



“You can hear a lot by listening.”

- Yogi Berra (funny but insightful)

Entrepreneurship Development: What Can We Do?

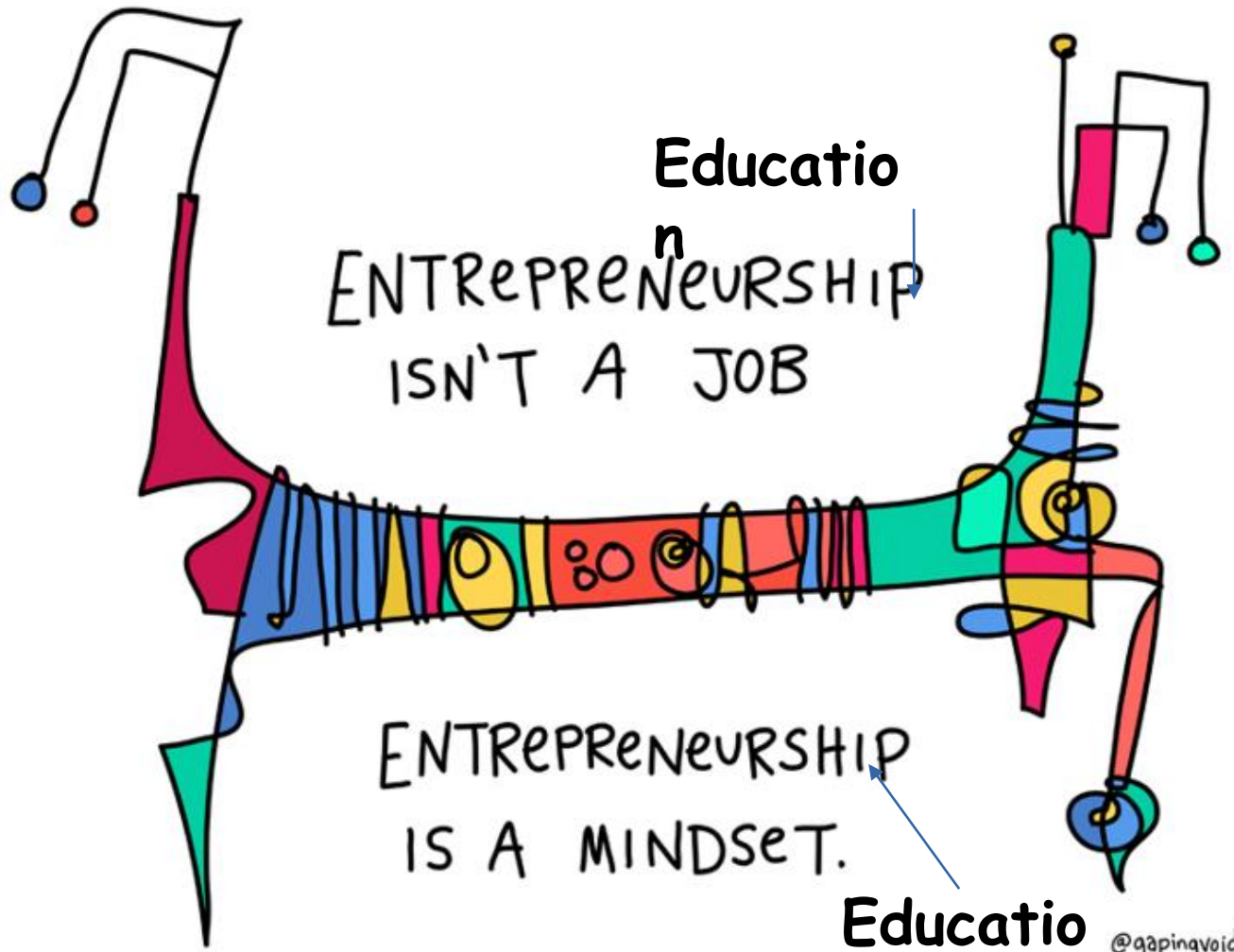
Norris Krueger, PhD

Active Learning and Pedagogy of Entrepreneurship

University of Macedonia

Even better context?

Are we as smart as Welsh primary students?



Education

ENTREPRENEURSHIP
ISN'T A JOB

ENTREPRENEURSHIP
IS A MINDSET.

Education
n

@gapingvoid

Key Questions for Today

- 1) **What** are we trying to change?
- 2) **How** do we know?
- 3) How does that influence how we **design** programs?
- 4) How does that influence how we **deliver** programs?

Lessons from HE Innovate / Entrepreneurship360

Key ingredients for primary/secondary (K-12)

[& why it matters to us and our unfair edge?]

- Deep co-immersion with entrep community
- Student-led, **student DESIGNED**
- Rigorous, regular **evaluation** [unfair edge? [EPIC!](#)]
- **Professional educator(s)** leading [unfair edge? forthcoming Renegades MOOC!]

What do we owe entrepreneurial learners?

The BEST!

- **The Best Pedagogies**
- **The Best Educators**
- **The Best Settings**
- **The Best Entrepreneur Education Ecosystems**
- **The Best Research**
- **The Best Assessment (#EPIC ftw)**

Details at <https://bit.ly/2021EntEdManifesto>

| Best Pedagogies & Best Educators

- **NOT independent – need both**
- **adult/community ed vs higher ed**

 • **Curate entrepreneurial master class**

 • **Dutch BKO, now UK**

EE
Elgar

HOW TO TEACH

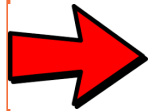
ENTREPRENEURSHIP

Colin Jones

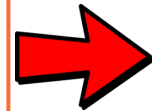
| Best Settings & Entrep Ed Ecosystems

- **Virtuous cycle:**

- Great entrepreneurial ecosystems offer ample opportunities for great entrep learning;
great entrep learning grow ecosystems



- **Again, curate >>> create**



- **Nurture the hidden entrep ed ecosystem**

Best Research & Best Assessment

- Impact research is awful, but understandable***

- Assessment is imperative (not just AACSB)



- Curate >>> create



- EPIC (and EntreComp) www.heinnovate.eu

***** HUGE RESEARCH OPPORTUNITIES!**

1) Full ICSB manifesto (Global Edu Report, join ICSB for full GER) <https://bit.ly/2021EntEdManifesto> [work in progress – comments/ideas welcome!]

2) Andy Penaluna: “An Education System Fit for an Entrepreneur”

https://www.academia.edu/7524065/An_Education_System_fit_for_an_Entrepreneur

e) Entrepreneurship360/HE Innovate white papers:

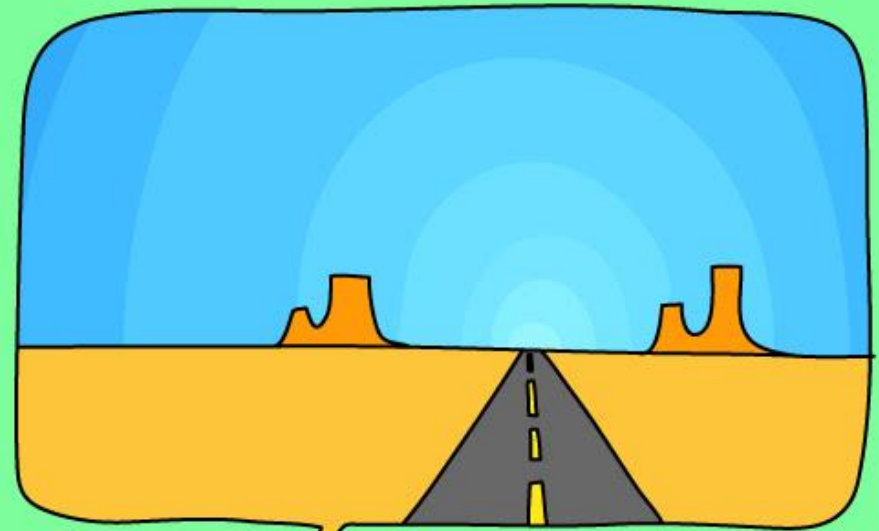
<http://www.oecd.org/cfe/leed/Entrepreneurial-Education-Practice-pt1.pdf>

<http://www.oecd.org/cfe/leed/Entrepreneurial-Education-Practice-pt2.pdf>

https://www.oecd.org/cfe/leed/BGP_Entrepreneurship-in-Education.pdf

THE PEOPLE WHO REALLY
CHANGE THE WORLD
ARE THE ONES WHO
SEE WHAT'S POSSIBLE

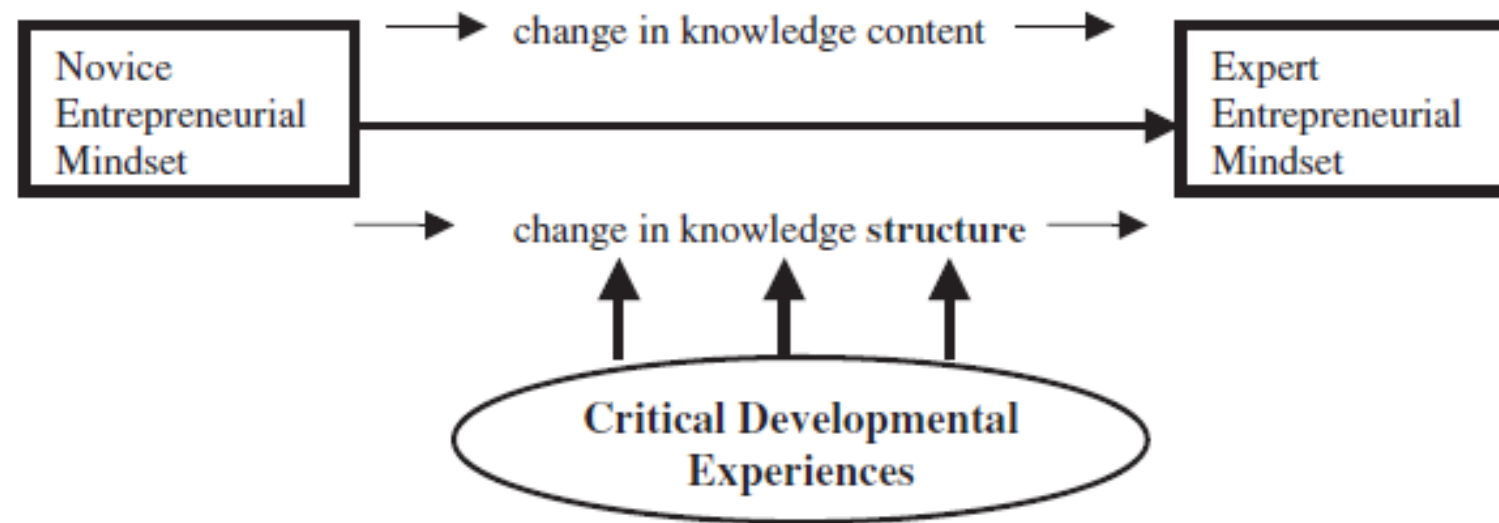
AND FIGURE OUT HOW TO
MAKE THAT HAPPEN.



First, a little theory!

Constructivistic model – from novice to expert (chess grandmaster, anyone?)

Constructivism and Entrepreneurial Cognitive Development



Constructivist: <http://bit.ly/ETP2007> ; neuro-entrep: <http://bit.ly/KruegerWelp> ;
Mindset whitepaper: <http://www.oecd.org/cfe/lead/Entrepreneurial-Education-Practice-pt1.pdf>;
Moberg lit review: <http://bit.ly/EPIClitrvw> ; AMLE lit review http://bit.ly/AMLE_SLR

Assessing: 5 key outputs

Knowledge content

Skills

Mindset

Behaviors

External stakeholder impacts

Assessing outputs (part 1)

Knowledge content

least informative but think Ron Mitchell & scripts!

What experts know is often counterintuitive; evade the usual myths & misconceptions

Skills

best tool is EntreComp <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/entrecomp-entrepreneurship-competence-framework>

Assessing outputs (part 2)

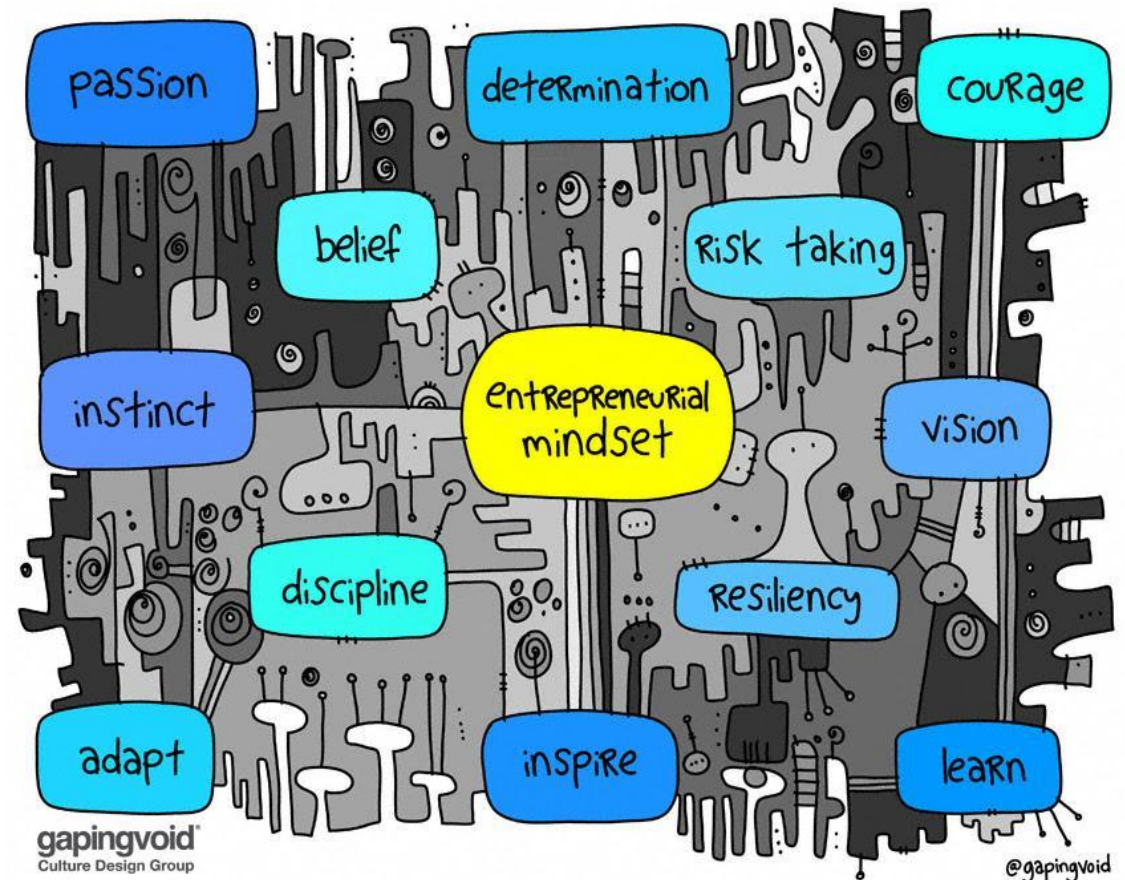
Mindset

experts manifest multiple facets of the mindset – which facets are you trying to change?

Role Identity: “Draw me a picture of an Entrepreneur!”

The Entrepreneurial Mindset

- Competing definitions
- Expert cognitions
- Facets of the mindset
- There **is** a dark side
- And...how do different cultural settings potentially matter?



Tested facets of mindset – which are you changing?

Resilience: Learned optimism

Action Orientation

EO scale (adapted for individual level)

Need for Structure <-inverse, of course

Cognitive Flexibility <-associated with dot-connecting skill

Entrepreneurial intensity

Constructive Thinking

Innovativeness & Grit <-these two should NOT change (good check)

Dark Triad? (What else do you want to change?)

Assessing outputs (pt 3)

Behaviors

not starting a business, intentions are perilous... but what other behaviors?

External stakeholder impacts

what do your stakeholders want? Ask! (spoiler alert: alumni)

Assessing inputs

What influences learning performance?

Student

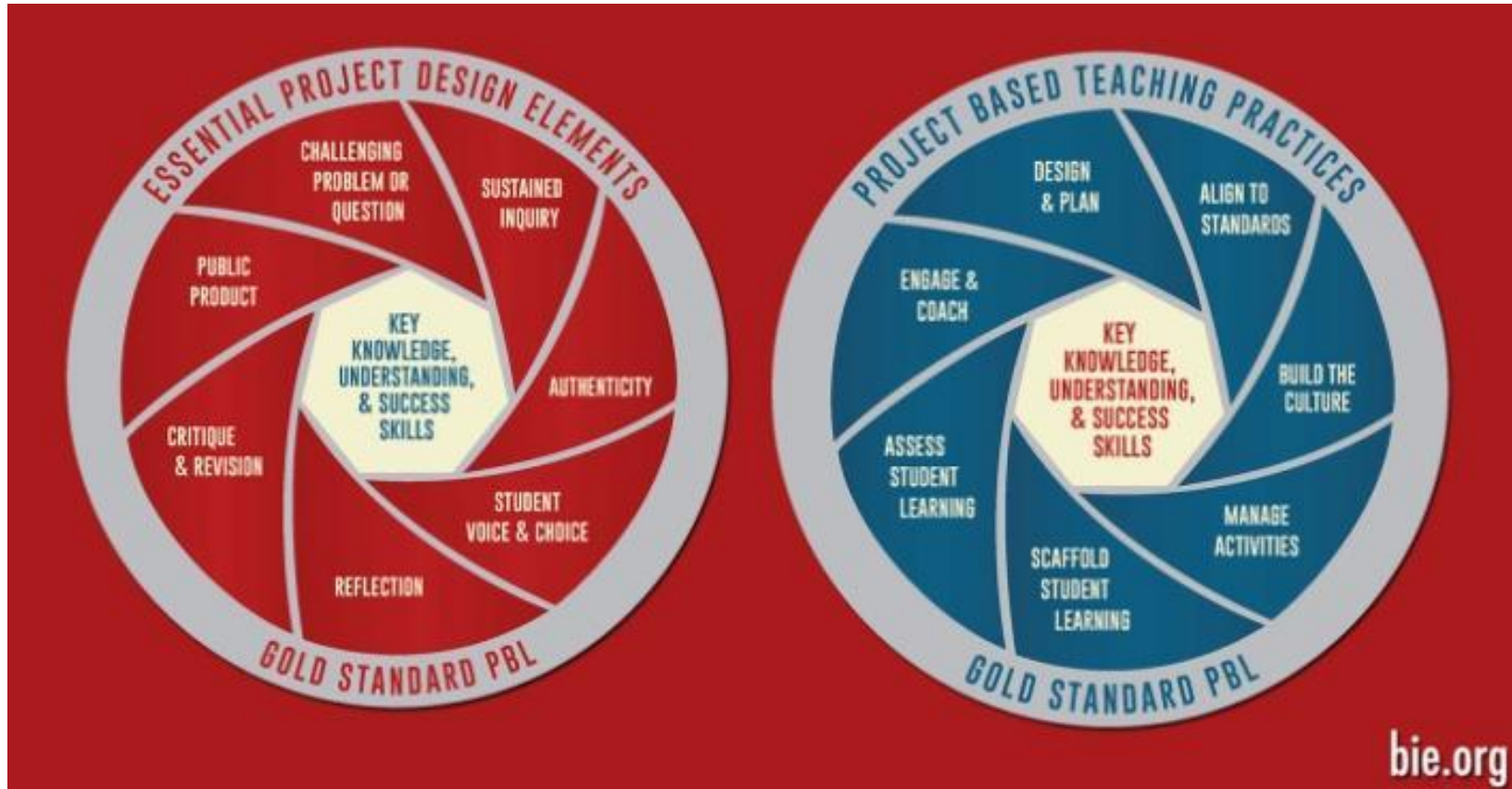
Instructor (!)

Pedagogy

Assessment itself

Context (including ecosystem)

Gold Standard Project Based Learning



(courtesy of Buck Institute of Education, www.pblworks.org)

Our Big Questions

- 1) What are we trying to change?
- 2) How do we know?
- 3) How does that influence how we **design** programs?
- 4) How does that influence how we **deliver** programs?

State of assessment for entrepreneurship education (and beyond)

What are we assessing?

Learner performance?

Short, medium or long term?

Clear goals or general intent?

Who sets criteria – subject or entrepreneurship specialist?
Internal or external stakeholders?

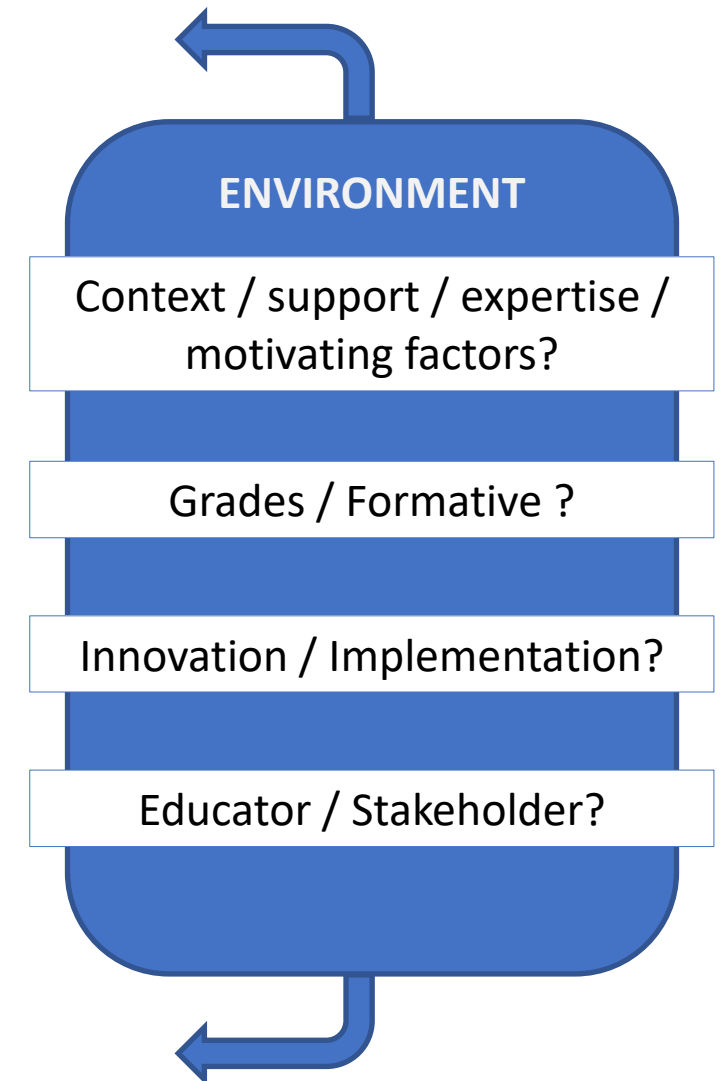
Educator performance?

Short, medium or long term?

Clear goals or general intent?

Who sets criteria for evaluation?

Can alumni evaluate?



Type of Assessment?

Type	Advantage	Disadvantage
Short term, e.g. end of module	Quick, clean and responds to educational requirements	Limited insights and tendency towards knowledge, not behaviour
Medium term, e.g. end of course	Meets educational summative 'results' criteria	Seen as an end goal in itself
Long term, e.g. 5, 10 or 20 years later	Real insights in contexts beyond education	Tracking alumni and institutional support needs resources.

Type of Assessment?

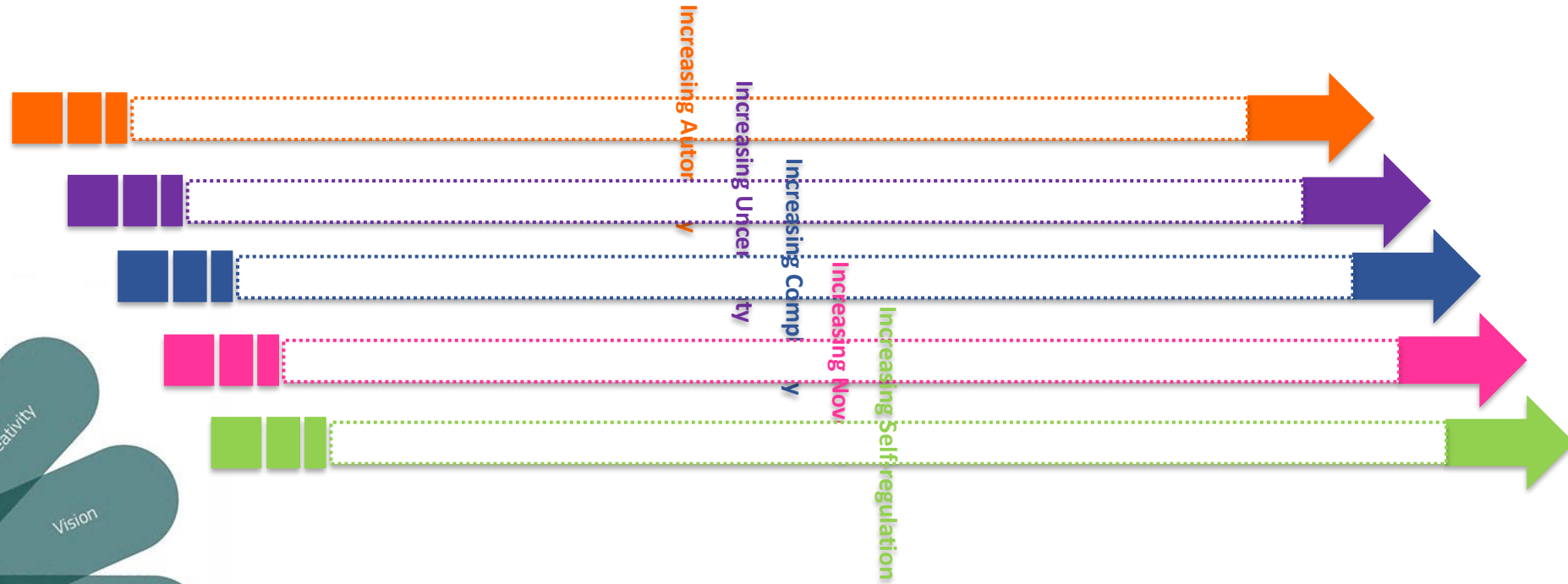
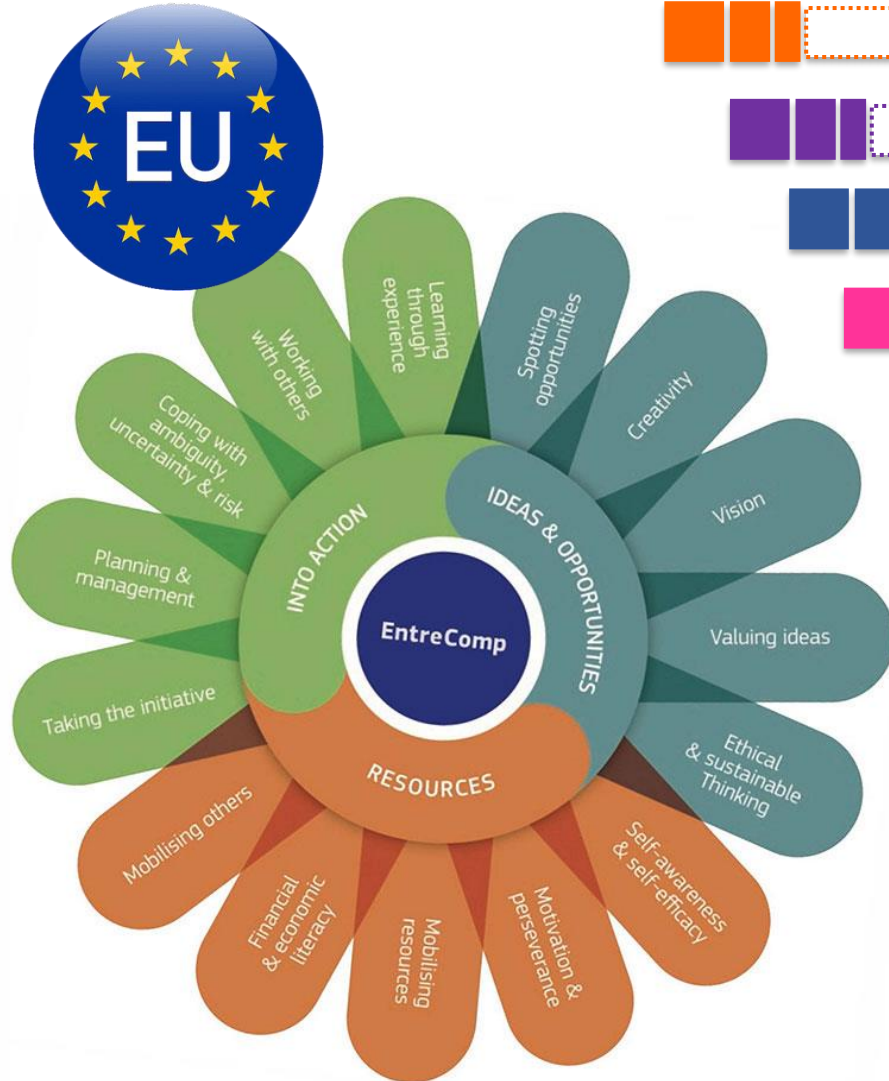
Goals	Advantage	Disadvantage
Clear goals based on definitional stances?	Good for research and measurement	Limited insights based on (educator) predicted outcomes
General aim or intent?	Allows for variance or interpretation over time	Makes measurement difficult
Subject based?	Real and very relevant to learner	Subject expertise required
Entrepreneurship based?	Specialist insights	May lack relevance to learner

FOUNDATION
RELYING ON SUPPORT FROM OTHERS

INTERMEDIATE
BUILDING INDEPENDENCE

ADVANCED
TAKING RESPONSIBILITY

EXPERT
DRIVING TRANSFORMATION,
INNOVATION AND GROWTH



European Competency Framework 'EntreComp'

15 Competencies – development from Foundation to Expert Level

<https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/entrecomp-action-get-inspired-make-it-happen-user-guide-european-entrepreneurship-competence>

Enterprise Educators UK

EntEd Online Share Connect

Join

Enabling excellence in enterprise education

Enterprise Educators UK is responding to COVID-19 by supporting members and associates to deliver their enterprise education offer completely online and at a distance. Visit our new page [#EntEdOnline](#) for information. EEUK events are either being rearranged or delivered online and we have postponed our annual conference IECC to take place at Aston University in September 2021.

<https://www.etctoolkit.org.uk>

ENHANCING THE CURRICULUM
ENTERPRISE AND ENTREPRENEURSHIP EDUCATION TOOLKIT

Select your Subject

Agriculture and Veterinary	Architecture and the Built Environment	Business, Law and Accounting	Creative
Health	Humanities	Science, Technology, Engineering and Maths	Extra Curricular
EEUK Fellowship Influencer	EEUK Curated Collection 2020: Taking #EntEdOnline to deliver at distance	Enhance Your Curriculum	

All ETC How To Guides & Case Studies

Useful UK Resources

<https://www.advance-he.ac.uk/guidance/teaching-and-learning/enterprise-and-entrepreneurship#framework>

<https://www.enterprise.ac.uk>

Get your Enterprise, Entrepreneurship and Employability resource pack

Complete the form by clicking the link below and we will send you an email resource pack containing a range of guidance, reports and useful links to help you understand and embed enterprise, entrepreneurship and employability in the curriculum.

→ Get your pack

QAA

Enterprise and Entrepreneurship Education:

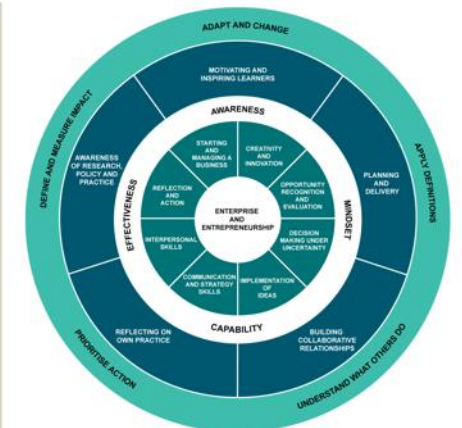
Guidance for UK Higher Education Providers

January 2018

https://www.qaa.ac.uk/docs/qaa/enhancement-and-development/enterprise-and-entrepreneurship-education-2018.pdf?sfvrsn=15f1f981_8

Enterprise and Entrepreneurship Education Framework

The framework is centred on the ways in which enterprise and entrepreneurship education can add value to the journey of learner, whether they are interested in starting their own venture or being enterprising when working for someone else in the private, public or voluntary and community sector. There is an evidence base that highlights the value of developing enterprising and entrepreneurial skills in learners, not only in terms of facilitating the creation of new ventures whilst in education, and upon graduation, but also in enhancing their employability.



HE Innovate's new EPIC assessment tool!

- Dr. Gabi Kaffka, Utrecht



EEEEPHEIC 's EPIC informal advisory board

Australia	Colin Jones	expert on adult, self-directed learning
Baltics	Inna Kozlinska	phd thesis on assessment
Bangladesh	Sabur Khan	president of large university (Daffodil)
Basque	Ana Laviada	Head of GEM project. Deeply connected
Belgium	Elin McCallum	EntreComp, Bantani
Brazil	Rose Lopes	ANGEPE
Canada	Alex Bruton	experiential ed, innovation ed
Chile	Patricia Hansen	Training program for Startup Chile
China	Jing Zhang	IEEC keynoter!
China	Mark Greeven	veteran entrep educator and researcher
Denmark	Lene Tanggaard	top researcher on educational psych
Denmark	Helle Neergaard	PACE program, veteran researcher
Dubai	Khyati Shetty	innovative innovation educator, studies female Muslim entreps
Egypt	Ashraf Sheta	premier entrep educ in Egypt
EU/Catalonia/Qatar	Marlena Aasa	European innovation Academy
Finland	Elena Ruskovaara	led 1st entrep ed assessment
Germany	Jessica di Bella	design thinking educator, former aide to Klaus Sailer
Iceland	Eythor Jonsson	accelerator expert, also at CBS
India/UK	Shai Vyakarnum	cognitive science, prog devel
Iran	Hamid Alibieki	educator & investor
Japan	Nagoya/Kyushu	program designers
Korea	Chih Hsieh	cog science & program developer
Kosovo	Alejtin Bereisha	president of a school
Macedonia	Martin Gold	leading educator in Macedonia
Mexico	Jose Ernesto Amoros	Mexico's top educator + GEM expert
Montenegro	Ivan Jovetic	researcher, investor
Netherlands	Aard Groen	researcher, program designer
Netherlands	Ruud Koopman	program designer, researcher
Netherlands	Marleen Bax	Erasmus Centre, also doing project
Oman	Sharifa Al-Baraimi	#1 entrep champion in Oman
Saudi Arabia/MENA	Tuba Terekli	top SA ecosystem maven, she is looking for the right person
Spain	Francisco Linan	top scholar in entrep ed
Spain	Clara Sastre	education/learning theory
Sweden	Martin Lackeus	champion of proper assessment
Sweden	Boo Edgar	value creation in med school
Dubai/UAE	Essam Disi	SME agency in UAE
UK	Nigel Adams	expert program developer
UN	Fiorina Mugione Bosseau	UN's interest in (UNCTAD)
Uruguay	Enrique Topolansky	accelerator developer & Uruguay's training expert
USA	Doan Winkel	thought leader and action leader in entrep ed
OECD <i>ex-officio</i>	Andrea Hofer	HE Innovate; Entrepreneurship360

EPIC

Evaluating Entrepreneurship Education
Program impact in Higher Ed...
powered by

ECORYS 

The EPIC journey – Assessing the effect of entrepreneurship education programmes in higher education

Project: Evaluation of Entrepreneurship Education Programmes in Higher Education Institutions and Centres (EEEPHEIC)



EEEPHEIC toolkit was developed by:

Consortium team

With the help of:

Expert panel

- Pool of high-level experts to provide key expertise at critical points in the study (Norris Krueger; Dianne Welsh; Andy Penaluna)

Larger informal advisory board or 'Think Tank' of first-movers

- A network of HEIs/educators/students from around the globe



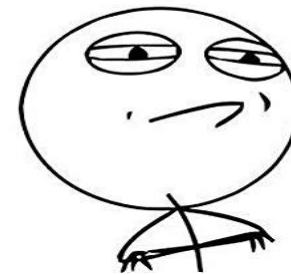
What you REALLY came for, part 2

HE Innovate's new EPIC assessment tool!

EEEPHEIC project

- **Design of toolkit: What kind of toolkit** do entrepreneurship educators want?
 - Which entrepreneurial competences assessed (learning objectives)?
 - Which method used for the assessment of effects of programmes (qualitative/quantitative)?

CHALLENGE ACCEPTED



Result: EEEPHEIC toolkit

The EPIC (**E**ntrepreneurial **P**otential and **I**nnovation **C**ompetences) toolkit contains five different assessment areas, drawing on existing as well as innovative measures:

- **Entrepreneurial competences**
- **Entrepreneurial intentions and attitudes**
- **Enterprising mindset and behaviour**
- **Entrepreneurial strategies**



EEEPHEIC → EPIC toolkit

Educators can **include any one, several or all of the five assessment areas** in the student assessment

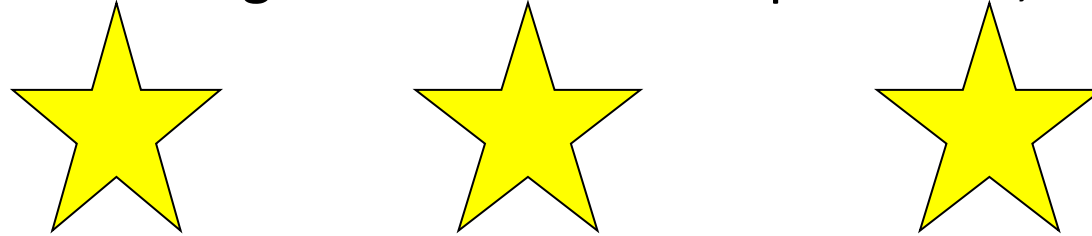
- They thus create a custom-made assessment questionnaire for their students

CUSTOM MADE

**But wait..
There is more!**

Three different focus levels in four of the five assessment areas

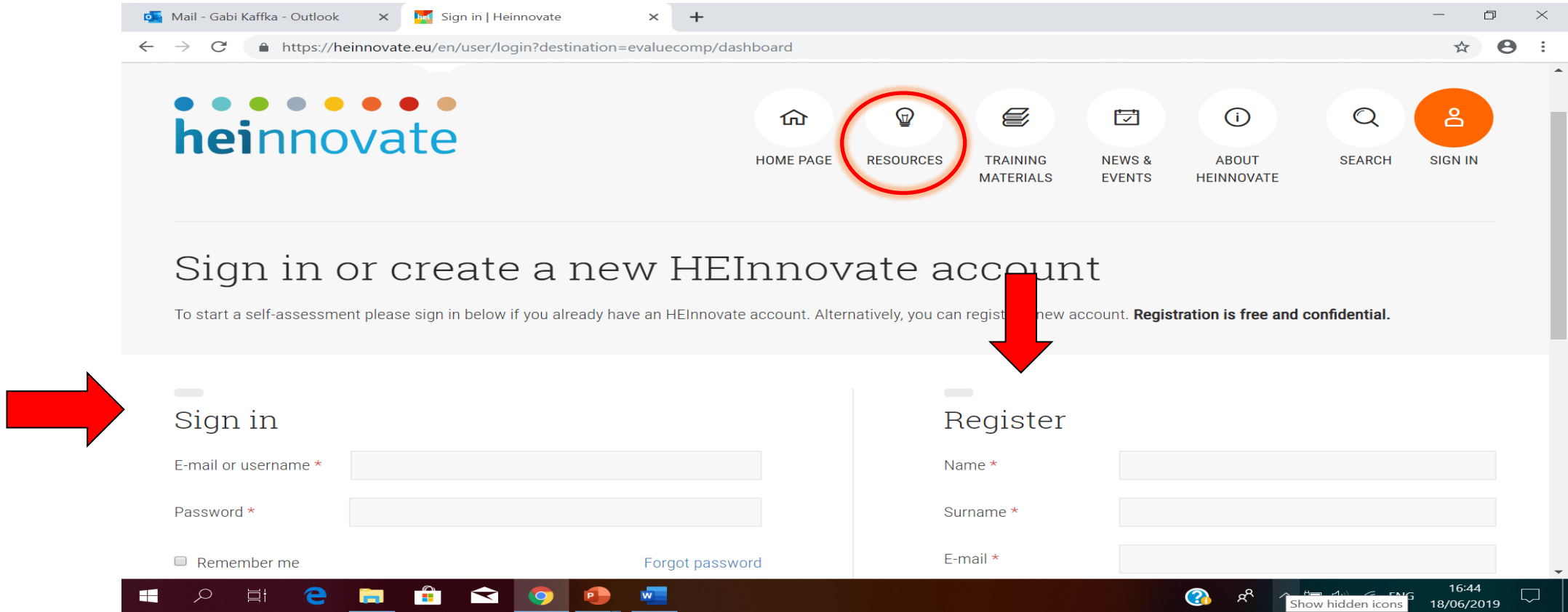
- Low, moderate or high focus level correspond to 1, 2 or 3 stars



- **Adding more stars means:** more items for that assessment area added to the questionnaire

- **Higher robustness (validity and reliability)**
- **Longer questionnaire**

EPIC is FREELY accessible via HEInnovate.eu:



The screenshot shows a web browser window with the URL <https://heinnovate.eu/en/user/login?destination=evaluatecomp/dashboard>. The page features the HEInnovate logo and a navigation menu with icons for HOME PAGE, RESOURCES (circled in red), TRAINING MATERIALS, NEWS & EVENTS, ABOUT HEINNOVATE, SEARCH, and SIGN IN. Below the navigation is a large heading: "Sign in or create a new HEInnovate account". Underneath, a sub-heading reads: "To start a self-assessment please sign in below if you already have an HEInnovate account. Alternatively, you can register a new account. **Registration is free and confidential.**". The page is divided into two columns: "Sign in" on the left and "Register" on the right. The "Sign in" form includes fields for "E-mail or username" and "Password", with a "Remember me" checkbox and a "Forgot password" link. The "Register" form includes fields for "Name", "Surname", and "E-mail". A red arrow points from the "RESOURCES" menu item down to the "Register" form, and another red arrow points from the left side of the page to the "Sign in" form.

EPIC

Heinnovate

https://heinnovate.eu/en/evaluatecomp/dashboard/create-course-assessment

Course assessment design (2/3)

2. Entrepreneurial Intentions and Attitudes
Focus level: ★☆☆

This thematic area focuses on venture creation. It assesses your students' intention to pursue a career as self-employed, their attitudes towards entrepreneurship, their entrepreneurial identity aspirations and their outcome expectations. These dimensions are all predictors of whether your students will engage in entrepreneurial activities in the future.

4 QUESTIONS APPROXIMATE TIME TO COMPLETE: 2 MINUTES

3. Entrepreneurial Mindset & Entrepreneurial Competences
Focus level: ★★★

This thematic area focuses on entrepreneurial judgment and independence. It assesses your students' intention to work with innovation and pursuing a career as an intrapreneur. It also includes assessment of their future orientation, confidence in their judgment and experience with making decisions under uncertainty. It is recommended that this area is combined with the thematic area Entrepreneurial Competences which includes many dimensions that overlap with this thematic area.

19 QUESTIONS APPROXIMATE TIME TO COMPLETE: 7 MINUTES

4. Educational Effects
Focus level: ★☆☆

This thematic area focuses on assessing how engaged your students are in their educational process and how motivated they have become by the educational programme. In addition to this the area focuses on which educational focus your students perceive your programme has had, how practice-oriented and experiential it has been, the level of focus on enterprising skills and business-oriented skills it has had.

5 QUESTIONS APPROXIMATE TIME TO COMPLETE: 2 MINUTES

NUMBER OF QUESTIONS 58

TIME TO COMPLETE 23 min

BACK NEXT PAGE

Windows taskbar: 19:12 19/06/2019

EPIC

The screenshot shows a web browser window with the URL <https://heinnovate.eu/en/evaluatecomp/dashboard/course-assessment/c1047cf5d94bd6439a71/preview>. The page title is 'Entrepreneurial Strategies'. Below the title, there is a text block: 'A 25 year old man was making plans to pursue a business idea. He had been nurturing a project idea for some time, but the lack of experience in the sector hindered him in the implementation and the idea still only exists in his head. What do you think he should do?'. Below this text is a list of five multiple-choice options, labeled C through E. A red arrow points to option C. The options are: C: He should find out about people's initial reaction to his idea; A: He should develop a basic business plan; B: He should take inventory of all existing resources (tangible and intangible assets) that could advance him in implementing his business idea; D: He should look for scientific and technical knowledge to understand the technological challenges of and future options for his new business ideas; E: He should make the decision whether he really wants to pursue his plans and idea whilst observing the field closely. At the bottom of the page, there is a green banner with the text: 'This page is a preview of the assessment that you have created. This is what your students will see when you share the assessment with them.' The Windows taskbar is visible at the bottom of the screen, showing the time as 19:55 on 19/06/2019.

RESOURCES DIGITAL RESOURCES **EVALUECOMP** PILOT

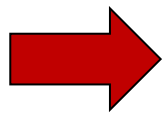
Entrepreneurial Strategies

A 25 year old man was making plans to pursue a business idea. He had been nurturing a project idea for some time, but the lack of experience in the sector hindered him in the implementation and the idea still only exists in his head. What do you think he should do?

- 1 C He should find out about people's initial reaction to his idea
- 2 A He should develop a basic business plan
- 3 B He should take inventory of all existing resources (tangible and intangible assets) that could advance him in implementing his business idea
- 4 D He should look for scientific and technical knowledge to understand the technological challenges of and future options for his new business ideas
- 5 E He should make the decision whether he really wants to pursue his plans and idea whilst observing the field closely

This page is a preview of the assessment that you have created. This is what your students will see when you share the assessment with them.

EPIC



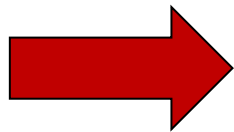
Your assessment is ready to share!

Course assessment name: **Clone of EC2EBE3 2020-21**

NUMBER OF STATEMENTS 25

TIME TO COMPLETE 18 min

CURRENT STATUS Open

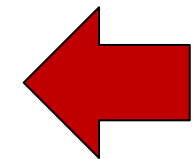


Copy link below to invite students to the course assessment.

<https://heinnovate.eu/epic/start-course-assessment/cfac74f0b7f1a8c7ca7a>

When students click on the link you send them, they will be taken directly to the course assessment you created. Students do not have to register or login to the website to complete the course assessment, unless they wish to do so. Their course assessment will be fully anonymous, but you can see the total number of completions and the aggregated results in the [My course assessments](#) menu.

MY COURSE ASSESSMENTS



EPIC

Microsoft Office Home | Mail - Gabi Kaffka - Outlook | Sign in to your account | Utrecht University - Sign in | CEEC 2021 - Mentimeter | Resources | Heinnovate

https://heinnovate.eu/en/epic/dashboard/course-assessment-results/844b9161daa0f4cf5a14

Fellowship Applicatio... | Interactive presentatio... | Login Page - Blackbo... | SS+EE 2016.pdf | Sign in to your Micros... | Subjective value in ent... | Sign in to your account | Unraveling the entrepr... | Akademische/r Rätin/...

StudentsBucharest01

OVERVIEW | VISUALISATION

1. Entrepreneurial Competences

A

	BEFORE	AFTER	DELTA
Ideas & Opportunities ★☆☆	3.9	5.9	2
Spotting Opportunities	3.8	6.8	3
Creativity	4.6	7	2.4
Sustainable and ethical thinking	2.6	7.2	4.6
Valuing Ideas	3.8	7	3.2
Vision	3.6	6.6	3
	4.4	6	1.6



BEFORE | AFTER | DELTA



EPIC

Heinnovate

https://heinnovate.eu/en/evaluatecomp/dashboard/course-assessment-results/0b898bfb5928322306d4

5. Entrepreneurial Strategies

The following scores are based on your students' preference of Entrepreneurial Strategies. A score of 60 on the area would mean that all of the students preferred the given strategy the most in every situation. A score of 0 would mean that your students preferred the given strategy the least in every situation.

	SCORE
Effectuation	18
Business planning	6
Human centered	12
Technology oriented	10
Neutral	14

BACK

DOWNLOAD AS .XLS

OECD
BETTER POLICIES FOR BETTER LIVES

European Commission

An initiative of the European Commission's DG Education and Culture in partnership with the OECD Local Economic and Employment Development Programme (LEED)

LinkedIn

[CONTACT](#) [LEGAL NOTICE](#)

Windows taskbar: 20:00, 19/06/2019



EPIC: You can get involved!

WHY WOULD YOU?

- Gives you the opportunity to **design your own, custom-made outcome (self-)assessment questionnaire (or let your students do it)**
- Gives you a quick and easy **overview of the impact of entrepreneurship education** by means of the student self-assessment



technopolis [group]



Three Opportunities for Attendees!

Would you like to start planning your own assessment plan?

....let's talk!

Better yet, be part of a major global research project on assessment?

.... you know where to find us!

And become part of an incredible nascent community of practice?

.... welcome aboard!

Who To Follow: Great Community of Practice!

The best thinkers and doers that we know...

Nigel Adams

Geoff Archer

Marguerite Bacipalugo

Bart Derre

Gustav Hagg

Colin Jones

Inna Kozlinska

Martin Lackeus

Rose Lopes

Mekin Maheshwari

Kare Moberg

Helle Neergaard

Elena Oikannen

Kathryn Penaluna

Daniil Pokidko

Samantha Steidle

Ayman Tarabishy

Elinor Vettraino

Doan Winkel

Andreas Zitek

...and more!

Links! (part 1)

- UK Quality Assurance Guidance for Enterprise and Entrepreneurship Education
<https://www.qaa.ac.uk/docs/qaas/enhancement-and-development/enterprise-and-entrepreneurship-education-2018.pdf>
 - UK HEA / AdvanceHE Guidance and best practice for embedding enterprise and entrepreneurship in the curriculum. <https://www.advance-he.ac.uk/guidance/teaching-and-learning/enterprise-and-entrepreneurship>
 - Subject-led Enterprise Educators UK ETC Toolkit
<https://www.etctoolkit.org.uk>
 - Short EPIC marketing video: <https://www.youtube.com/watch?v=gDVHelEbv0k>
 - Longer EPIC explanatory “how to” video:
<https://www.youtube.com/watch?v=Wacyu8AVnCI&t=29s>
- entrep ed manifesto 2021:** <https://bit.ly/2021EntEdManifesto>

Links! (part 2)

- Key whitepapers: [Penaluna](#), [Krueger](#), and [Lackeus](#)
- Some **science**: <http://bit.ly/ETP2007> , neuro, entrep ed chapt
- **Kare Moberg's** lit review on assessment: <http://bit.ly/EPIClitrvw>
- AMLE SLR on impact of entrep ed: http://bit.ly/AMLE_SLR
- **INTRINSIC** 's great videos here: <https://www.intrinsic.eu/webinars-of-the-intrinsic-project.html>
- **EntreComp**: <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/entrecomp-entrepreneurship-competence-framework>
- OECD Netherlands study: www.bit.ly/OECDdelta



shameless self-promotion ;)
*(and **please** connect!)*

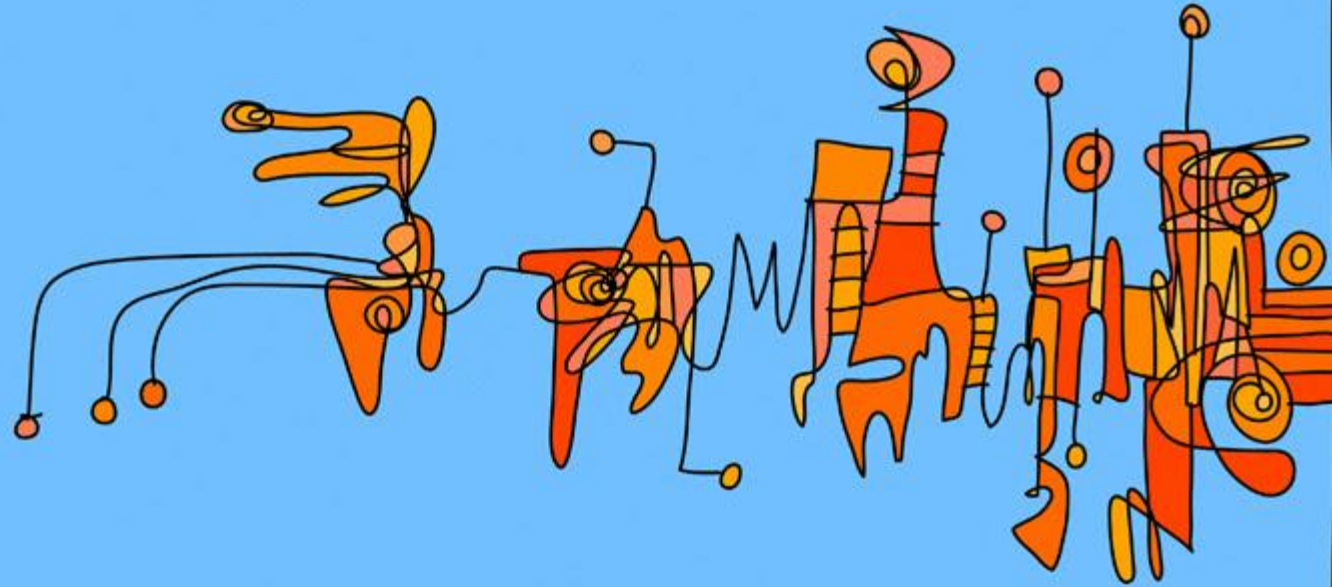
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ENTREPRENEURSHIP.



BECAUSE SOMEbody
HAS TO SAVE THE WORLD.