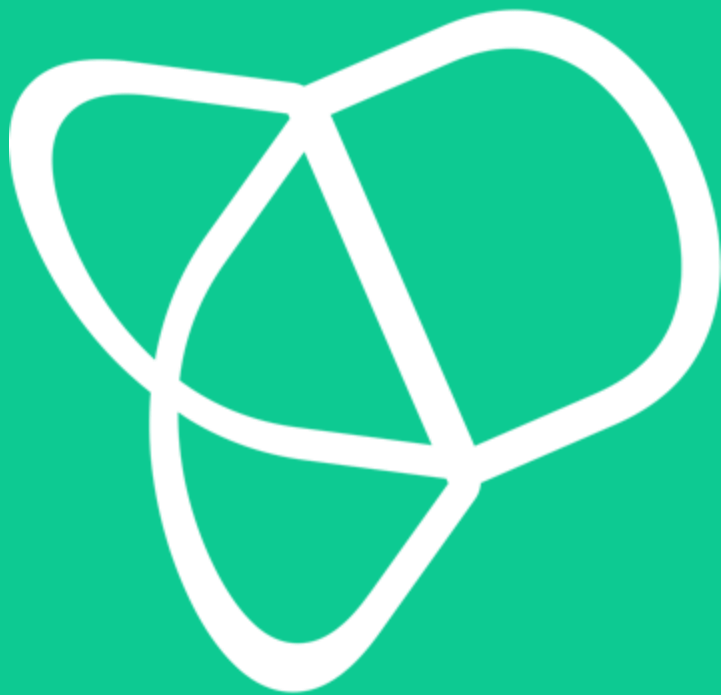




DEGREE

DATA GUIDANCE FOR TRAINERS
MEASURING MULTILEVEL IMPACT OF THE TRAINING



The DEGREE project addresses four main objectives:

- Objective 1:** Improve the instructional knowledge, skills, and behaviour of EE staff (from HEIs, VETs and SMEs) to design future proof (green, resilient, digital) and effective entrepreneurial educational courses through a data driven and activity-based **train-the-trainer (TTT) programme** that is embedded in an entrepreneurial ecosystem (Community of Practice - CoP). The EE staff of HEIs, VETs and SMEs are the trainees in this project. This objective contributes to aim 1 of the call: *“Fostering new, innovative and multidisciplinary approaches to teaching and learning: fostering innovation in education design and delivery, teaching methods, assessment techniques, learning environments and/or developing new skills.”*
- Objective 2:** Improve future-proof (green, resilient, digital) entrepreneurial mindset and behaviour among HEI and VET students and MSMEs owners/staff through data-driven, contextualised and activity-based effective **EE courses and training programmes**. The HEI and VET students and owners/staff of Micro, Small and Medium-Sized Enterprises (MSME) are the learners in this project. This objective contributes to aim 5 of the call: *“Stimulating a sense of initiative and entrepreneurial attitudes, mind-sets and skills in learners, educational staff and other workers, in line with the Entrepreneurship Competence Framework (EntreComp)”* and aim 6 of the call: *“Improving the quality and relevance of skills developed and certified through education and training systems (including new skills and tackling skills mismatches)”*
- Objective 3:** Design and implement an effective **entrepreneurial ecosystem**, through a **Community of Practice**, and stimulate lifelong and life-wide learning on EE between HEI, VET, and MSME staff, on a local and pan-European level. This objective fulfils aim 7 of the call: *“Facilitating the flow and co-creation of knowledge between higher education and vocational education and training, research, the public sector and the business sector.”*
- Objective 4:** Provide a set of design principles for EE leadership and policy to design and implement an effective TTT programme within a Community of Practice ecosystem so that a) EU policymakers can set education policies, facilitate and promote new models of EE within all EU countries, and b) other stakeholders, including higher and vocational education management, can implement and support the exchange of best practices. This objective enhances the exploitation of the project results and contributes to one of the EU key actions to foster EE education (2001, see further Needs Analysis): *“Scaling up EE requires collaboration between multiple stakeholders at local, national and European level. Governmental bodies, education institutions, businesses, and civil society actors could link up to develop strategies, policy agendas, and EE curricula. A strong European platform for EE would be helpful.”*



While DEGREE contains elements that are also present in the initiatives and projects mentioned above, the DEGREE project distinguishes itself on several innovative dimensions and their unique combination in a single project:

- DEGREE will use an innovative 360° data-driven, design science research (DSR) approach to lifelong green entrepreneurial educational design & implementation. **This innovative 360° data collection from both the trainees and learners will be done using a mixed-method approach, i.e. a combination of quantitative and qualitative measurement instruments. The quantitative measures will be collected through a Qualtrics survey (LOIQ and EPIC), pre and post. For the qualitative measurement, there will be continuous data-gathering using the LoopMe app (see illustration and details in 2.1.1.2). The use of this digital tool to gather data further enhances the digital skills of both trainees and learners.**
- **Data is collected from both trainees and learners (see figure below) using a mixed-method approach. To monitor, analyse and evaluate the impact of the TTT on the trainees, a Level of Implementation Questionnaire (based on: LOIQ – developed by Dunn et al. 2019) is used to measure the pre- and post-differences in a quantitative way. The LOIQ not only assesses self-reported instructional behaviours and trainees’ perception of their skill level but also the perceived percentage of students who have engaged in certain behaviours since the start of the course.**
- Learners use the “Entrepreneurial Potential and Innovation competence” (EPIC) course assessment tool (available through HEInnovate) to monitor, analyse and evaluate the pre-post impact of the EE course on their entrepreneurial learning gains. The EPIC tool is based on the EntreComp competency model as far as entrepreneurial competencies are concerned (HEInnovate EPIC, 2022) but no scientific validation of the measurement instrument has been published to date. The EPIC assessment tool is flexible, includes various assessment methods and provides actionable feedback to educators within the field of entrepreneurship. It is designed to meet the needs of many different contexts, disciplines, target audiences, and approaches to entrepreneurship education. As such, it is particularly useful to educators who focus on teaching new venture creation as well as educators who focus on increasing their students’ enterprising behaviour.



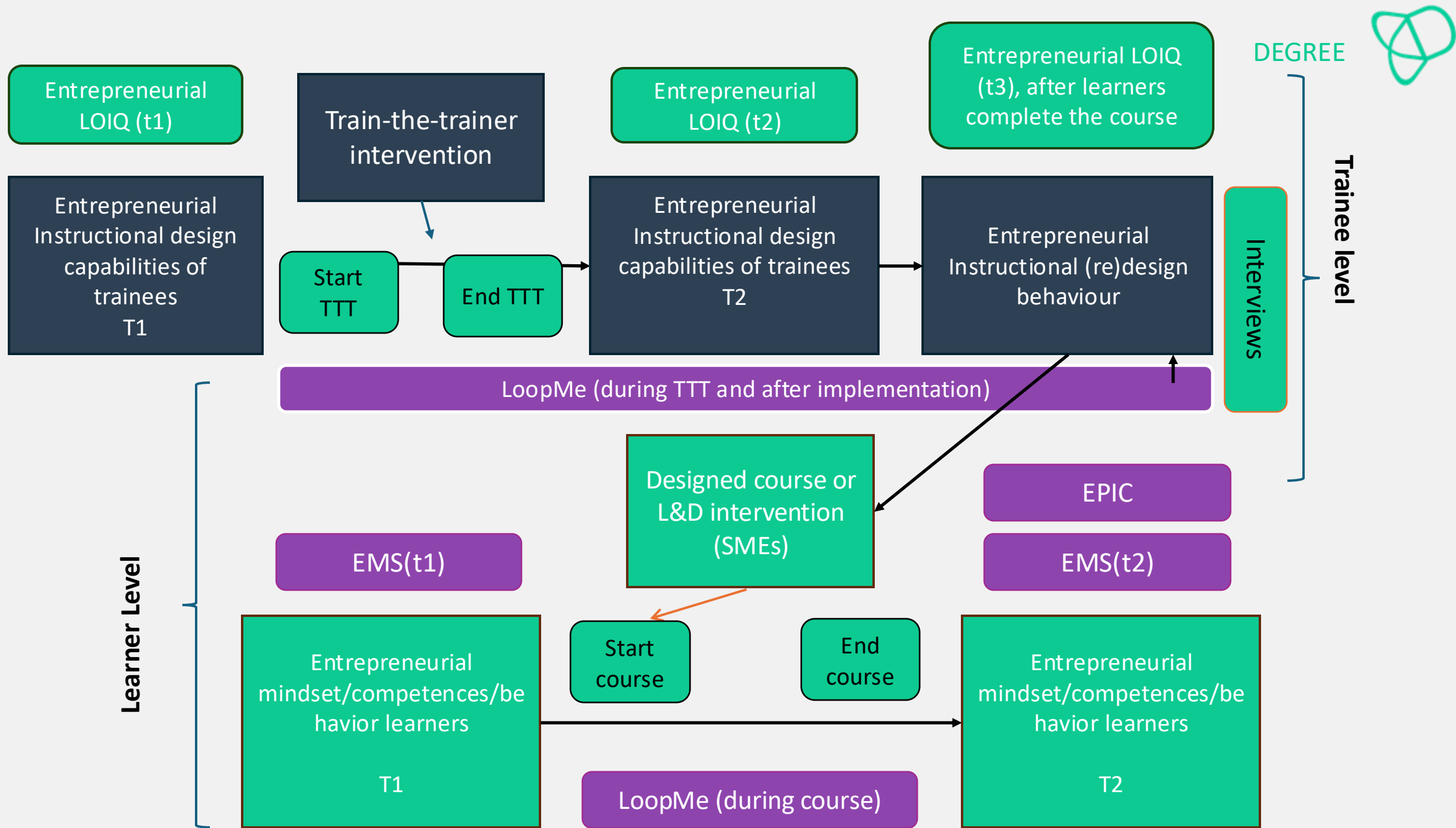
INNOVATION

While DEGREE contains elements that are also present in the initiatives and projects mentioned above, the DEGREE project distinguishes itself on several innovative dimensions and their unique combination in one single project:

- **Both trainees and learners also record changes in the more action-oriented entrepreneurial competences and behaviour in a qualitative, continuous way using the LoopMe App.** LoopMe operates not only as a social media data-collection platform but also as a system aligned with an activity-based approach to entrepreneurial education with predefined behavioural tasks as an input (Lackéus, 2018). The LoopMe App also allows for formative feedback to be provided in a very convenient way and consequently contributes to a balanced assessment where assessment of learning and assessment for learning can be performed. LoopMe focuses in particular on action-based education, i.e. a learning environment that includes the outside world. With LoopMe, the practical learning experience for each student is mandated and followed in detail by specifying predefined or custom action-oriented tasks that all in the class will perform.
- For teachers, the tasks clarify goals and expectations and also trigger action and reflection. The group can be followed in real-time via the live feed of their reflections and via overview matrices by the teachers, while students get an overview of their assigned and completed assignments. Each report contains a personal reflection, an emotion categorisation, and a categorization using different tags that indicate progress and challenges. At the same time, the tasks also allow for a more fine-grained design of participant behavior. The logical link between tasks, emotional ratings, and user-generated text allows for the quantification of cause-and-effect relations between independent variables (i.e., behavioural tasks) and dependent variables (i.e., emotions, tags, and written reflections).



Multilevel mixed-methods data collection





Trainee level:
Entrepreneurial LOIQ
Quantitative questionnaire



The Entrepreneurial Level of Implementation Questionnaire (Entrepreneurial LOIQ) builds conceptually **on the logic of the original Level of Implementation Questionnaire (LOIQ)**, which was developed to measure the extent to which teachers actually implemented knowledge and skills acquired through professional development into classroom practice.

The original LOIQ functions as a structured self-report instrument to assess the degree and quality of transfer from professional learning into practice.

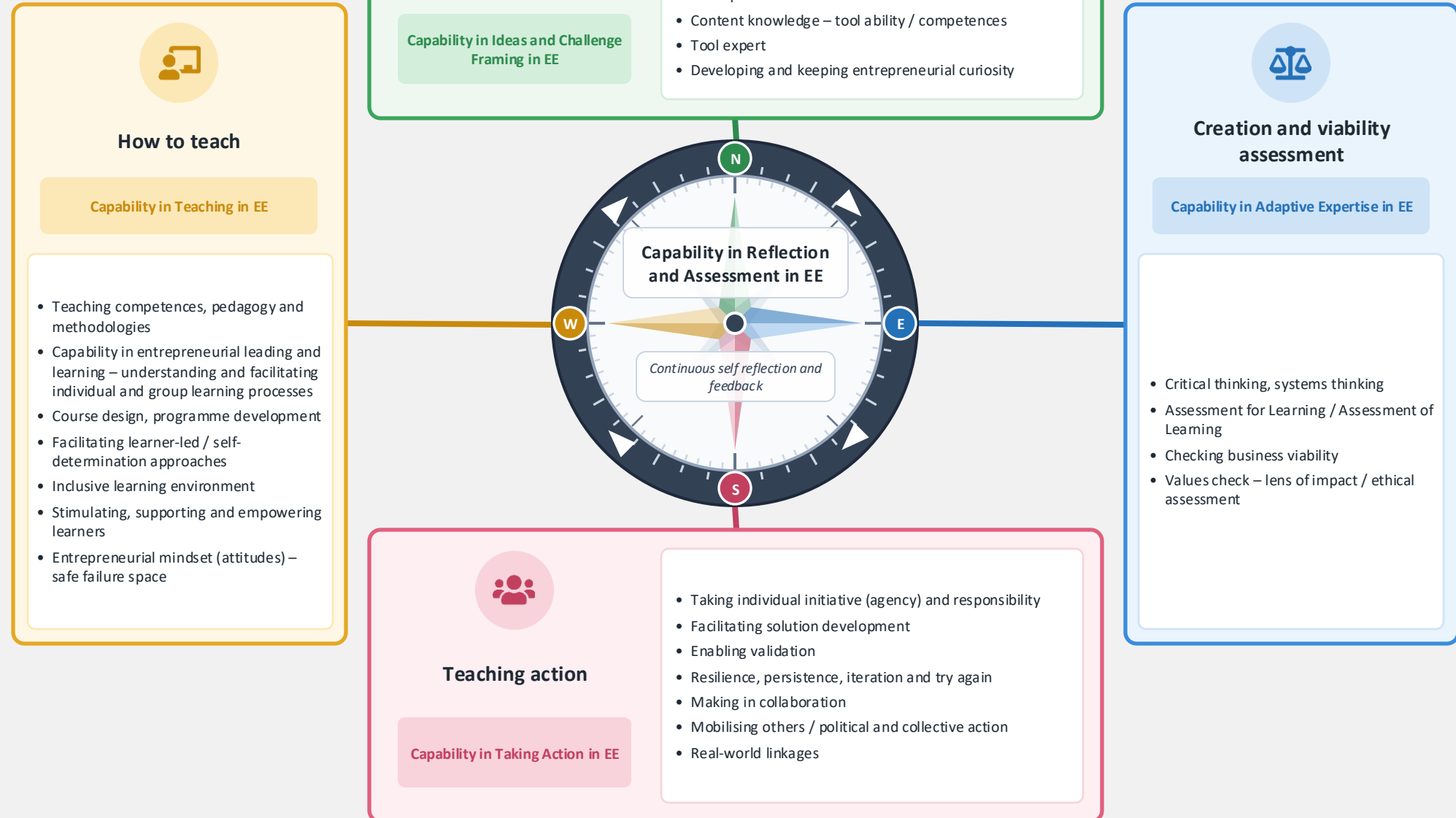
Within DEGREE, this LOIQ logic is adapted and extended to the context of entrepreneurship education. Rather than focusing on subject-specific instructional practices, the Entrepreneurial LOIQ uses the same continuum-based structure to assess how deeply trainees implement, sustain and adapt entrepreneurial pedagogical and instructional design practices learned during the Train-the-Trainer (TTT) and Community of Practice (CoP).



In this sense, the Entrepreneurial LOIQ operates as a bridge between competences and capabilities:

- At the level of competences, it captures whether trainees can apply specific entrepreneurial teaching practices in their courses;
- At the level of capabilities, it captures the extent to which trainees are able to adapt, innovate and extend these practices to new contexts, uncertainty and emerging learning needs—reflecting adaptive expertise.

By applying the LOIQ logic to entrepreneurial education, DEGREE is able to measure not only whether trainees know about entrepreneurial approaches, but how deeply and at what level they actually implement, sustain and adapt them in practice, thereby operationalising entrepreneurial instructional design capabilities in a rigorous and development-oriented way.





1. Capability in teaching in EE – 10 items

Entrepreneurial teaching and learning – understanding and facilitating individual and group learning processes; course and programme design; learner-led / self-determination approaches; inclusive learning environment; stimulating, supporting and empowering learners' entrepreneurial mindset and creating a safe failure space.

2. Capability in ideas and challenges framing – 10 items

Helping learners identify, interpret and shape opportunities for value creation (with a positive social and environmental impact lens); facilitating initial ideation and creative solution finding; supporting executive-function tasks such as planning and organising; providing content knowledge of the business world, emerging tools and technologies; flexible use of tools and venture process frameworks (canvases, double diamond, prototyping, user validation, ...).

3. Capability in adaptive expertise in EE – 10 items

Encouraging critical and systemic thinking and growth through feedback and reflection loops; coping with uncertainty, ambiguity and risk; using formative and authentic assessment to capture learning progression and improve one's own practice. Adaptive expertise here functions as the cognitive and metacognitive mediating capability that translates instructional cognition, human capital and social capital into effective, innovative and responsive instructional design behaviour.



5 capabilities

4. Capability in reflection and assessment in EE – 10 items

Including structured reflection in teaching, modelling student reflection on learning and competence development, and seeking feedback to enhance teaching effectiveness; using qualitative and quantitative methods to gauge learning gains, design assessments and detect emerging learning outcomes.

5. Capability in taking action in EE – 10 items

Being able to move into action as an educator: boundary spanning between programmes, disciplines, external partners, students and management; accessing relevant stakeholders and expertise; building collaboration networks that enable co-creation; having the legitimacy and influence to initiate or accelerate educational innovation.



Question framing

At this point in time, which statement best reflects how you implement the following practices when designing and facilitating entrepreneurial education or L&D interventions?

Implementation continuum

•0 – Not using

Not started yet

•1 – Exploring / planning

Intent only – ideas or plans, no implementation

•2 – Trying out

Pilot use or occasional experimentation

•3 – Using regularly

Applied in some lessons, projects or activities

•4 – Integrated use

Embedded in routine teaching or training practice

•5 – Optimised / adaptive use

Continuously refining, tailoring and improving across contexts



Aspect	Description
Instrument	Entrepreneurial LOIQ
Platform	QuestionPro
Target group	Trainees
Distribution	HOGENT sends the QuestionPro link
Recipients	Trainees (email addresses known to HOGENT)
Completed by	Trainees
Data storage	QuestionPro (HOGENT account)
Analysis	HOGENT (SPSS)
Reporting	Aggregated
Trainee action	None (completion only)



Trainee level:
LoopMe app



LoopMe is used with trainees as a reflection tool during the following stages (more info on LoopMe, see slide 38):

- the TTT,
- and the implementation of the designed course.

Aspect	Description
Instrument	LoopMe
Platform	LoopMe / MeAnalytics
Target group	Trainees
Moment	During TTT and implementation
Access	Dedicated LoopMe set per CoP
Completed by	Trainees
Visibility	Trainee + HOGENT data management
Data export	By HOGENT (Excel)
Analysis	NVivo (HOGENT)



Trainee level: Interviews



At the end of the project, semi-structured interviews are conducted with trainees to:

- deepen insights into design choices;
- interpret entrepreneurial LOIQ and LoopMe results;
- articulate design principles.

Aspect	Description
Organisation	HOGENT
Data type	Audio / transcript
Analysis	NVivo (HOGENT)



Learner level: EPIC tool Quantitative questionnaire



EPIC tool

Within DEGREE, **EPIC is used as an assessment tool to capture learners' perceived learning gains in relation to both predefined and emerging learning objectives.**

EPIC is designed by the trainee (educator) during the build phase of the course, which takes place as part of the Train-the-Trainer (TTT) and Community of Practice activities.

During this phase, the trainee configures the EPIC instrument so that it reflects the specific learning objectives and intended learning outcomes of the designed course. This design process is carried out using the online HEInnovate EPIC tool.

EPIC is administered to learners at the end of the course, during the implementation phase. Although EPIC captures learners' perceptions of learning progression (i.e. pre–post development), the measurement is conducted only once, at post-course level, relying on learners' retrospective self-assessment.



EPIC tool

The EPIC data are analysed within the EPIC online environment.

After completion of the course, the trainee exports or retrieves the EPIC results and provides the aggregated output to HOGENT via email.

These data are then integrated by HOGENT into the overall analysis of learning gains in relation to the designed course and the entrepreneurial design capabilities of trainees.



Aspect	Description
Instrument	EPIC
Platform	EPIC online website
Target group	Learners
Moment	After course completion
Design	Co-creation by trainee during TTT
Completed by	Learners
Data access	Primarily held by the trainee
Delivery to HOGENT	Trainee emails aggregated results
Data type	Aggregated outputs
Analysis	HOGENT



Entrepreneurial Potential and Innovation Competences (EPIC)

How effective are your entrepreneurship courses?

The Entrepreneurial Potential and Innovation Competences (EPIC) course assessment tool was designed to help educators to measure the effectiveness of their entrepreneurship courses. It can be used to assess the skill and competence development of participants in different entrepreneurship courses, modules, summer schools, bootcamps or training programmes.

The assessment works with a set of statements across five thematic areas with which course participants can assess their development: (1) entrepreneurial competences, (2) entrepreneurial intentions and attitudes, (3) enterprising behaviours, (4) entrepreneurial strategies and (5) educational effects.

To ensure that the course assessment fits the design of your entrepreneurship course you can either create a customised assessment or you can choose to use one of our predefined assessment templates. If you wish to:

If you wish to:

- Create a customised course assessment, during the design of your assessment you can choose the level of focus on each of these five thematic areas. The higher the level of focus you select the more detailed the assessment will be.
- Use a predefined assessment template, you can choose from (i) Entrepreneurial mindset assessment, (ii) Readiness for business-creation assessment, and (iii) Venture creation potential assessment.

Please select one of the options below to create a new assessment, alternatively you can also view your previously created assessments. You can download the EPIC user guide [here](#).



Entrepreneurial Potential and Innovation Competences (EPIC)

How effective are your entrepreneurship courses?

The Entrepreneurial Potential and Innovation Competences (EPIC) course assessment tool was designed to help educators to measure the effectiveness of their entrepreneurship courses. It can be used to assess the skill and competence development of participants in different entrepreneurship courses, modules, summer schools, bootcamps or training programmes.

The assessment works with a set of statements across five thematic areas with which course participants can assess their development: (1) entrepreneurial competences, (2) entrepreneurial intentions and attitudes, (3) enterprising behaviours, (4) entrepreneurial strategies and (5) educational effects.

To ensure that the course assessment fits the design of your entrepreneurship course you can either create a customised assessment or you can choose to use one of our predefined assessment templates. If you wish to:

If you wish to:

- Create a customised course assessment, during the design of your assessment you can choose the level of focus on each of these five thematic areas. The higher the level of focus you select the more detailed the assessment will be.
- Use a predefined assessment template, you can choose from (i) Entrepreneurial mindset assessment, (ii) Readiness for business-creation assessment, and (iii) Venture creation potential assessment.

Please select one of the options below to create a new assessment, alternatively you can also view your previously created assessments. You can download the EPIC user guide [here](#).



Entrepreneurial Potential and Innovation Competences (EPIC)

How effective are your entrepreneurship courses?

The Entrepreneurial Potential and Innovation Competences (EPIC) course assessment tool was designed to help educators to measure the effectiveness of their entrepreneurship courses. It can be used to assess the skill and competence development of participants in different entrepreneurship courses, modules, summer schools, bootcamps or training programmes.

The assessment works with a set of statements across five thematic areas with which course participants can assess their development: (1) entrepreneurial competences, (2) entrepreneurial intentions and attitudes, (3) enterprising behaviours, (4) entrepreneurial strategies and (5) educational effects.

To ensure that the course assessment fits the design of your entrepreneurship course you can either create a customised assessment or you can choose to use one of our predefined assessment templates. If you wish to:

If you wish to:

- Create a customised course assessment, during the design of your assessment you can choose the level of focus on each of these five thematic areas. The higher the level of focus you select the more detailed the assessment will be.
- Use a predefined assessment template, you can choose from (i) Entrepreneurial mindset assessment, (ii) Readiness for business-creation assessment, and (iii) Venture creation potential assessment.

Please select one of the options below to create a new assessment, alternatively you can also view your previously created assessments. You can download the EPIC user guide [here](#).



Entrepreneurial Potential and Innovation Competences (EPIC)

How effective are your entrepreneurship courses?

The Entrepreneurial Potential and Innovation Competences (EPIC) course assessment tool was designed to help educators to measure the effectiveness of their entrepreneurship courses. It can be used to assess the skill and competence development of participants in different entrepreneurship courses, modules, summer schools, bootcamps or training programmes.

The assessment works with a set of statements across five thematic areas with which course participants can assess their development: (1) entrepreneurial competences, (2) entrepreneurial intentions and attitudes, (3) enterprising behaviours, (4) entrepreneurial strategies and (5) educational effects.

To ensure that the course assessment fits the design of your entrepreneurship course you can either create a customised assessment or you can choose to use one of our predefined assessment templates. If you wish to:

If you wish to:

- Create a customised course assessment, during the design of your assessment you can choose the level of focus on each of these five thematic areas. The higher the level of focus you select the more detailed the assessment will be.
- Use a predefined assessment template, you can choose from (i) Entrepreneurial mindset assessment, (ii) Readiness for business-creation assessment, and (iii) Venture creation potential assessment.

Please select one of the options below to create a new assessment, alternatively you can also view your previously created assessments. You can download the EPIC user guide [here](#).

EPIC tool: access online

DEGREE





- Home page
- News & events >
- Resources >
- Other initiatives >
- About >

Home / News & Events / Newsletter archive

Search

LOG IN

Is your Higher Education Institution prepared for future challenges?

HEInnovate is a self-reflection tool for Higher Education Institutions who wish to explore their innovative potential. It guides you through a process of identification, prioritisation and action planning in eight key areas. The self-assessment is available in all EU languages.

HEInnovate is not a benchmarking tool. It diagnoses areas of strength and weakness, opens up discussion on the entrepreneurial/innovative nature of your institution and allows you to compare and contrast evolution over time. You can have instant access to your results, learning materials and a pool of experts. HEInnovate can be used by all types of higher education institutions. It is free, confidential and open to anyone to use. [Read more.](#)

NEW: To further support Higher Education Institutions in their entrepreneurial development, seven profiles and corresponding sets of recommendations are now available for actions toward more innovative institutions! [Read more](#)

HEInnovate is an initiative of the European Commission launched in 2013 in partnership with the OECD. As a concept, it is embedded in numerous EU policy initiatives and funding programmes. [Read more.](#)

-  Leadership and Governance
-  Organisational Capacity: People, Resources, Incentives and Rewards
-  Entrepreneurial Teaching and Learning
-  Preparing and Supporting Entrepreneurs
-  Digital Transformation and Capability
-  Entrepreneurial Ecosystem and Networks
-  The Internationalised Institution
-  Impact of the Entrepreneurial HFI

EPIC tool: access online

DEGREE



Log in



- Home page
- News & events >
- Resources >
- Other initiatives >
- About >

Home / News & Events / Newsletter archive

Is your Higher Education Institution prepared for future challenges?

HEInnovate is a self-reflection tool for Higher Education Institutions who wish to explore their innovative potential. It guides you through a process of identification, prioritisation and action planning in eight key areas. The self-assessment is available in all EU languages.

HEInnovate is not a benchmarking tool. It diagnoses areas of strength and weakness, opens up discussion on the entrepreneurial/innovative nature of your institution and allows you to compare and contrast evolution over time. You can have instant access to your results, learning materials and a pool of experts. HEInnovate can be used by all types of higher education institutions. It is free, confidential and open to anyone to use. [Read more](#).

NEW: To further support Higher Education Institutions in their entrepreneurial development, seven profiles and corresponding sets of recommendations are now available for actions toward more innovative institutions! [Read more](#)

HEInnovate is an initiative of the European Commission launched in 2013 in partnership with the OECD. As a concept, it is embedded in numerous EU policy initiatives and funding programmes. [Read more](#).

[LOG IN](#)

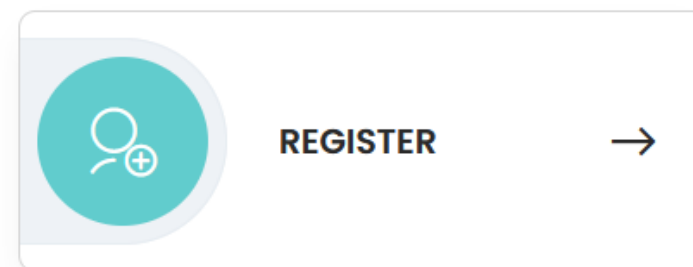
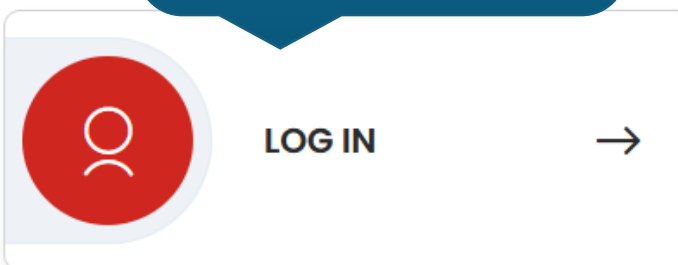
-  Leadership and Governance
-  Organisational Capacity: People, Resources, Incentives and Rewards
-  Entrepreneurial Teaching and Learning
-  Preparing and Supporting Entrepreneurs
-  Digital Transformation and Capability
-  Entrepreneurial Ecosystem and Networks
-  The Internationalised Institution
-  Impact of the Entrepreneurial HFI



Log in or
register

Sign in or create a new HEInnovate account

To start a self-assessment or use our new course assessment tool (see EPIC in our Related projects section) please log in, if you already have an HEInnovate account. Alternatively, you can register a new account. **Registration is free and confidential.**





Go to other initiatives

Other initiatives

- EIT HEI Initiative
- EPIC
- CEI

About

Other initiatives



COMMUNITY FOR EDUCATIONAL INNOVATION (CEI)

The Community for Educational Innovation (CEI) is a collaborative community of practice uniting educators, institutions, businesses, and policymakers to advance educational innovation across Europe. It offers a platform for exchanging ideas, exploring best practices, and engaging in thematic activities such as webinars and study visits. It fosters dialogue on how to equip learners with key skills, shaping education systems that drive innovation and societal impact. CEI also serves as a hub for institutions using HEInnovate to reflect on their innovation journeys and share experiences.

BROWSE EVENTS



ENTREPRENEURIAL POTENTIAL AND INNOVATION COMPETENCES (EPIC)

The Entrepreneurial Potential and Innovation Competences (EPIC) course assessment tool was designed to help educators to measure the effectiveness of their entrepreneurship courses. It can be used to assess the skill and competence development of participants in different entrepreneurship courses, modules, summer schools, bootcamps or training programmes.

GO TO EPIC



HEINNOVATE FOR EIT HIGHER EDUCATION INITIATIVE (EIT HEI)

The EIT HEI Initiative: Innovation Capacity Building for

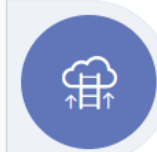
[Go to EPIC](#)

Other initiatives



COMMUNITY FOR EDUCATIONAL INNOVATION (CEI)

The Community for Educational Innovation (CEI) is a collaborative community of practice uniting educators, institutions, businesses, and policymakers to advance educational innovation across Europe. It offers a platform for exchanging ideas, exploring best practices, and engaging in thematic activities such as webinars and study visits. It fosters dialogue on how to equip learners with key skills, shaping education systems that drive innovation and societal impact. CEI also serves as a hub for institutions using HEInnovate to reflect on their innovation journeys and share experiences.

[BROWSE EVENTS](#)

ENTREPRENEURIAL POTENTIAL AND INNOVATION COMPETENCES (EPIC)

The Entrepreneurial Potential and Innovation Competences (EPIC) course assessment tool was designed to help educators to measure the effectiveness of their entrepreneurship courses. It can be used to assess the skill and competence development of participants in different entrepreneurship courses, modules, summer schools, bootcamps or training programmes.

[GO TO EPIC](#)

HEINNOVATE FOR EIT HIGHER EDUCATION INITIATIVE (EIT HEI)

The EIT HEI Initiative: Innovation Capacity Building for

- [Home page](#)
- [User dashboard](#)
- [News & events](#)
- [Resources](#)
- [Other initiatives](#)**
 - [EIT HEI Initiative](#)
 - [EPIC](#)
 - [CEI](#)
- [About](#)



Get started: create
custom or use
predefined.

Please select one of the options below to view your previously created assessments. You can download the EPIC user guide [here](#).

Select the option below and start assessment

[CREATE CUSTOM ASSESSMENT](#)[USE PREDEFINED TEMPLATE](#)

Or view your previous assessments

[VIEW YOUR ASSESSMENTS](#)

Additionally you can read the EPIC user guide for further information

[VIEW](#)[DOWNLOAD](#)

© European Union, 2020

EPIC is the result of a Preparatory Action proposed by the European Parliament and funded by the European Commission under the Erasmus+ programme. The results of the project are owned by the European Commission.

Learner level:
EMS Questionnaire
Quantitative questionnaire



In DEGREE, entrepreneurial mindset (EMS) is measured using two complementary instruments: the Ghent Entrepreneurial Mindset Scale (GEMS) and the College Students' Entrepreneurial Mindset Scale (CS-EMS).

Both instruments are administered in parallel to learners in order to strengthen concurrent validity.

The CS-EMS is a validated instrument specifically developed to assess changes in entrepreneurial mindset as an educational outcome of entrepreneurship education, with strong evidence for construct validity, reliability and measurement invariance across gender, discipline and educational experience groups. It is widely recognised as a robust assessment tool for evaluating the effectiveness of entrepreneurship education interventions.

The GEMS, in contrast, is grounded in a broader and more holistic socio-cognitive conceptualisation of entrepreneurial mindset, integrating entrepreneurial personality traits, entrepreneurial competencies and entrepreneurial decision-making into a single latent construct. The instrument has been validated on a large sample and demonstrates high internal consistency and strong construct validity, providing a theoretically rich and comprehensive representation of entrepreneurial mindset.



By combining GEMS and CS-EMS, DEGREE:

- triangulates entrepreneurial mindset measurement across two independently validated instruments;
- captures both education-sensitive mindset dimensions (CS-EMS) and broader socio-cognitive foundations of entrepreneurial behaviour (GEMS);
- and enables the examination of concurrent validity, increasing confidence that observed changes or differences in entrepreneurial mindset are robust and not artefacts of a single measurement model.

This combined approach supports a more rigorous and interpretable assessment of entrepreneurial mindset as a key outcome variable in the evaluation of entrepreneurial, green and digital education.



Why GEMS strengthens educational effectiveness research

A key principle in **educational effectiveness research** is that effectiveness should not only be assessed in terms of **inputs** (resources, curricula) or **processes** (instructional strategies), but above all in terms of **outcomes** and **value added** for learners. *This means that the real question is not simply **what do students know after the course**, but **how much have they developed compared to what they already brought with them**.*

By including **personality traits**, GEMS makes it possible to establish a **baseline profile** of students' entrepreneurial mindset before the course. This allows educators and researchers to:

- **Differentiate between baseline and growth**: separating what students already bring in terms of dispositions from what changes as a result of the course.
- **Assess value added**: identifying the true educational contribution beyond what could be predicted by students' initial traits.
- **Capture holistic effectiveness**: recognizing that educational impact involves not only competence acquisition but also the development of cognitive perspectives and decision-making capacities that support entrepreneurial behavior.

In this sense, GEMS aligns strongly with the **value-added perspective** in educational effectiveness research: it allows us to measure both **learning gains** (competence and decision-making growth) and **value added** (the extent to which the educational intervention enhances mindset development beyond expectations given students' starting profile).

Finally, by providing this richer picture of students' entrepreneurial development, GEMS also supports **instructional design capabilities**. **Educators can use baseline and follow-up GEMS data to better align instructional design with learners' prior profiles, manage cognitive load, and target those aspects of entrepreneurial mindset where the most meaningful growth can occur.**



Aspect	Description
Instrument	EMS (GEMS + CS-EMS)
Platform	QuestionPro
Target group	Learners
Distribution	HOGENT → trainee
Forwarding	Trainee emails the link to learners
Completed by	Learners
Data storage	QuestionPro (HOGENT account)
Analysis	HOGENT (SPSS)
Reporting	Aggregated



Learner level:
LoopMe tool
Quantitative and qualitative



Within DEGREE, **LoopMe is used as a Scientific Social Media (SSM) platform designed for research, education and organisational development.** The platform supports activity-based learning by embedding learning and reflection directly into authentic learning or work environments.

Learners are provided with action-based tasks aligned with the designed course.

After completing these tasks, they are prompted to reflect on their experiences and to tag their learning, emotions and perceived outcomes.

These tags are defined by the trainee during the course design phase and reflect both learning goals and behavioural or experiential dimensions of entrepreneurial learning.

LoopMe captures multiple types of data:

- Quantitative process data, such as the frequency of task engagement, the use of tags, and correlations between activities and reported outcomes;
- Qualitative data, including learners' free-text reflections and dialogical interactions between learners and trainees.

.



Aspect	Description
Instrument	LoopMe
Platform	LoopMe / MeAnalytics
Target group	Learners
Moment	During the entire course
Design	By trainee (activities, questions, tags)
Completed by	Learners
Visibility	Learner + trainee
Additional access	HOGENT data management
Data export	By HOGENT
Analysis	NVivo (HOGENT)



Learning interventions

- Activity-based learning, embedded in authentic learning or work environment- non formal learning
- Stimulating self-regulated learning
- Tailored to role and experience
- Pull learning – *learn what you need when you need it*
- Scaffolding of formal L&D programmes
- Bidirectional feedback, focusing on deep learning
- Tracking of progress towards *learning goals* through tags and qualitative data.



Behavioural interventions

- Reminders
- Social norm nudges
- Easy access to relevant knowledge
- Reinforcement learning
- Decision support and guidance
- Affective feedback focusing on behaviour change
- Tracking of progress towards *behavioural goals* through tags and qualitative data



EDUCATION

Active learning: “Hands-on” meets “minds-on”

Widespread disruptions to schooling spurred by COVID-19 have amplified long-standing discussions about what high-quality teaching and learning can be. Growing bodies of research and practice, from early childhood to university classrooms and beyond, demonstrate the benefits of moving beyond traditional lecture-driven approaches in favor of “active learning.” Such approaches put students more in the driver’s seat through discussions, in-class questions, and feedback; interactive technologies; and other strategies to engage learners and deepen understanding. Beyond cognitive and academic benefits, active-learning approaches can also provide socioemotional support, particularly for students who may not feel at home in or supported by traditional passive learning. But there is no single active-learning approach. Instead, as the experts below describe, we see a rich and developing portfolio of methods and ideas supporting different ways to produce more effective learning. —Brad Wible

AI from the screen into the physical world

By Nesra Yannier¹, Scott E. Hudson¹, Kenneth R. Koedinger¹

Improving science, technology, engineering, and mathematics (STEM) teaching is crucial for improving STEM learning. Yet teacher training improvements progress slowly. And even the best teachers are challenged to maintain the attention of new cohorts of “digital natives” and feel the need to find innovative ways to engage

them. Less focus on scientific facts and more experiences with scientific inquiry better engage the natural curiosity of children. But many elementary teachers typically do not have the background or curriculum materials to teach science from an inquiry perspective.

Addressing these challenges, we have been developing mixed-reality Intelligent Science Stations (see norilla.org) to engage children in active, inquiry-based experimentation and learning experiences in the physical world while providing interactive guidance that supports teachers as well as students. Children perform and interpret real-world experiments in a given physical apparatus (e.g., an earthquake table, ramps, a balance scale). Artificial intelligence (AI) computer vision algorithms reconstruct the physical scene and

PHOTO: SAHAR COSTON-HARDY



3-step approach

Design tasks - Give feedback - Analyse outcomes



Choose area to develop



Follow and give feedback in real time



Analyse



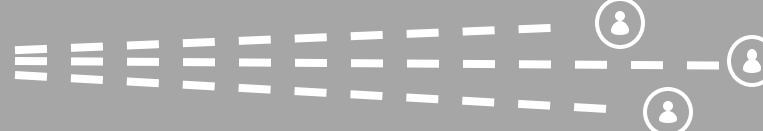
Tasks, methods and tags for your loopers



Manageable flow



Social relation:
Leader <--> Loopers



The decisive emotional events



Personal / organisational development





Design tasks – methods – assessment

Building block	Description
Learning tasks - Content related learning tasks - Process related learning tasks	The "backbone of learning tasks" describes the (sequential) tasks that learners must perform to foster intended learning outcomes.
Method	The method (or work format) describes the pattern of interaction with learners and how the learning tasks are presented and supported.
Assessment	The assessment describes how the assessment is conducted aligned with the learning goals and learning activities.



Design tasks – tags

Planned reflective action

1. Doing

2. Reflection

3. Deep reflection questions

4. Even deeper reflection questions

5b. Emotions

5. Outcomes and emotions

New Loop

Venture Creation Program

Develop your own personal cold-calling method

Task Description

Conduct a minimum of five successful cold-calls related to your project where you get to talk to a relevant person at a relevant potential customer. Use the course literature to prepare for calls.

After this is completed, reflect here in LoopMe upon your favourite methods for making successful cold-calls, ...

...answering the question: What is YOUR own personal approach for making successful cold-calls?

Text

Add Photo / File

How has this task changed your perspectives and beliefs around sales?

Feeling and Tags

Becoming more creative	Becoming more resilient	Better leader
Communicated more effectively	Considered other people	Considered wider impact
Disappointed in myself	Disappointed in others	Expected a different outcome
Increased customer	Increased my	More able to cope with

Why it is useful for DEGREE?



1. Captures lived experience

1. While GEMS measures *outcomes* (mindset development), LoopMe captures the *process*: what students actually do, feel, and learn in real time during entrepreneurial tasks.

2. Triangulation of data

1. We get both *big data* (large amounts of structured tags, tasks, usage metrics) and *thick data* (rich narratives of student reflections).
2. This complements GEMS' psychometric assessment with contextualised evidence of how and why change happens.

3. Authentic and ecological validity

1. Students reflect on actual entrepreneurial learning activities as they unfold, not retrospectively in an abstract questionnaire.
2. This increases ecological validity and reduces recall bias.

4. Assessment and feedback loop

1. LoopMe allows educators to follow students' experiences in real time, giving opportunities for formative assessment and adaptive teaching.
2. For DEGREE, this documents *mechanisms of change* — how instructional design choices connect to student outcomes.

5. Alignment with your multilevel design

1. Trainee level: we measure capabilities and implementation (Compass + LOIQ).
2. Learner level: we measure outcomes (GEMS) *and* experiences/learning processes (LoopMe).
3. This way, we can link **educator behaviour → course design → student lived experience → student mindset change**.



Authors: Team HOGENT
Bart Derre



Co-funded by
the European Union

