



**GHENT
UNIVERSITY**

SESSION 3 :

SUPPORTING ACADEMIC STAFF TO INCORPORATE
ENTREPRENEURSHIP EDUCATION IN THEIR TEACHING AND THEIR
STUDENTS LEARNING - UNIVERSITY-WIDE CHALLENGE

ENTREPRENEURIAL SKILLS IN LIFE SCIENCE : THE IMPORTANCE OF THE LEARNING TRAJECTORY

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Keywords: Learning trajectory, entrepreneurial competences, constructive alignment

CONTENT

1. Introduction
2. Entrepreneurial Competences and Personal Skills
3. Learning trajectory
4. Constructive alignment
5. Tips
6. Conclusion



LIFE SCIENCE

VERSUS

BUSINESS SCHOOLS

Life science students

Area of interest: living objects, cells, organelles

(Often) Low affection to general economics and business models

Entrepreneur = start a business = is not the first thing to think about

“An entrepreneur is the one making big money”

Economics & business schools

Area of interest: economy, business, marketing

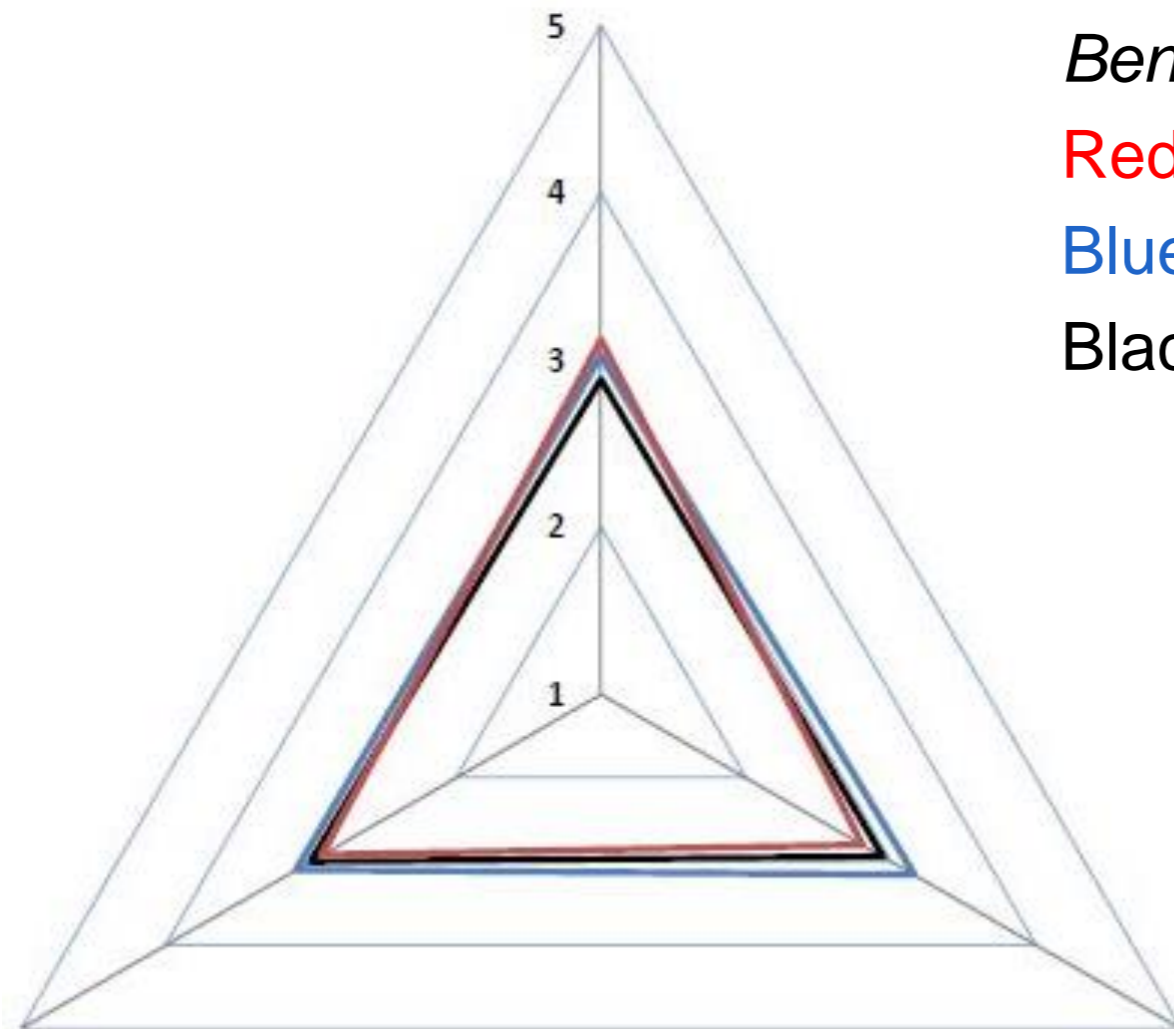
Awareness to obtain entrepreneurial skills

Low affection with life science
Expect specific courses

“I Hope to be an entrepreneur or play an important role in enterprises”

1. INTRODUCTION

Entrepreneurship

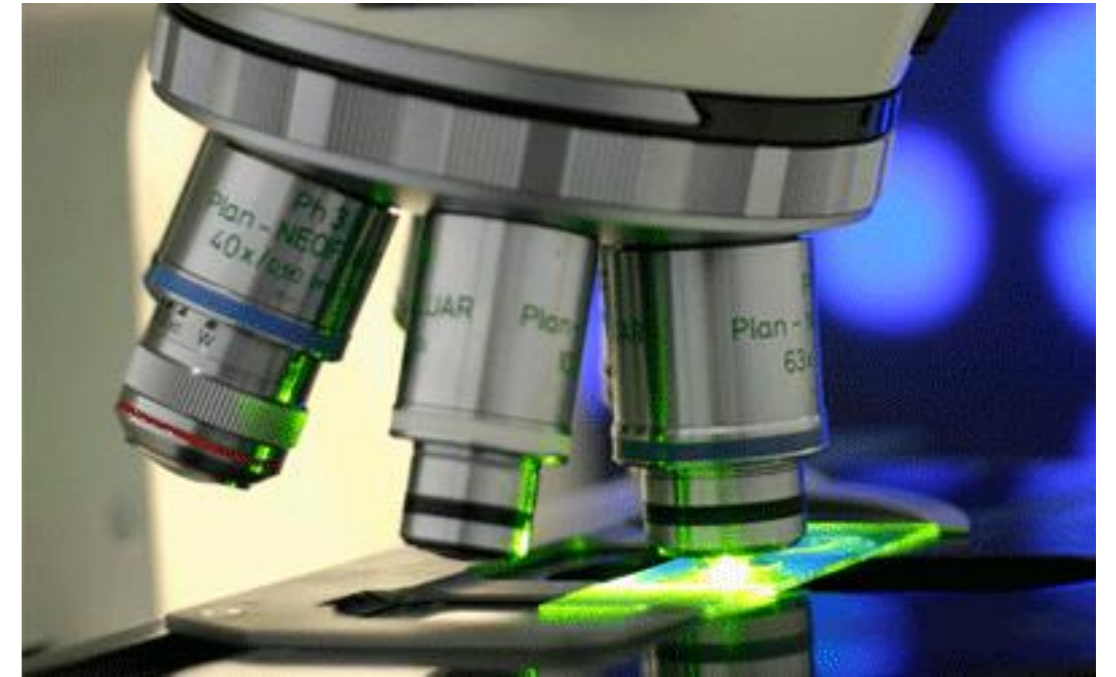


Benchmark:

Red: my students

Blue: master life science

Black: all masters

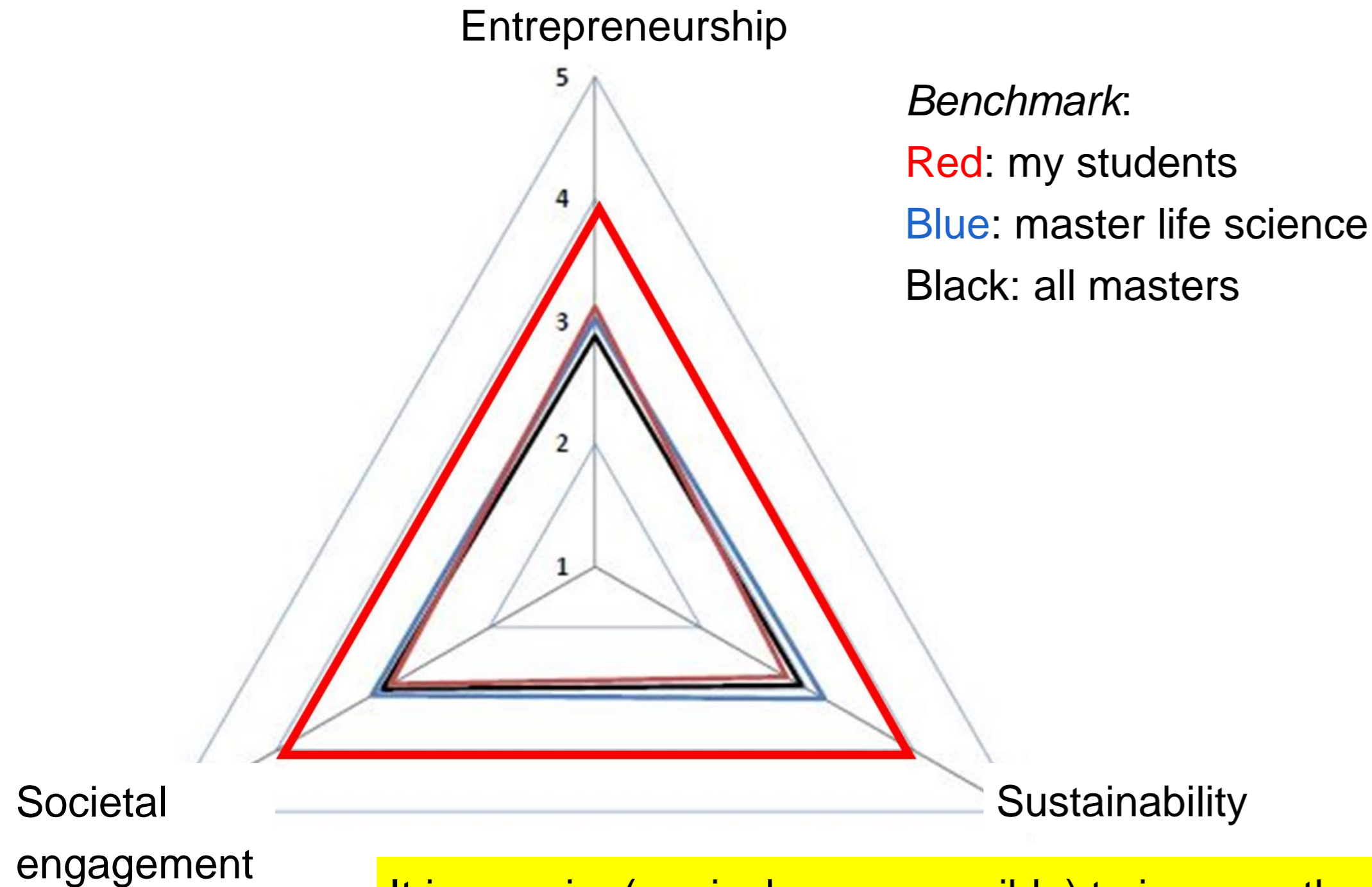


Societal
engagement

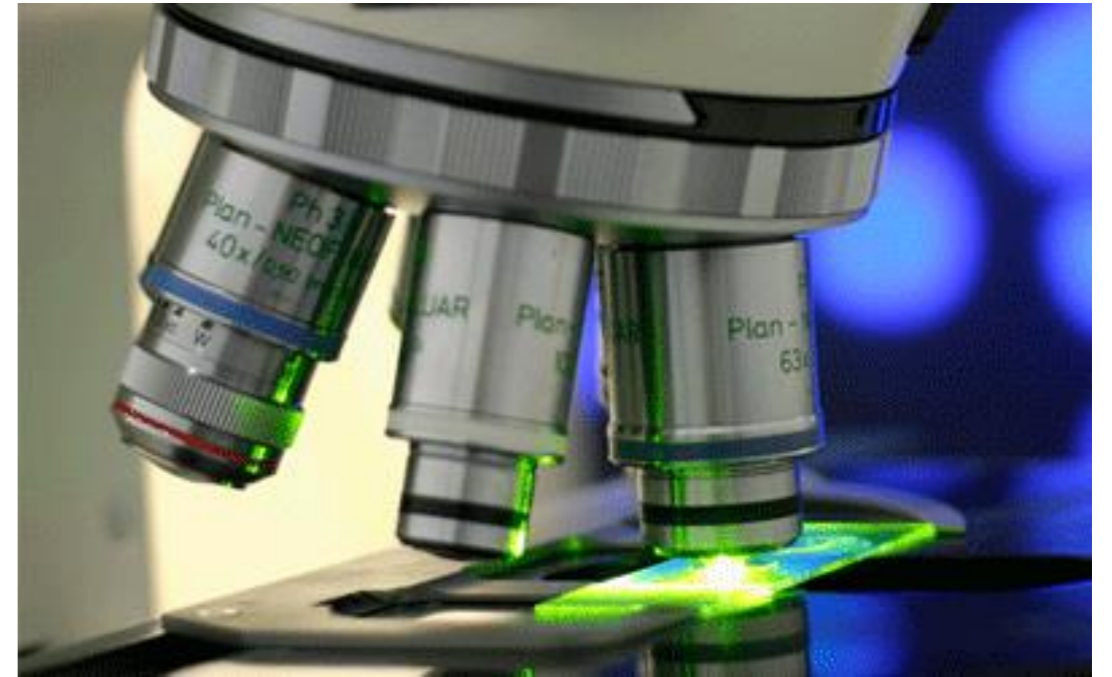
Sustainability

Students are “neutral” with regard to the question if the curriculum strengthens the entrepreneurial competences → ?

1. INTRODUCTION

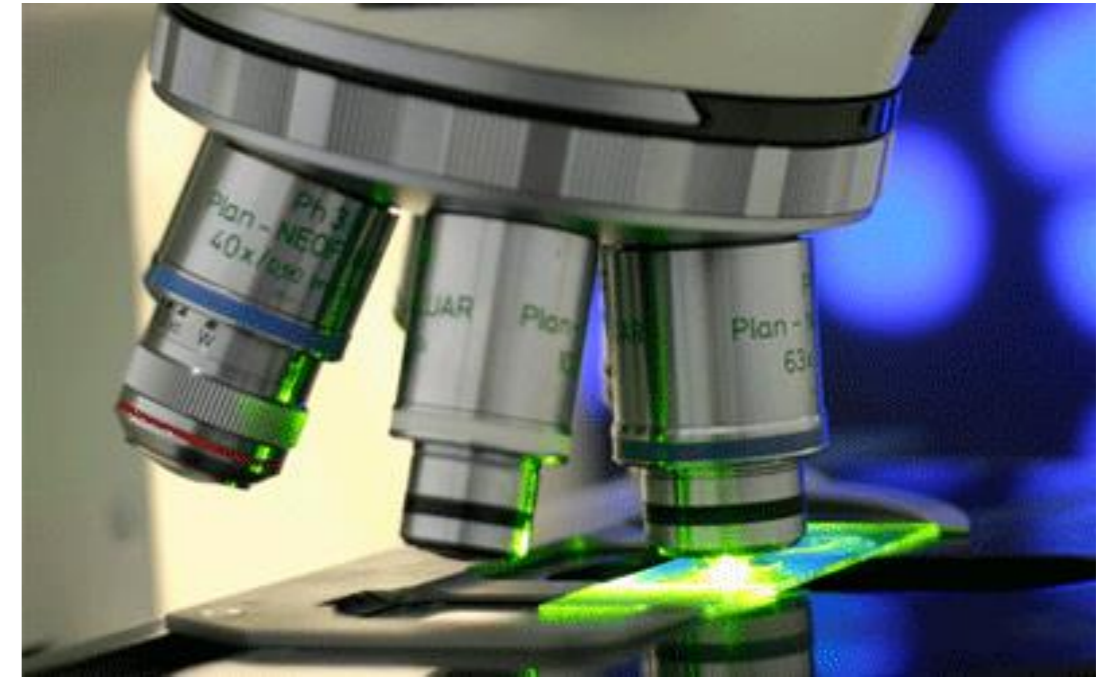


It is our aim (curriculum responsible) to improve the score



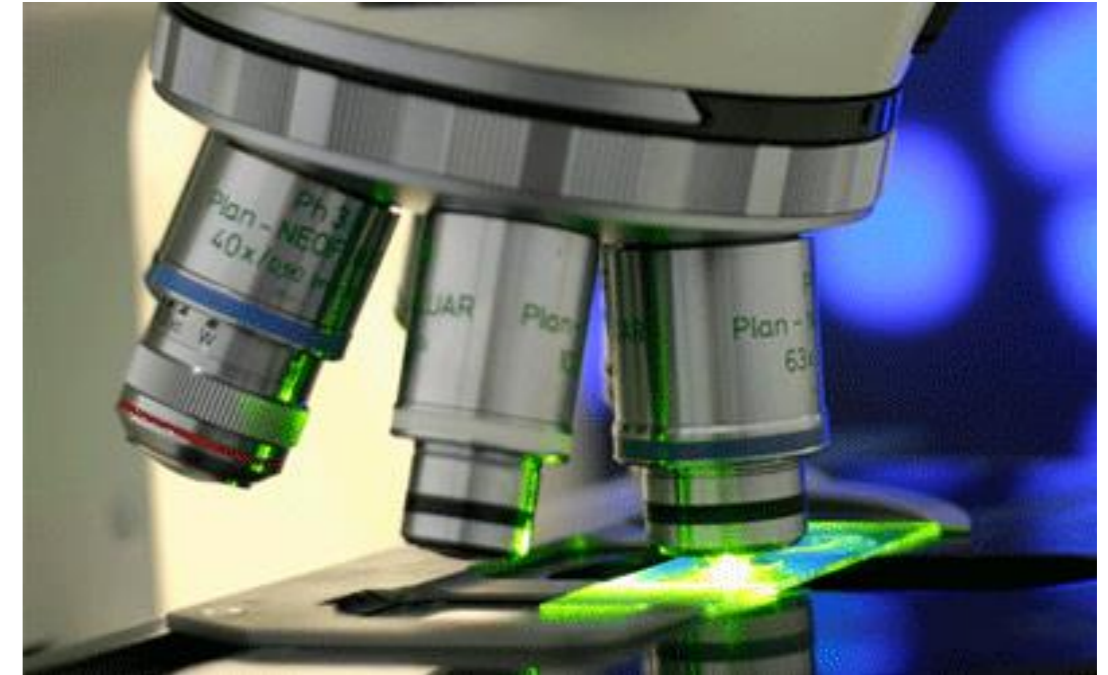
1. INTRODUCTION

Development of an entrepreneurial **mind-set** and entrepreneurial **competences** among students



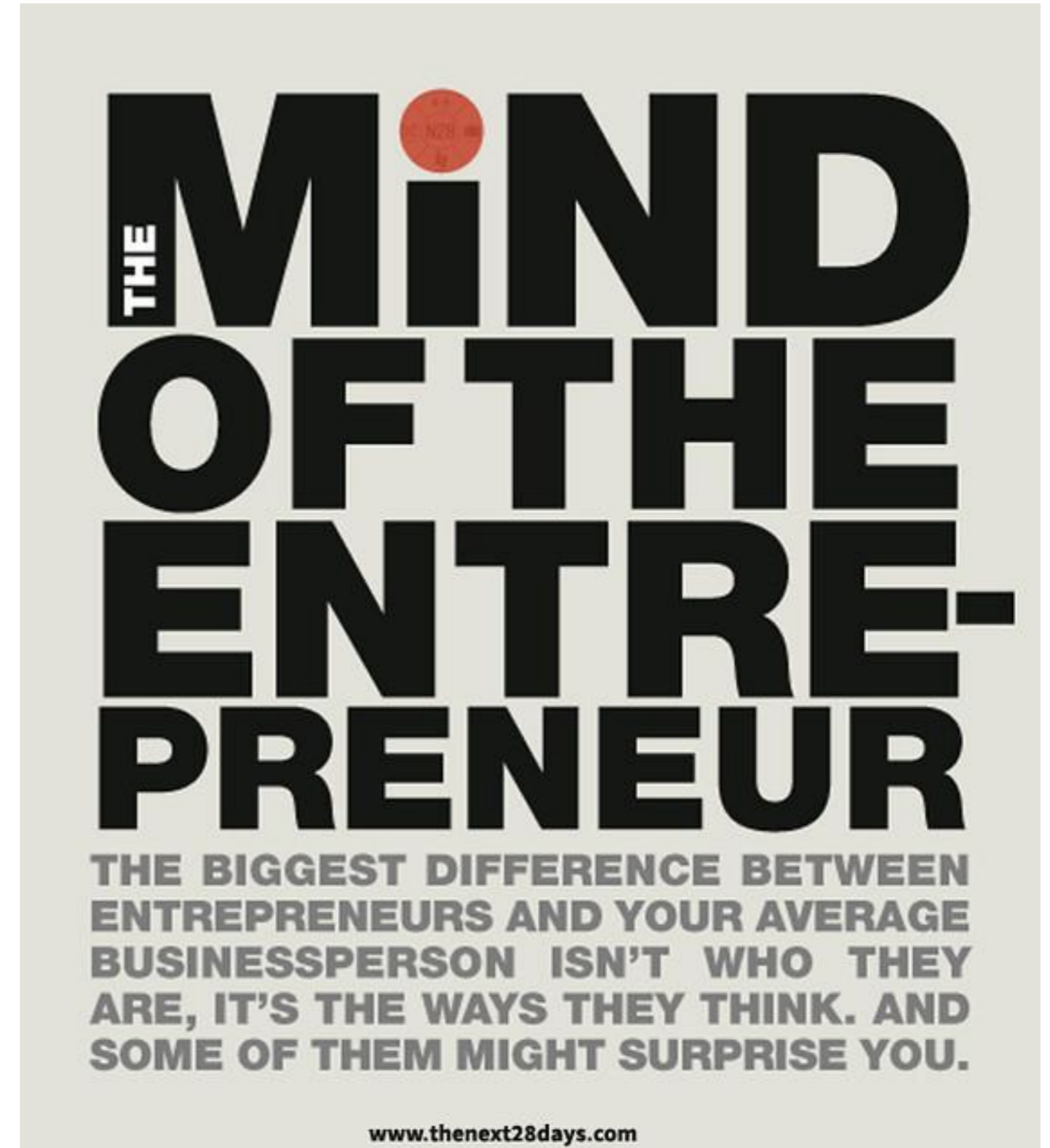
1. INTRODUCTION

The entrepreneurial development of our students depends on the entrepreneurial experience gained throughout **the whole life science** curriculum.



2. COMPETENCES AND PERSONAL SKILLS

- Initiative
- Looking for opportunities
- Persistence
- Information seeker
- Quality consciousness
- Commitment to work
- Proper planning
- Problem solver
- Self confident
- Persuasive
- Assertive



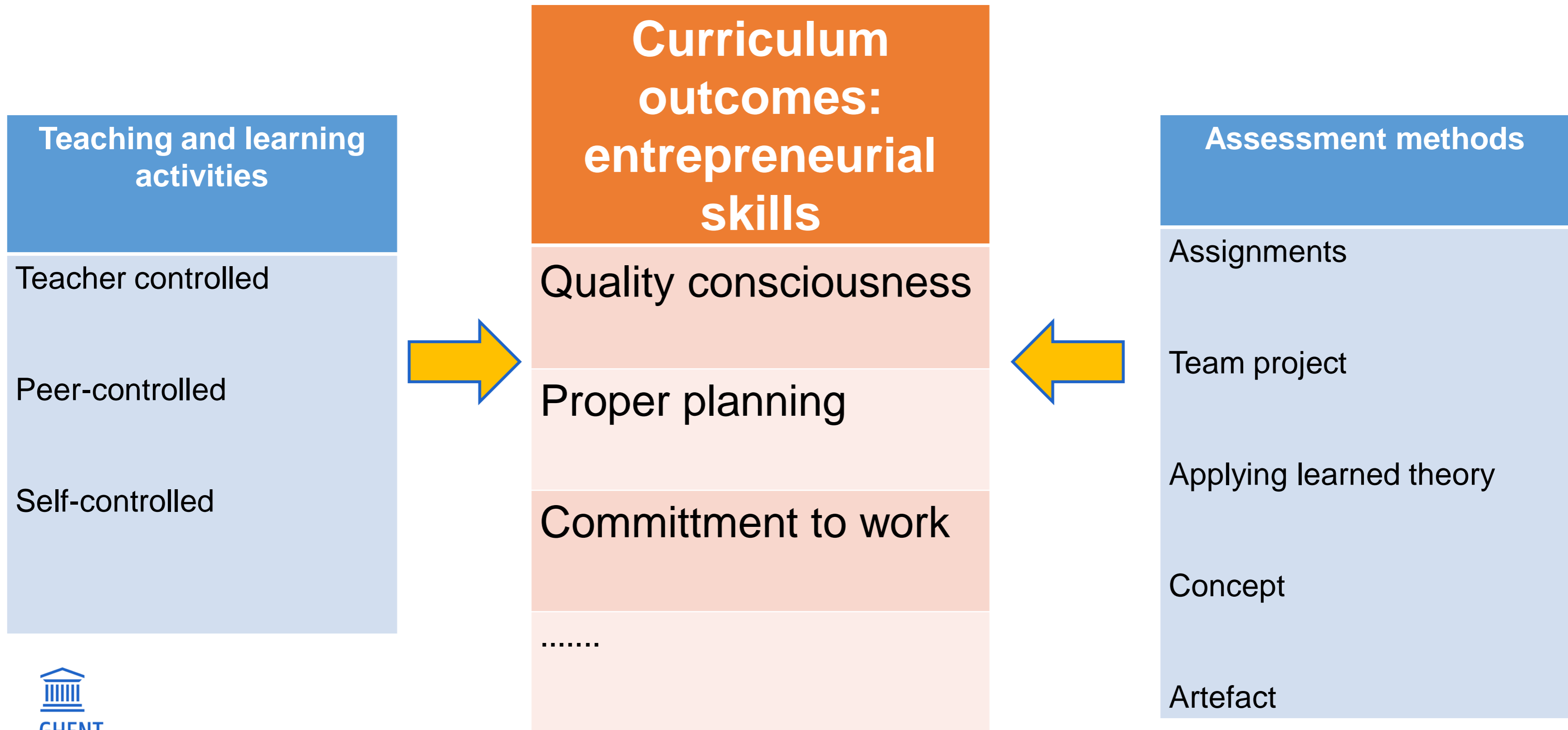
3. CONSTRUCTIVE ALIGNMENT

= Constructive alignment is an example of outcomes-based education (OBE)

Learning outcomes = achieved competences

Assessment = method to evaluate to which level the outcomes are achieved

3. CONSTRUCTIVE ALIGNMENT



3. CONSTRUCTIVE ALIGNMENT

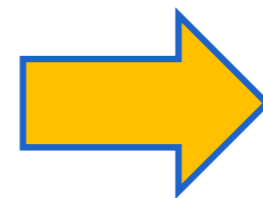
**Curriculum
outcome: f.e.
entrepreneurial
skills**

Assessment methods

Assignments

Team project

Applying learned theory



A: Excellent

B: Highly Satisfactory

C: Satisfactory

D: Just pass

3. CONSTRUCTIVE ALIGNMENT

You learn students about the different type of managers and learn them about the importance of f.e. what is a business plan.

An exam in which you ask them:

- ***Can you give an example of a managers' type ?***
- ***What are the important parts of a business plan ?***

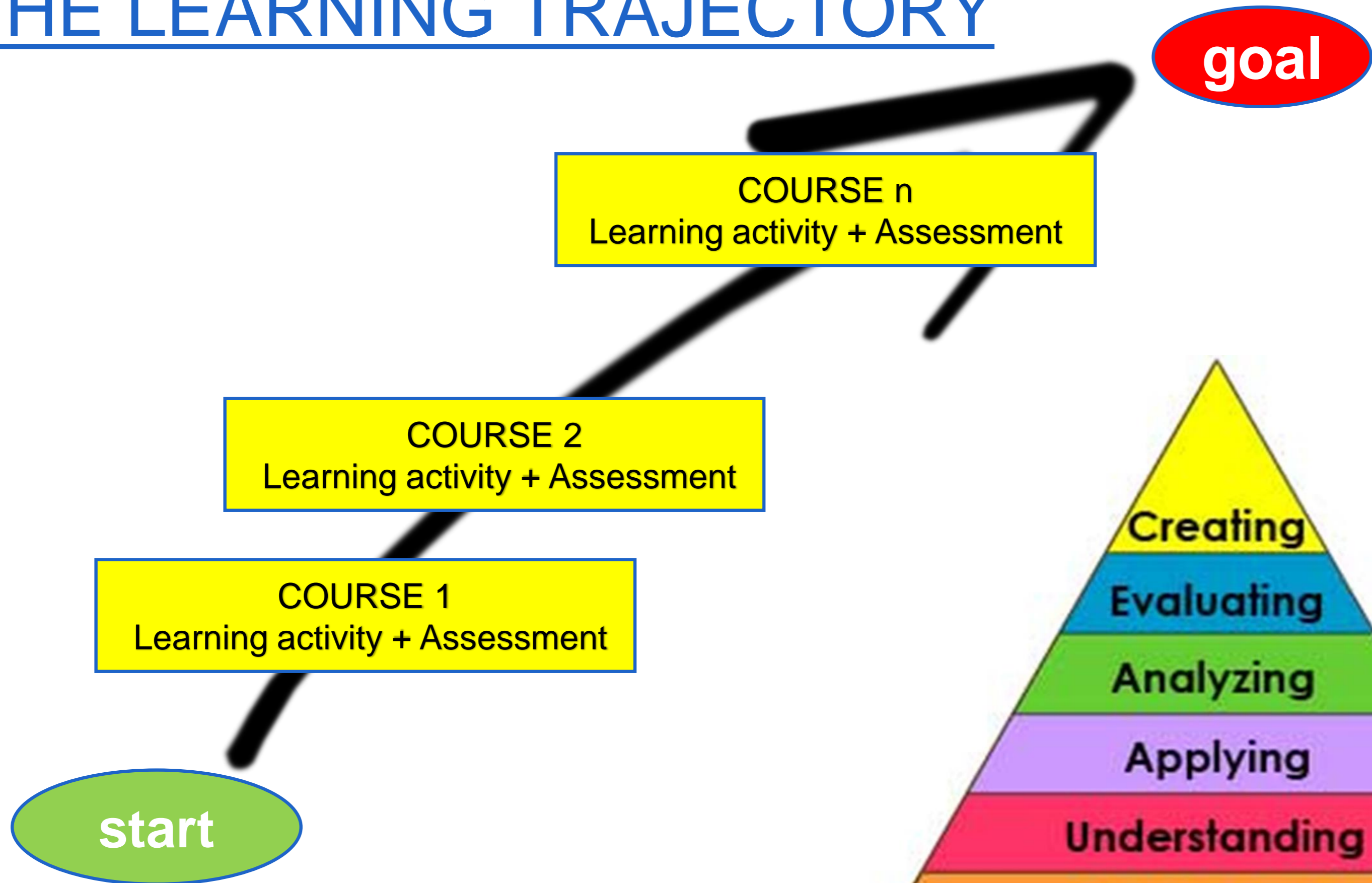
Students will tell you what you told them.

You can and should do it different !

4. THE LEARNING TRAJECTORY



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Learning trajectory or path = a device whose purpose is to support the development of a curriculum, or a curriculum component.

A learning trajectory comprises **3 parts**

the learning goal or level



the development of sequence to reach the goals



the learning activities in which the students might engage to reach the goal or level



4. THE LEARNING TRAJECTORY

A **curriculum** has multiple learning trajectories for f.e.

- Basic scientific skills (maths and physics)
- Basic skills in life science
- Entrepreneurial and societal skills
- Technological skills
- Research skills

The team defines the **FINAL learning outcomes (goals) at the end of the curriculum**

4. THE LEARNING TRAJECTORY

The team defined the FINAL learning outcomes at the end of the curriculum

Now the team has to define the sequence of courses or modules which are necessary to develop the competences

Each course or module aims the development of competences which are part of the final competences at the end of the learning trajectory

A course is a set of activities which aim to reach a higher level in competences

4. THE LEARNING TRAJECTORY: PART 1.

Basic scientific skills (maths and physics)

Basic skills in life science

Technological skills

Entrepreneurial and societal skills

Research skills

4. THE LEARNING TRAJECTORY: PART 2

BACHELOR			Master	
Year 1	Year 2	Year 3	Year 1	Year 2
Course / module	Course / module	Course / module	Course / module	Course / module
Course / module	Course / module	Course / module	Course / module	Course / module
Course / module	Course / module	Course / module	Course / module	Course / module
Course / module	Course / module - research	Course / module	INTERNATIONAL PROJECT	MASTER Thesis
Course / module	Quality management	Course / module		
General economics	Course / module	Risk management	INTERNSHIP	
Course / module	Course / module	Entrepreneurship business models		

4. THE LEARNING TRAJECTORY: PART 3

Course Year 1 – semester 1

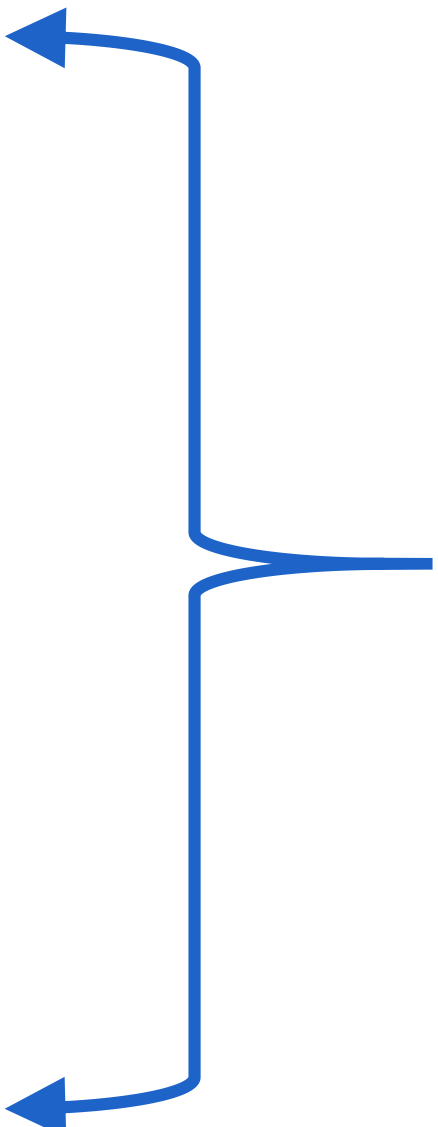
Activities → competences ← assessments

= Constructive alignment

4. THE LEARNING TRAJECTORY: COMPETENCE MATRIX

Which competences are covered for course 1 ?

- By teaching methods / students activities
- By assessment methods



To do for the complete curriculum

4. THE LEARNING TRAJECTORY: (ENTREPRENEURIAL) COMPETENCE MATRIX

Course name	Comp 1	Comp 2	Comp 3	Comp 4	Comp n
Mathematics						
Analytical chemistry						
Plant biology						
Water treatment						
Soil fertility						
Food safety						
Master thesis						
CURRICULUM						

Fill in if the competences are covered by the teaching method (T) and if they are assessed (A)

4. THE LEARNING TRAJECTORY: (ENTREPRENEURIAL) COMPETENCE MATRIX

Course name	Comp 1	Comp 2	Comp 3	Comp 4	Comp n
Economics	T A	T A	T A			
Analytical chemistry						
Plant biology	T A			T A	T A	
Water treatment			T A			
Product innovation		T A			T A	
Food safety						T A
Master thesis	T A					
CURRICULUM	A	A	A	A	A	A

4. THE LEARNING TRAJECTORY: COMPETENCE MATRIX

Competence coverage matrix



**GHENT
UNIVERSITY**

Master of Science in Bioscience Engineering Technology: Food Industry

Academic year 2018-2019

Legend:
T=teaching methods
E=evaluation methods

			General Courses							Master's Dissertation
			I700181 Process Instrumentation and Quality Control	I700082 Biochemical Applications in Food Industry	I700157 Molecular Analysis Techniques	I700083 Cereal Technology	I700158 Dairy Technology	I700087 Rheology and Texture Analysis	I700065 Applied Management	I700056 Master's Dissertation
null	IM7BWV-1.1 null	T4 E4		T E		T E	T E	T E		
	IM7BWV-1.2 null	T6 E6	T E	T E	T E		T E	T E		
	IM7BWV-1.3 null	T1 E1					T E			
	IM7BWV-1.4 null									
	IM7-2.1 null	T1 E1								T E
	IM7-2.2 null	T1 E1								T E
	IM7-2.3 null	T8 E8					T E	T E		T E
	IM7-2.4 null	T1 E1								T E
	IM7-3.1 null	T1 E1								T E



Academiejaar 2018-2019

Gebruikte eenheden in de matrixcellen:

werkvormen in aanbodsessie : aantal vakken en aantal contacturen
evaluatievormen in studiefiche : aantal vakken.

		WERKVORM										EVALUATIEFORM											
		TOTAAL	demonstratie	excursie	groepswork	hoorcollege	microteaching	practicum	werkcollegie: geleid	werkcollegie: P-C-klus	project	rolie seminarie	zelfevaluatie op de werkvloer	deling examen	participatie	peer-evaluatie	portfolio	schriftelijk examen	schriftelijk examen	schriftelijk examen	vaardigheidstest	verslag	werkstuk
Kenniscompetentie	IM7BWV-1.1 Gevorderde toepassingsgerichte kennis van conventionele en innovatieve productieprocessen binnen de voedingsindustrie en hun Ingenieurs-technische achtergrond	12 184.0	1	2	1	4	1	1	2									1	2	3		1	
	IM7BWV-1.2 Gevorderde toepassingsgerichte kennis van de middelen en	11 192.0		2	1	5		1	2									2	3	3		2	1
	de en	4 96.0			1	2		1					3	1				1	1				
	geborgd	2 38.0			1	1							4					1	1				2
Wetenschappelijke competentie	kritisch																						1
	IM7-2.2 Een juiste onderzoeksmethodiek ontwikkelen en eventuele nieuwe technieken implementeren																						1
	IM7-2.3 Relevante besluiten nemen op basis van eigen onderzoeksresultaten of de resultaten van anderen	3 36.0			1			1	1	1			6	1	1				1	1		1	1

Teaching Methods

Assessment methods

Hours per
academic
year

COMPETENCES

5. TIPS

- “important to define the goals”: what do you want to achieve – which level ?
- You do not need new course on f.e. Entrepreneurship or Innovation Management to develop entrepreneurial skills → detect/create “space” with the curriculum
- You can start at the beginning, from nascent... with courses in which teaching methods are used which develop entrepreneurial skills



EXAMPLE: COURSE INTERNATIONAL PROJECT

TOOL: assignment: (Students in Food Technology): Organise in the last year of the curriculum a scientific symposium on Food and Nutrition

Opportunity: at the university we have national as well as international curricula on food science and technology attended by foreign students. The latter originates in a multi-cultural environment although this is seldom seen as an opportunity.

Challenge: bring together different nationalities in a scientific and cultural setting, build bridges

Skills: Creativity, communicative, organising, motivate, empowering, persuasive, leading skills

Activities : short introduction (1 hour), organising activities (16 h), feed back sessions (3 hours), (pre-post) - symposium (6 h)

FOOD SYMPOSIUM

FREE
ENTRANCE!

ORGANIZED BY STUDENTS OF 'MASTER OF SCIENCE IN
BIOSCIENCE ENGINEERING TECHNOLOGY: FOOD INDUSTRY'

Friday 10th of May 2019
Campus Coupure: building E



Where food meets science

Scientific presentations

On this day you will have the chance to hear what researchers have to say about their investigations and experiments on food and related topics. An ideal chance for participants to expand their knowledge and for younger students who may consider pursuing a field of study and career in the food industry!

During the scientific presentations, a jury will give each presenter a score based on different topics. At the end of the day, the winner will receive a prize! More information about the topics and a time table can be found on this flyer.

Food market

After giving the brain some food for thought, you will have the opportunity to satisfy your taste buds by tasting different dishes or desserts from around the world. Each food stand will show more information about the dish you are currently enjoying so keep an eye out for some juicy details. After visiting these food stands, you can give one vote for your favourite dish/dessert by filling in the voting form and handing it in at the reception. Free drinks can be obtained at the bar. After the second part of the scientific presentations, you are invited to join the reception and see which presenter and cook were chosen by the jury and participants!



Time table



13H30: Part 1 of scientific presentations

14H30: Food market

16H00: Part 2 of scientific presentations

17H00: Reception and award ceremony

Food market

Bara

Armanda ~~Flemming~~ - Suriname

Mango lassi, khichri and okra wraps

Pankaj Sharma & Emma ~~Dekeyser~~ - India

Sticky rice balls with red bean paste & sesame

Fathyah Hanum ~~Pamungkaningtyas~~, Stefani ~~Djunaidi~~ Harry

~~Triharvogi~~ - Indonesia

Maize thick porridge and Zamné sauce

~~Moustapha Soungalo Drabo~~ - Burkina Faso

Fresh spring roll and fried spring roll

Minh Trang Tran - Vietnam

Tiramisu

Erica ~~Bonazzi~~ - Italy

Waffles

Cato Malfait - Belgium

Cheese dessert

Bashar ~~Kabawa~~ - Syria

Polaw and Nepalese style fresh pickle

Puja ~~Kumari~~ Chaudhary - Nepal

Remember to vote for your favourite dish by using the voting form!



6. CONCLUSION

- The learning trajectory to develop entrepreneurial skills is a sequence of courses in the curriculum with teaching methods – student activities which lead to the goal.
- The constructive alignment is important: teaching methods and assessment methods
- It is the work of the curriculum team to develop the trajectory



THANK YOU !

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