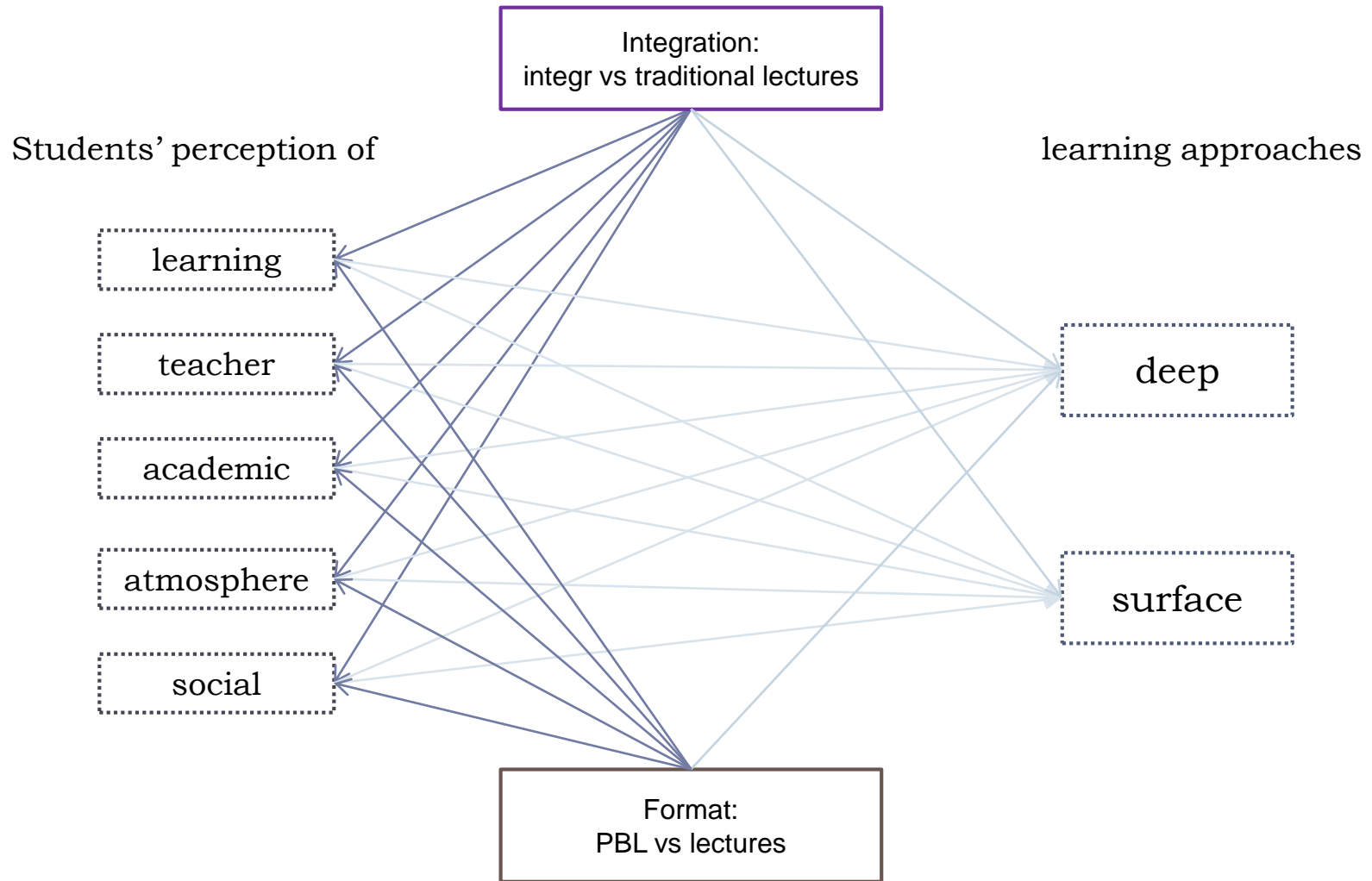
Format:
PBL vs lectures



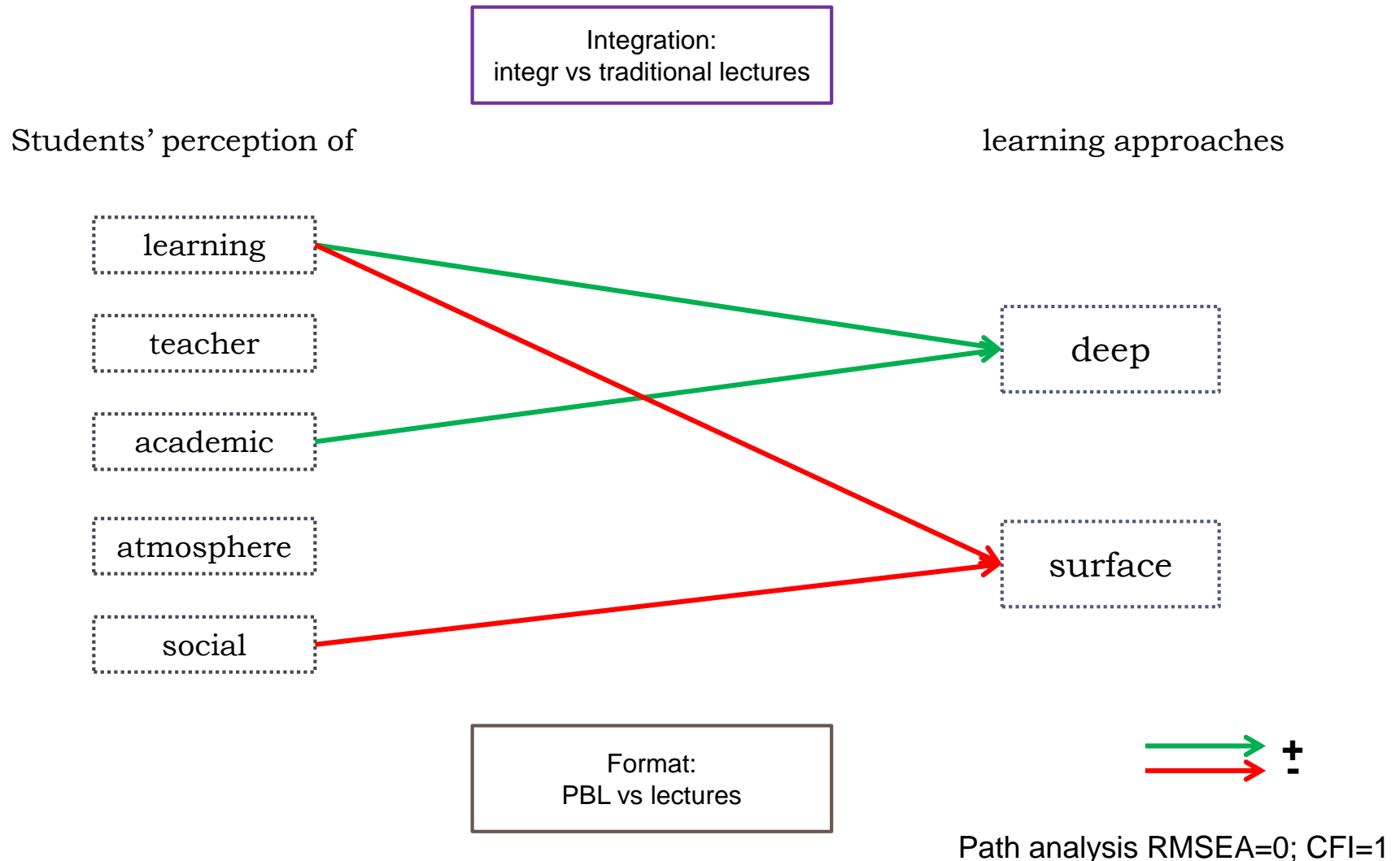
Modelization



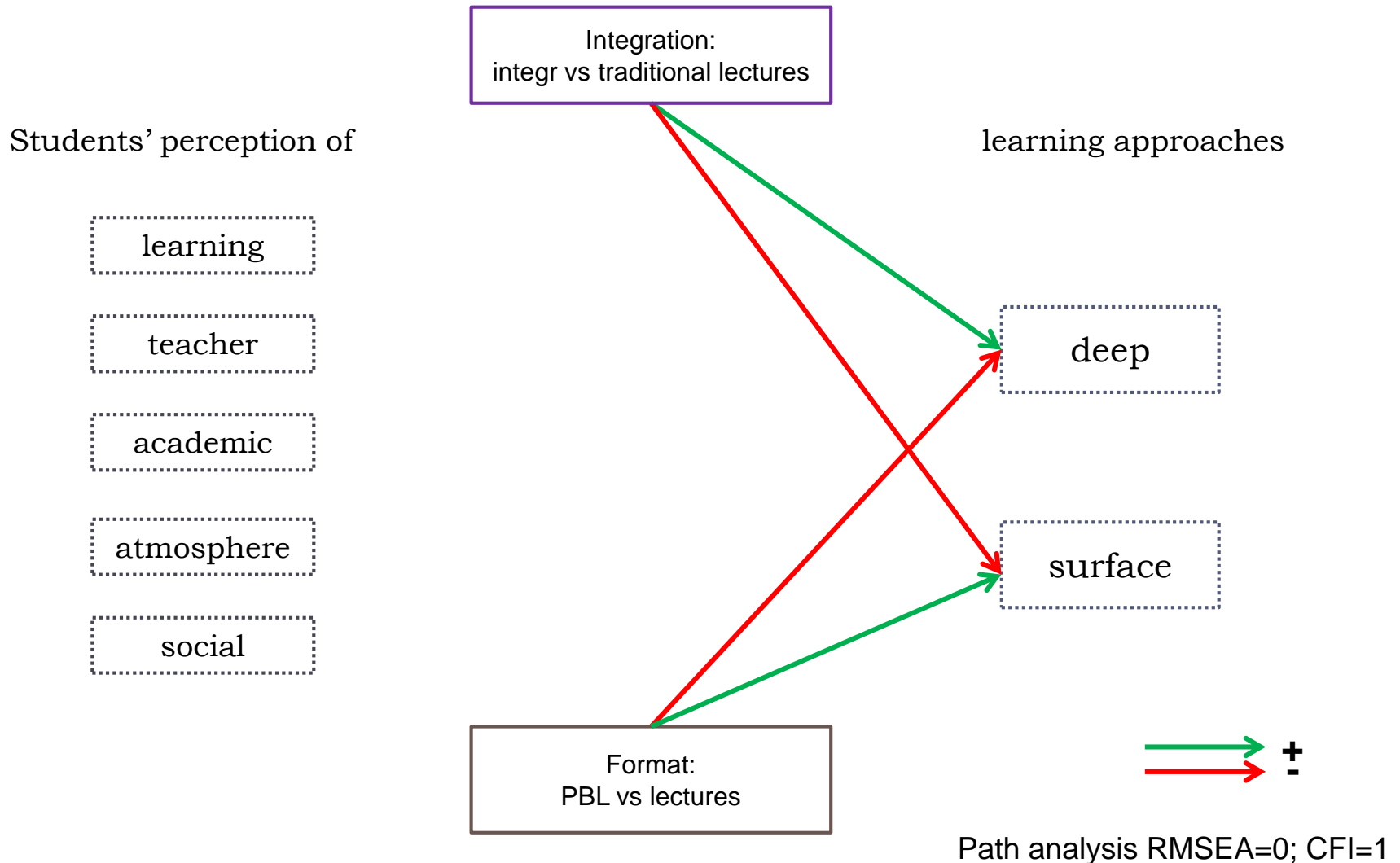
Modelization



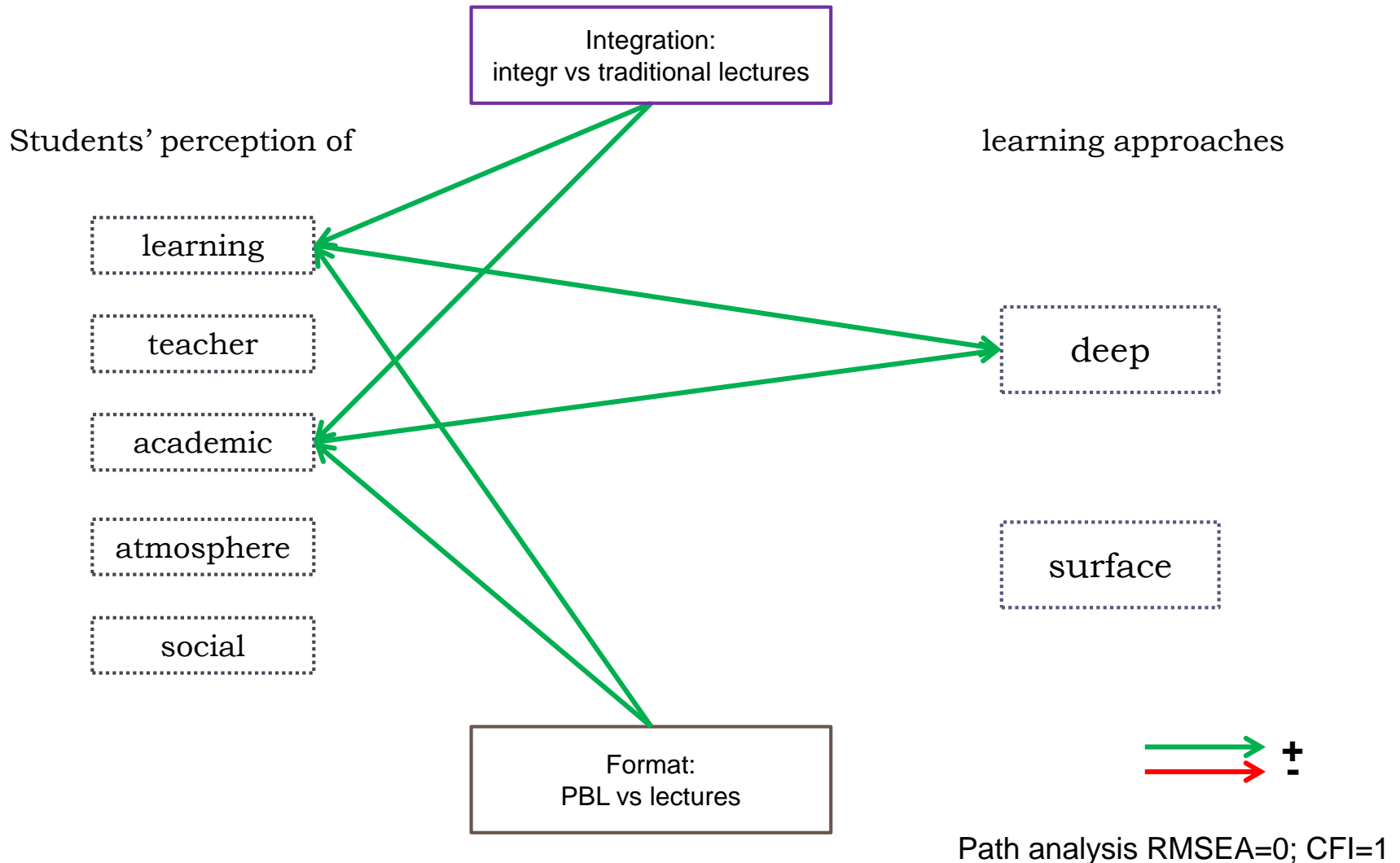
Results: students' perception of the learning context impacts their learning approaches



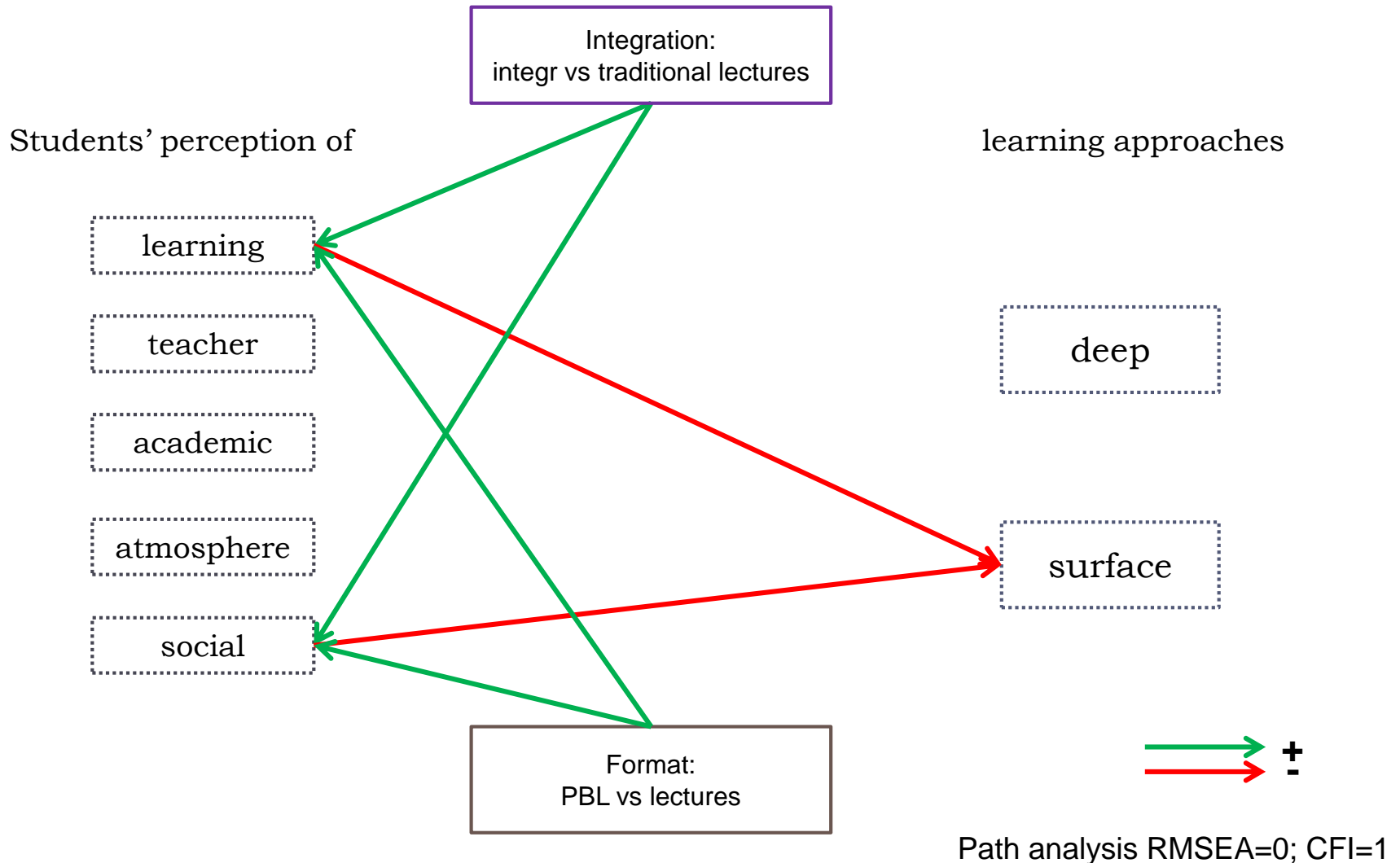
Results: integration and PBL impact learning approaches (direct effect)



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

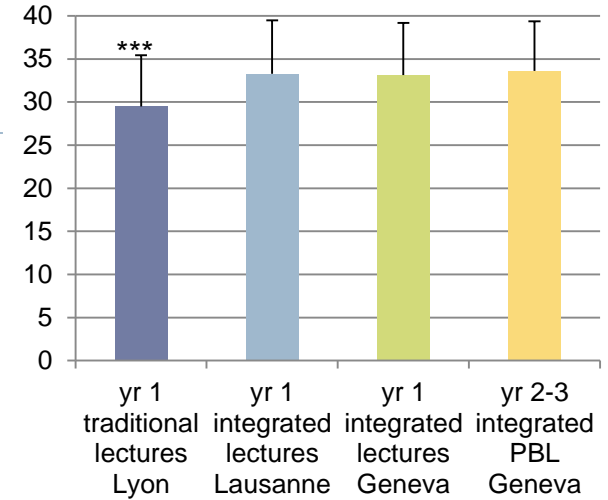


Results: integration and PBL impact learning approaches (indirect effect)

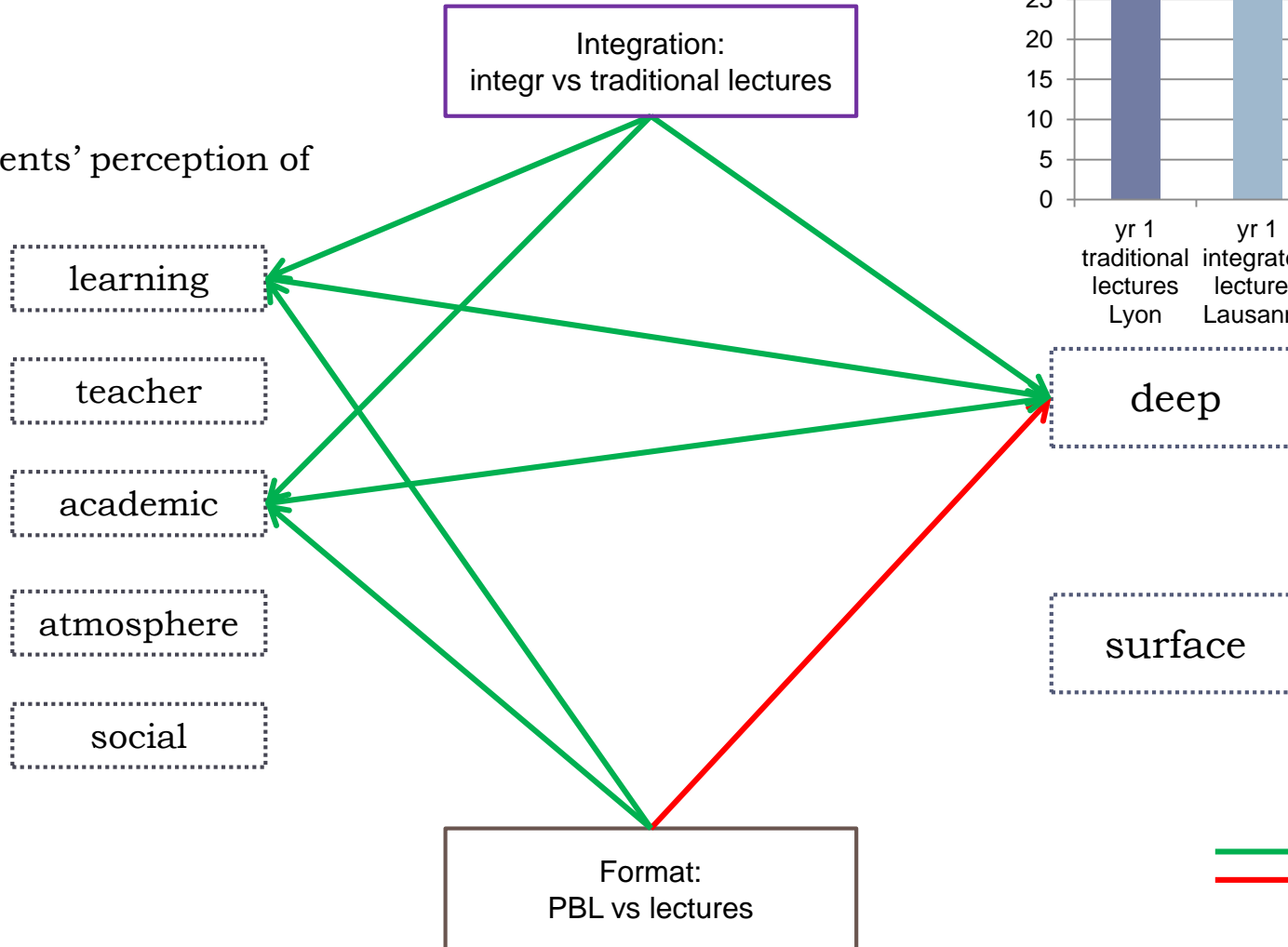


Results: deep approach

DEEP APPROACH



Students' perception of



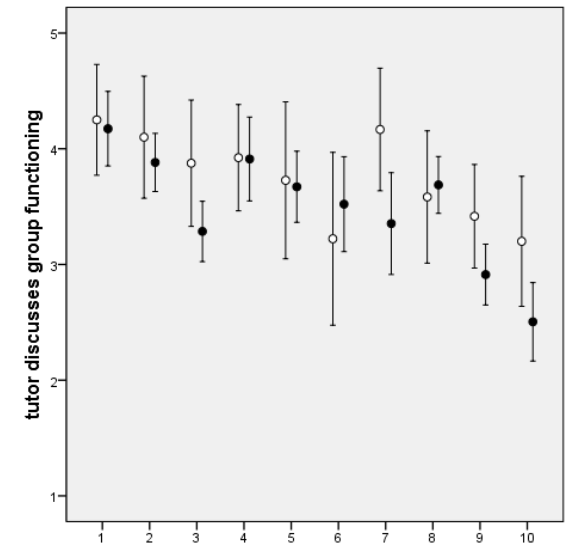
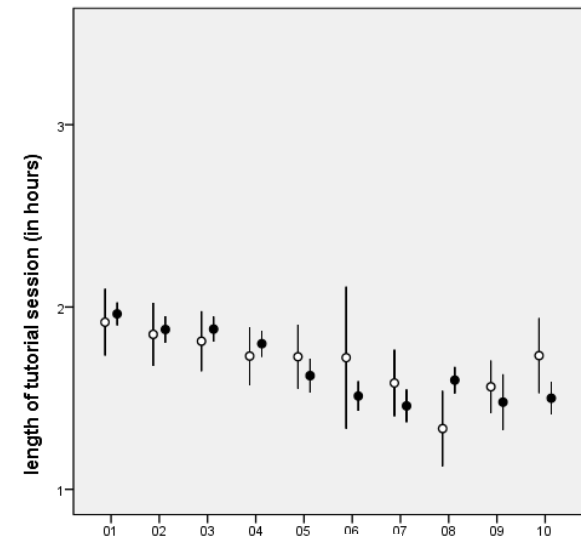
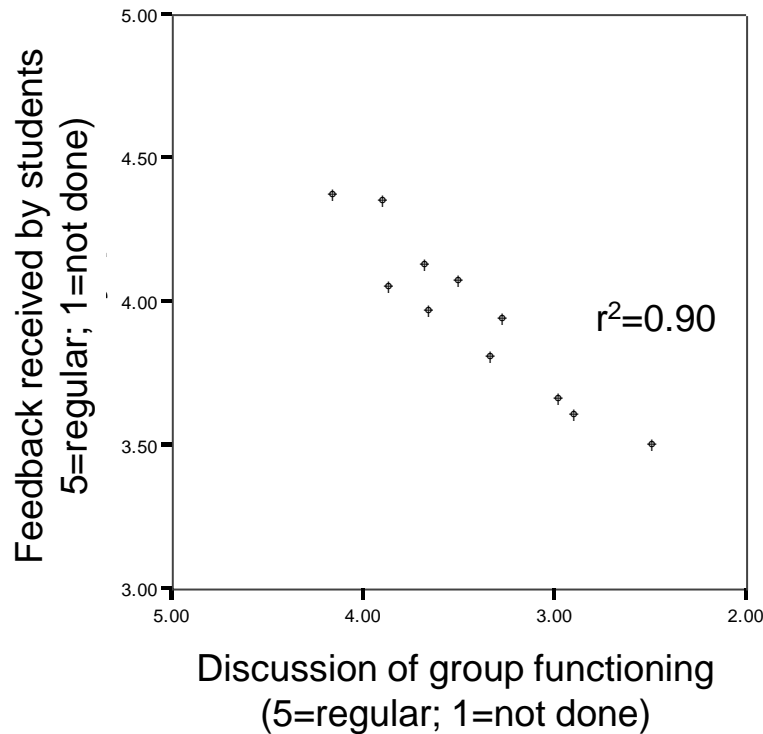
Path analysis RMSEA=0; CFI=1

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



Teaching units along the
2nd and 3rd year curriculum

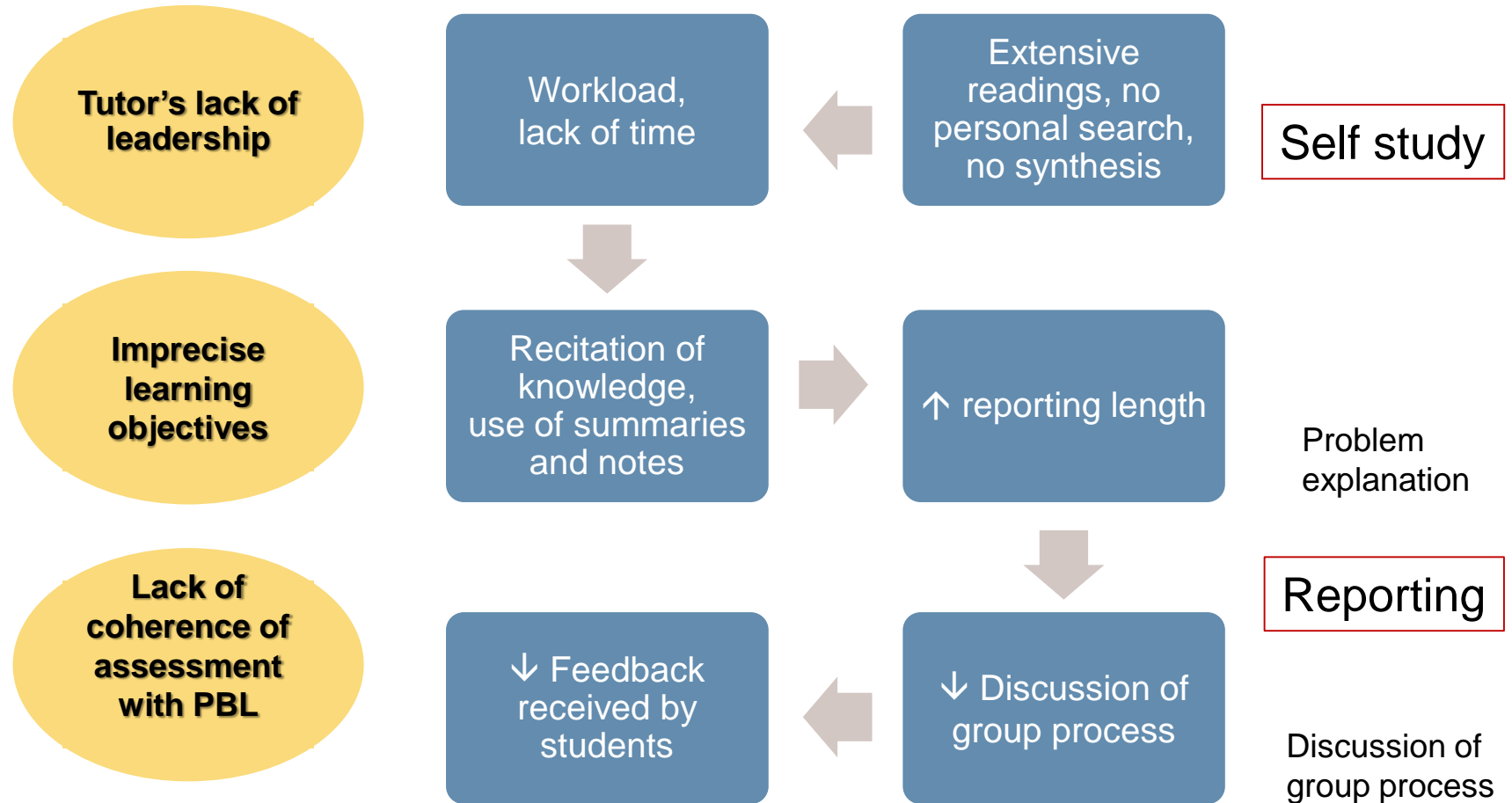
Baroffio, Vu, Gerbase (2013)

Data:

survey of
teachers
(n=235)

students' evaluation of
program and teachers
(n=828)

Students' analysis



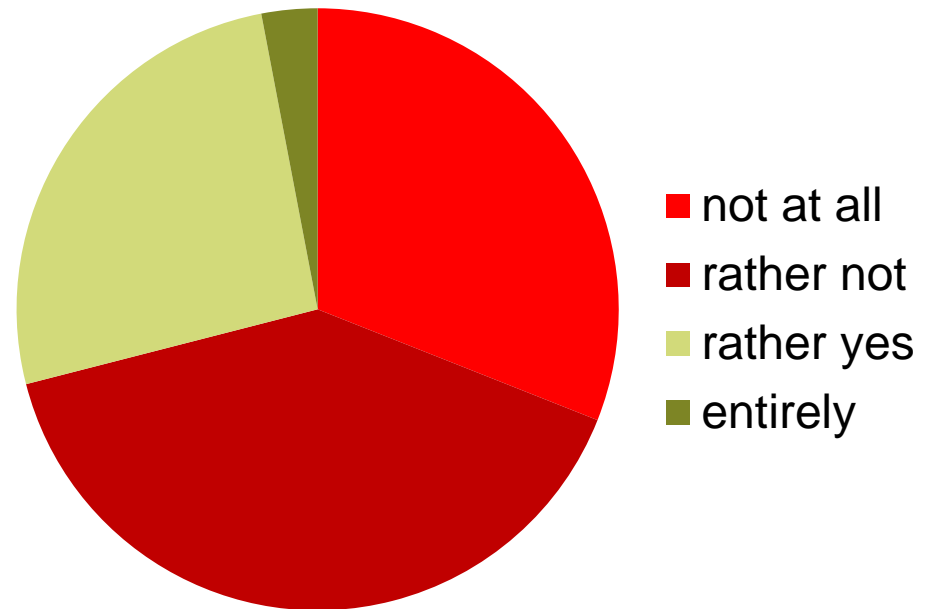
Students' analysis

Tutor's lack of leadership

Imprecise learning objectives

Lack of coherence of assessment with PBL

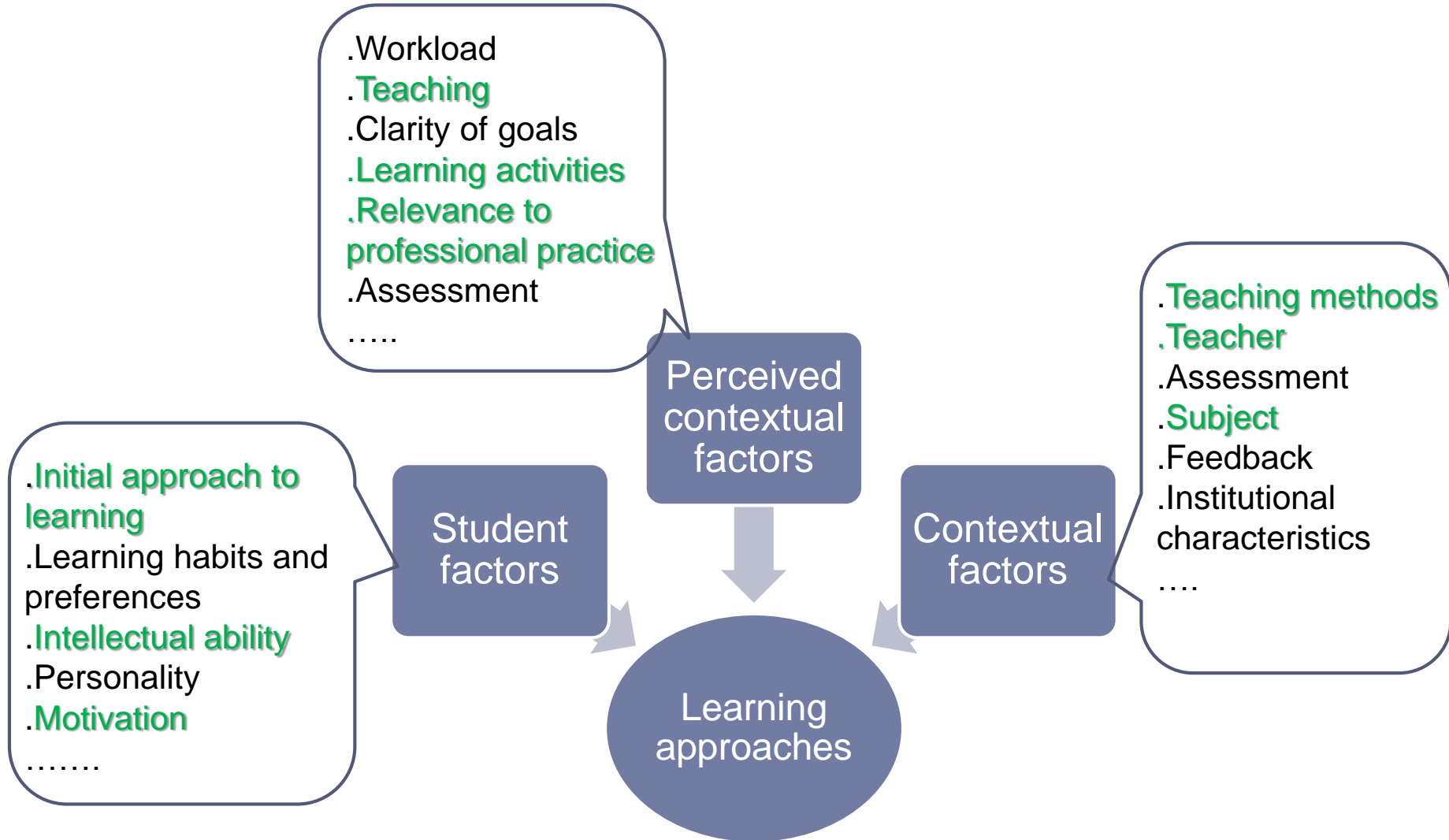
Do you think that PBL, such as it is practiced today, fosters long-term memory?



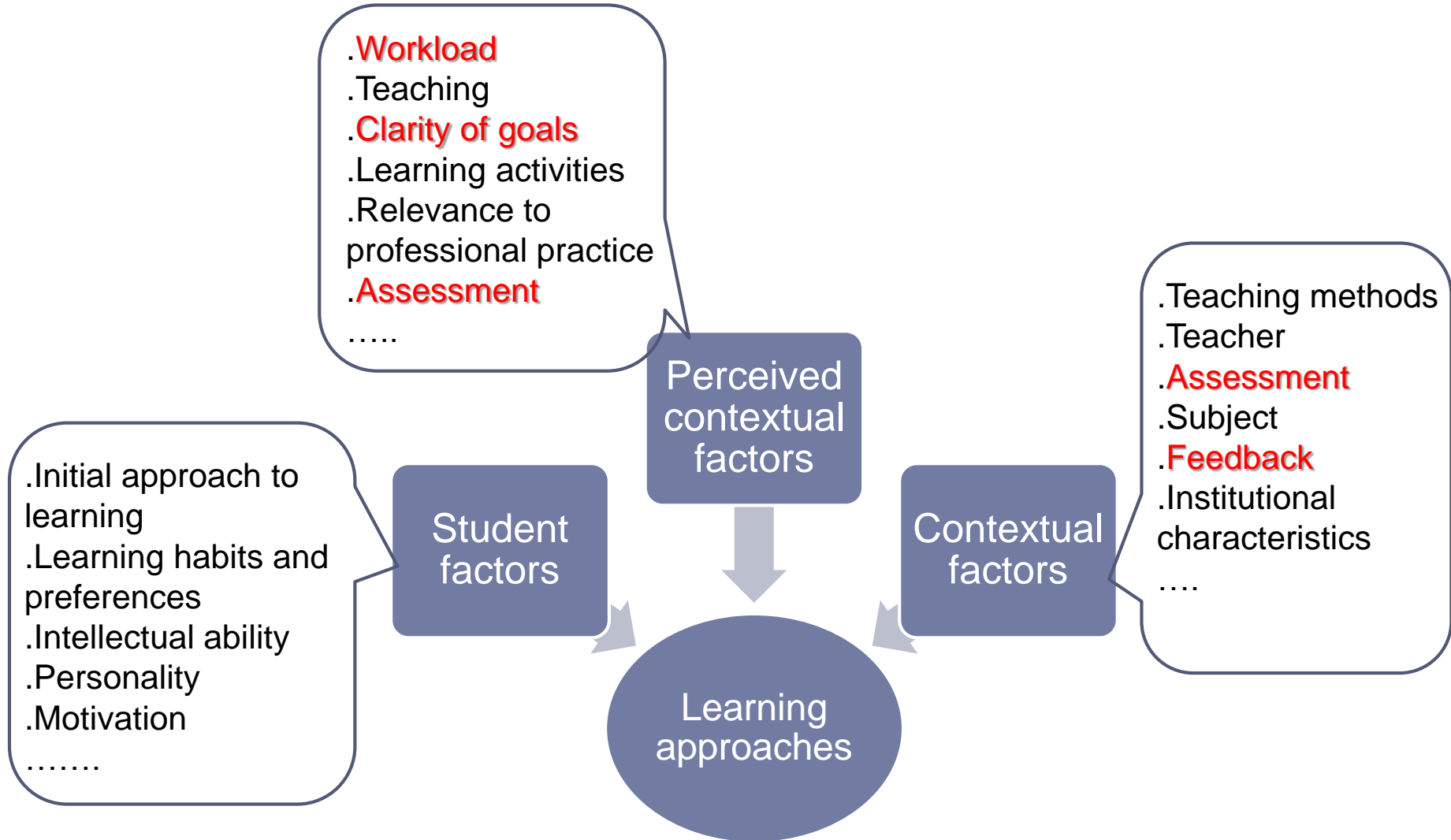
Geneva medical school:
from educational context to students learning

Friends or foes?

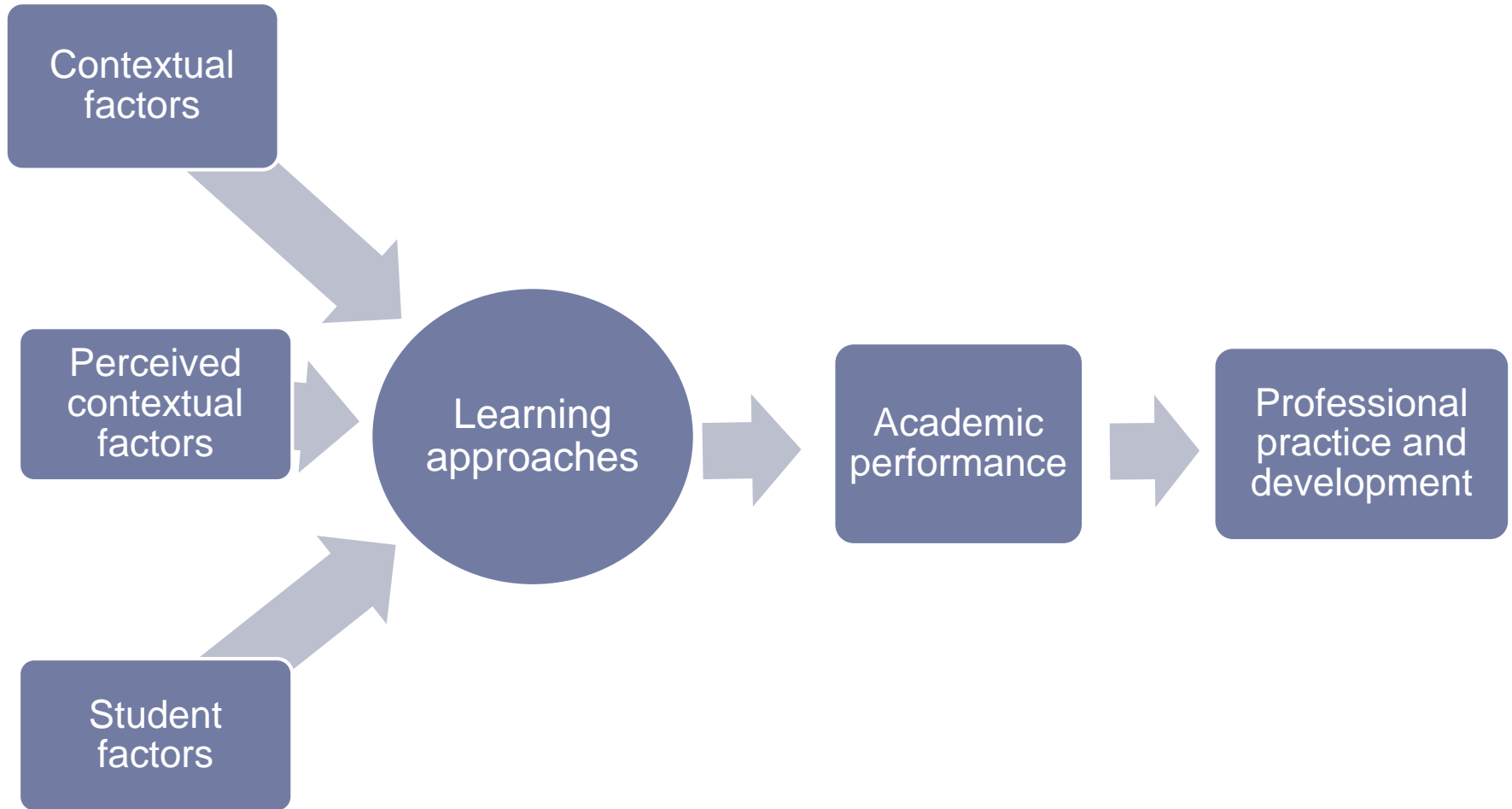
Friends of our students' learning



Foes of our students' learning



Factors of the institutional culture impact students training



Friends and foes

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



And thanks to:



N.V. Vu & M. Nendaz

D. Aeberhard

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N. Bochatay

N. Carrieu

B. Cerutti

P. Chastonay

N. Cosandey

F. Demaurex

F. Geoffroy

P. Huber

V. Juge

N. Junod

B. Kayser

J. Laurin

C. Layat

C. Lenzen

C. Mange

A. Perrier

C. Sahlé

G. Savoldelli

D. Scherly

E. vanGessel

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S. Hurst

C. Layat

M. Ummel

Deans and vice-deans

C. Bader

L. Bernheim

H. Bounameaux

JL. Carpentier

P. Suter

JD. Vassalli

The CAPA dream team & collaborators

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N. Junod & M. Nendaz (Geneva)

MP. Gustin (Lyon)

R. Bonvin and M. Monti (Lausanne)

T. Pelaccia, M. Clad, N. Prat (Strasbourg)

E. Pfarrwaller, D. Hester (UIGP Geneva)

Co-authors of the work shown today

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C. Gallay (Fehlmann)

N. Vu

MP. Gustin (université Lyon-Est)



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