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Assessment in Innovation Pedagogy

INNOCENS Project

Minsk 27.11.-1.12.2017

Turku University of Applied Sciences Ltd.

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Monday 27.11.2017			Tuesday 28.11.2017			Wednesday 29.11.2017			Thursday 30.11.2017			Friday 1.12.2017		
Time	Topics	Room*	Time	Topics	Room	Time	Topics	Room	Time	Topics	Room	Time	Topics	Room
9.00-11.00	Presentations from BSU	520	9.15-11.15	Internal BSU excursion	Meeting point – downstairs at Leningradskaya str., 20	9.00-11.00	Rater Training day	520	9.00-11.00	Learning to use FINCODA Innovation Competences Assessment Barometer in practice	516	9.00-11.00	Assessment of innovation competences in the future	520
11.00-11.30	Coffee Break	520	11.15-11.30	Coffee Break	520	11.00-11.30	Coffee Break	520	11.00-11.30	Coffee Break	516	11.00-11.30	Coffee Break	520
11.30-13.30	Orientation and pre-assignment day	520	11.30-13.30	Assessment in higher education	520	11.30-13.30	Rater Training day	520	11.30-13.30	Learning to use FINCODA Innovation Competences Assessment Barometer in practice	516	11.30-13.30	Assessment of innovation competences in the future	520
13.30-15.30	Lunch		13.30-15.30	Lunch		13.30-15.30	Lunch		13.30-15.00	Lunch		13.30-15.30	Lunch	
15.30-17.30	Orientation and pre-assignment day	520	15.30-17.30	Assessment in higher education	520	15.30-17.30	Rater Training day	520	15.00-16.30	Learning to use FINCODA Innovation Competences Assessment Barometer in practice	516	18.00	Project Dinner	

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Tuesday 27.11.2017

Assessment in higher education

We will discuss and learn about assessment methods, practices and processes in Universities, especially related to innovation competences. Main topics include:

- **What kind of assessment processes are on use?**
- **What we can measure with different assessment processes?**
- **Who makes the assessment?**
- **How assessment could be organized to gain more reliable results?**
- **Processes and tools to assess innovation competences**
- **What novel EU Agenda for Higher Education underlines in assessment of learning outcomes?**
- **Students are in the center of assessment, how about organizations?**

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Orientation and pre-assignment day

Program for Monday:

Get familiar with assessment procedures of students overall in your country in different educational stages

- *Primary school*
- *Secondary education (high school and vocational education)*
- *University education, including Polytechnics.*

Please also list what kind of assessment methods or procedures you personally use and what kind of experiences you have from different ways to assess students.

This information will be utilized and cultivated further on Minsk Workshop.

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Group presentations

- The findings from yesterday in short: *assessment procedures of students overall in your country in different educational stages*
  - *Primary school*
  - *Secondary education (high school and vocational education)*
  - *University education, including Polytechnics.*
- *Additionally: what kind of assessment methods or procedures you personally use and what kind of experiences you have from different ways to assess students.*

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The Purpose of...

assessment
is to
INCREASE
quality.

evaluation
is to **JUDGE**
quality.

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Assessment vs. grading

- Generally, the goal of *grading* is to evaluate individual students' learning and performance.
- Grades are not always a reliable measure of student learning. They may incorporate criteria – such as attendance, participation, and effort – that are not direct measures of learning.
- The goal of *assessment* is to improve student learning, it goes beyond grading by systematically examining patterns of student learning across courses and programs and using this information to improve educational practices.

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"If you want to change students'learning, change assessment"

(Brown, et al. 1997)

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Nothing we do to, or for our students is more important than our <u>assessment of their work</u> and the feedback we give them on it. The results of our assessment influence students for the rest of their lives...'

Race, P. Brown, S. and Smith, B. (2005) 500 Tips on assessment: 2nd edition, London: Routledge.

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What is Assessment for Learning?

- Assessment for Learning aims to develop students' ability
  - to evaluate themselves
  - to make judgements about their own performance
  - to improve upon current performance
- Well planned assessment offers lots of opportunities for students to develop their skills through formative assessment using summative assessment sparingly

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'Good' assessment will have the following elements:

- **Transparency –** establish what it is you are aiming to assess with assessment criteria that clearly reflect this and which are shared with students so they know what is expected of them. This will enable them to direct their learning appropriately.
- **Validity –** assess those skills or attributes that reflect the learning outcomes of the course of study.
- **Reliability –** create and clearly define marking criteria that are aligned with the learning outcomes of the course of study making the assessment process objective, accurate and repeatable.
- **Authenticity** – take into account the knowledge and skills that are relevant in the workplace and that are valued by employers.

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Effective assessment design

- Effective assessment design requires you to establish exactly what you are trying to achieve in a particular type of assessment. You may find the following 'trigger' questions useful for this:
  - Why am I assessing?
  - What exactly am I trying to assess?
  - How am I assessing my students?
  - Who is best placed to do the assessing?
  - When should I assess my students?

Brown, S. & Glasner, A. (2003). *Assessment Matters in Higher Education: Choosing and Using Diverse Approaches*. Buckingham. The Society for Research into Higher Education & Open University Press.[4]

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Summative assessment

- The goal of summative assessment is to *evaluate student learning* at the end of an instructional unit by comparing it against some standard or benchmark.
- Summative assessments are often *high stakes*, which means that they have a high point value. Examples of summative assessments include:
  - a midterm exam
  - a final project
  - a paper
  - a senior recital
- Information from summative assessments can be used formatively when students or faculty use it to guide their efforts and activities in subsequent courses.

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Formative assessment

The goal of formative assessment is to *monitor student learning* to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning. More specifically, formative assessments:

- helps students identify their strengths and weaknesses and target areas that need work
- helps faculty recognize where students are struggling and address problems immediately

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” A better goal than being the most perfect one is to be the most unique one”

André Noël Chaker

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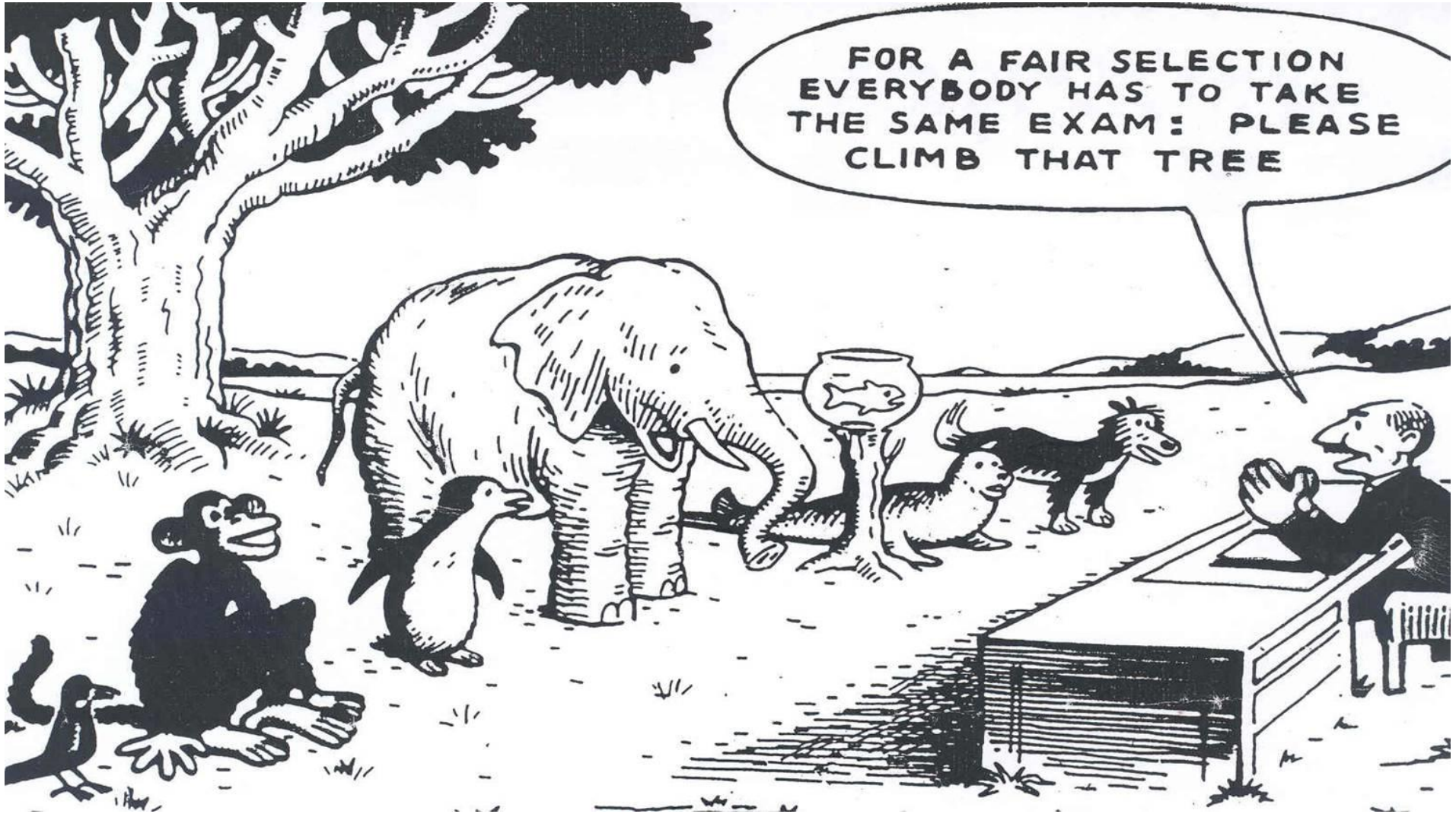

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Peer and self-assessment

- students assess each other and themselves
- can encourage students to take greater responsibility for their learning, for example, by encouraging engagement with assessment criteria and reflection of their own performance and that of their peers
  - students can learn from their previous mistakes
  - they can identify their strengths and weaknesses
  - they may learn to target their learning accordingly
- If students are participants rather than 'spectators', they are more likely to engage with their learning.

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Self-assessment

- Self-assessment requires students to reflect on their own work and judge how well they have performed in relation to the assessment criteria
- The focus is not necessarily on having students generate their own grades, but rather providing opportunities for them to be able to identify what constitutes a good (or poor!) piece of work
- Some degree of student involvement in the development and comprehension of assessment criteria is therefore an important component of self-assessment

Boud, D. *Enhancing Learning Through Self-Assessment*. (1995). London. Routledge Falmer.

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Peer-assessment

- involves students taking responsibility for assessing the work of their peers against set assessment criteria
- They can therefore be engaged in providing feedback to their peers, summative grades, or a combination of the two
- It's a powerful way for students to act as the 'assessor' and to gain an opportunity to better understand assessment criteria
- It can also transfer some ownership of the assessment process to them, thereby potentially increasing their motivation and engagement
- students might be encouraged to learn more deeply, building up their understanding, rather than just their knowledge of the facts, as well as gaining an insight into their own approach to an assessment task in comparison to their peers

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Towards supportive assessment culture

- from a culture of testing
  - to a **culture of supporting learning and developing personal understanding**
- from controlling and teacher-centredness
  - to **active agency of the students and student centricity**
- from assessment of product
  - to **assessment of process**

(Postareff 2017)

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Remarks to consider when designing asessment

- **Assessment methods influence learning.**
  - deep learning – surface learning
- **Different assessment methods measure different skills**.
  - Using more diverse assessment methods allows for the measurement of a potentially wider range of knowledge, competencies and skills.
- **Different people are better at assessing different things.**
  - faculty members - employers as part of a work placement course.
- **Peer-assessment and feedback works!**
  - in formative feedback the students may well engage more with and respond better to the feedback it provides
- **Different methods require different efforts.**
  - multiple choice question – student feedback
  - Case EU Funding training

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of

EUROPEAN
COMMISSION

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Brussels, 30.5.2017
COM(2017) 247 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

on a renewed EU agenda for higher education

{SWD(2017) 164 final}

PRIORITIES FOR ACTION

1. Tackling future skills mismatches and promoting excellence in skills development
2. Building inclusive and connected higher education systems
3. Ensuring higher education institutions contribute to innovation
4. Supporting effective and efficient higher education systems

Source: COM(2017) 247 final

5.2 Promising approaches

5.2.1 Promoting entrepreneurship, creativity and innovation skills

76. Higher education institutions increasingly recognise that they must afford young minds the opportunity to develop skills that inspire, encourage and enable innovation. Although it is difficult to make explicit links between specific skills and innovation, there is a move towards rethinking education and training programmes to promote the combined skills of creative and critical thinking, entrepreneurship, problem-solving, risk-taking and resilience, management, communication, exploiting the results of research and independent analysis. Promoting, assessing and rewarding these skills sets in higher education, alongside acquisition of detailed subject knowledge, is one of the challenges faced by teaching staff across Europe.

77. A step in this direction is the FINCODA project[77] led by Turku University of Applied Sciences that aims to develop a tool to assess students' 'innovation competences' during their studies and comprises a plan for training teachers to use the criteria. A further extension of FINCODA thinking is an initiative by the European Institute of Innovation and Technology's (EIT) Climate-KIC to develop a framework that defines essential innovation competencies and describes quality standards to develop and measure them respectively. This aims to create a pan-European standard for assessing innovation and entrepreneurship skills, with a focus on the climate change field[78].

FINCODA

At the core of this project is the development of the FINCODA Innovation Barometer Assessment Tool. This is a psychometric tool that measures individuals' capacity for innovation. It breaks innovation into five core areas and assesses the individual's capacity in each of these areas separately. The research underpinning this tool has been conducted by the FINCODA partners who as a whole bring together both the academic and industry innovation expertise from across Europe. The project will develop an online toolkit for behavioural assessment relating to innovation and a massive open online course (MOOC) related to behaviour assessment to disseminate the methods.

Source: FINCODA

EUROPEAN COMMISSION

Brussels, 30.5.2017
SWD(2017) 164 final

COMMISSION STAFF WORKING DOCUMENT

Accompanying the document

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions

A renewed EU agenda for higher education

{COM(2017) 247 final}

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Future of jobs

Top 10 skills at 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

Source: World Economic Forum (2016)

In innovation pedagogy, learning takes place by various ways

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- By experimenting
- From and with others
- From different sources of information and by creatively combining experiences from (working) life
- In the context of working life, by applying knowledge, by doing
- In a multidisciplinary manner, by combining different competences
- In a problem-based manner
- In a goal-oriented manner

But how to measure the complex cognitive behaviour that contributes to creativity, problem-solving and working in teams or networks?

Is there a risk that in higher education only what can be easily and transparently measured is taught or assessed?

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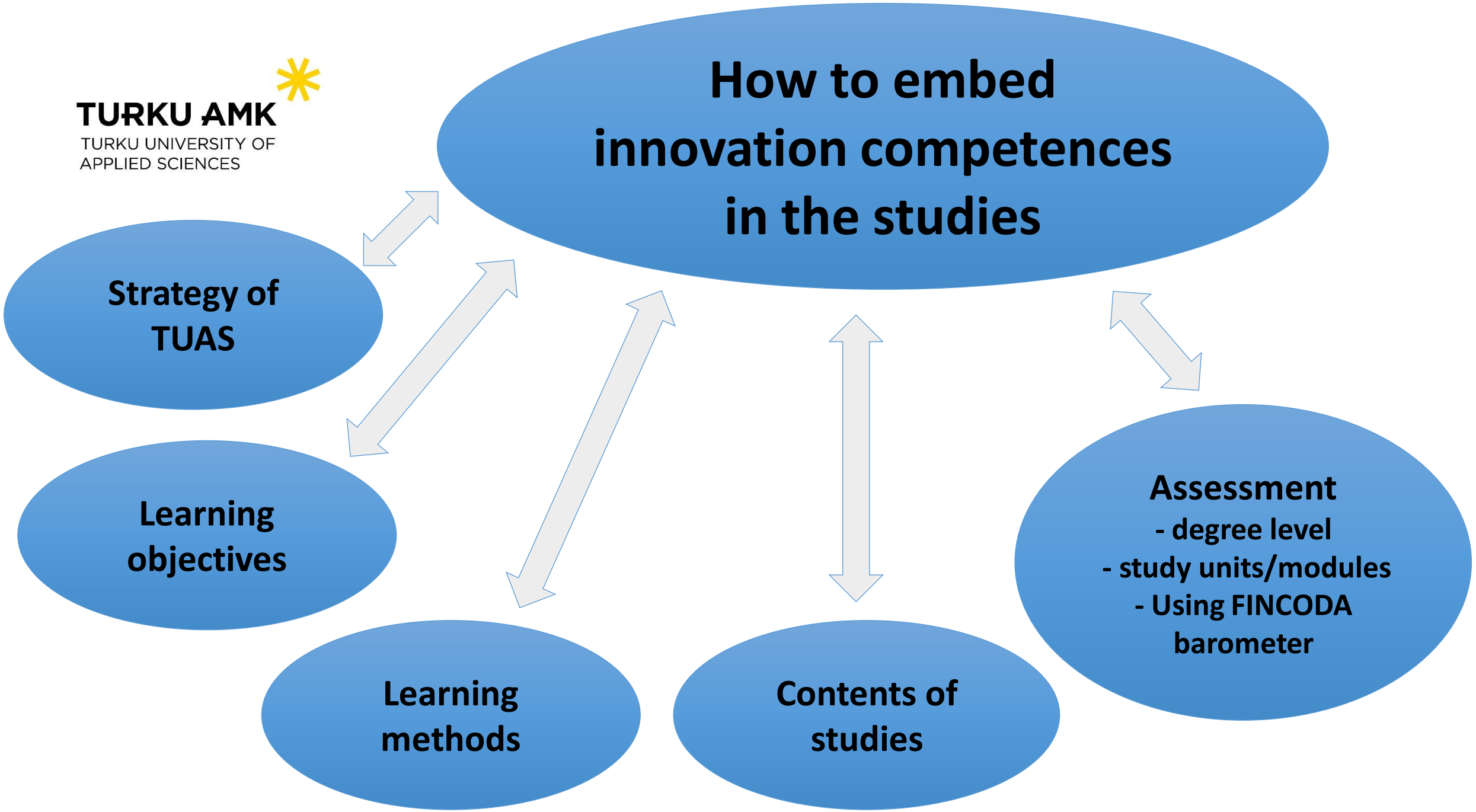
How to embed innovation competences in the studies



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Assessment
- degree level
- study units / modules

Degree level

- self- assessment in the beginning of studies/ annually/ in the end of studies
- electronic tool in electronic curriculum
- linked to study unit ’University studies and working life skills’ 5 cr, extent 3.5-4 yrs
- lead by tutor teacher, development discussions with students

Study unit/ module level

- electronic assessment tool available on our learning platform Optima
- can be applied to self, peer and external assessment
- can be applied partially

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Developing the barometer for innovation competences

INCODE

- How to measure Innovation Competencies?
- From analyzing the theoretical background to building the barometer.
- 2011-2013
- International, 4 countries

INNOKOMPPI

- Validation of the barometer to the University environment
- 2012-2014
- National, 4 UAS' + 1 University

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- With universities and companies
- Development of the barometer also to the needs of companies
- 2015-2017
- International, 5 countries

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Framework for Innovation Competencies Development and Assessment

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Erasmus+ Knowledge Alliances project 1.1.2015-31.12.2017

FINCODA CONSORTIUM		
HE	**COMPANY**	**OTHER**
TUAS, FI	Elomatic Ltd., FI	EENNW, UK
HAW, DE	Meyer Turku Oy, FI	
HU, NL	Lactoprot, DE	
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Aims and objectives for FINCODA

- The **FINCODA** project was born out of a recognition of how important **innovation** is to both the business and academic worlds.

- At the core of this project is the development of the **FINCODA Innovation Barometer Assessment Tool.** This is a psychometric tool that measures individuals' capacity for innovation.

- The assessment tool, is tested in various settings in innovative and unprejudiced way. The aim is to provide solutions for creating a solid path for forthcoming innovators from university to companies.

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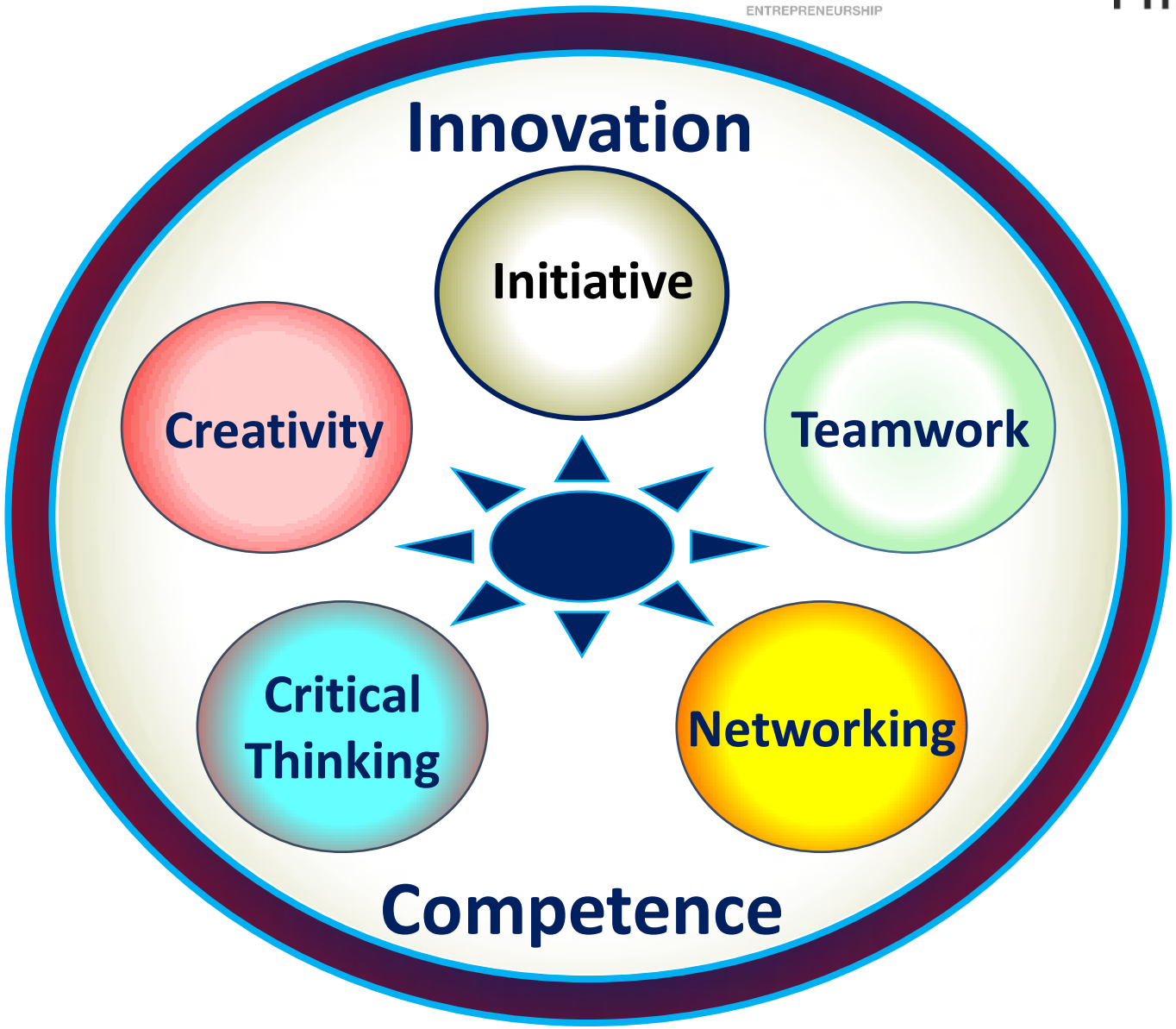

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FINCODA Innovation Barometer Assessment Tool

Creativity (9 items)

- ability to transcend (think beyond) traditional ideas, rules, patterns or relationships, and to generate or adapt meaningful alternatives, ideas, products, methods or services independently of their possible practicality and future added value

Critical thinking (6 items)

- ability to analyze and deconstruct issues with a purpose (evaluate advantages and disadvantages, foresee how events will develop, estimate the risks involved)

Initiative (6 items)

- ability to take decisions or carry out actions to operationalize ideas that foster positive changes, as well as to mobilize and manage creative people and those who havem to implement ideas

Teamwork (7 items)

- ability to work efficiently with others in a group

Networking (6 items)

- ability to involve external/outside stakeholders (outside the work group)

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Scientifically validated barometer (2 phases) Step 1: A literature review

1) A literature review of innovation competence model and of the surveys used to measure them.

working with 3 data sets provided by 3 teams of 3 researchers:

- 44 papers were collected and reviewed
- 12 innovation models were found, but none of those models is linked to any publication in scientific journals in which a rigorous complete and replicated validation process with independent samples and research groups has been communicated. No detailed analysis of the dimensionality of multi-item based models has been published.

2) Discussions on the available material in different group dynamics

- 4 of the authors met with 3 HR-managers and 1 person in charge of innovation who works

3) The proposal prepared by this group was worked and re-elaborated on a 2 day workshop

- 9 researchers from European universities
- 17 managers from 9 European innovative medium- and large-sized companies

Source: Marin-Garcia, Juan A. et al. (2016) Proposal of a Framework for Innovation Competencies Development and Assessment (FINCODA), Working Papers on Operations Management. Vol. 7, Nº2 (119-126).

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Scientifically validated (2 phases) Step 2: A psychometric validation

- After a literature review and qualitative validation a psychometric validation work was started.
- A joint sample of students and professionals working in organization was used (N=510 consisting of 316 students and 194 professionals).
- Internal consistency reliability (Cronbach's alpha) is:
  - Creativity .88 (n=9),
  - Critical thinking .76 (n=6),
  - Teamwork .77 (n=7),
  - Initiative .78 (n=6)
  - Networking .80 (n=6).
- These results are adequate for a personality style instrument like the Fincoda barometer.

Source: Butter, R. (2016) Psychometric validation of the Fincoda barometer for assessment of innovation competencies: a concise summary. Unpublished summary 5.12.2016.

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Scientifically validated (2 phases) Step 2: A psychometric validation

- Three sources of criteria information were used:
  1. Self-reports on behavioral indicators of innovation
  2. Boss-reports on above behavioral indicators
  3. Qualitative stories on innovative performance based on STAR methodology (Situation, Task, Action, Result) that were analyzed by independent judges unaware of the respondents' scores on the FINCODA dimensions.

- The results are as follows:
  1. All FINCODA scales are positively and significantly correlated with the self-criterion.
  2. Creativity, critical thinking and initiative are positively and significantly correlated with the boss criterion.
  3. Judgements of STAR descriptions on radical innovation are positively and significantly related to initiative, creativity, critical thinking and networking. The magnitude of the correlation coefficients increases with the number of STAR examples.

Source: Butter, R. (2016) Psychometric validation of the Fincoda barometer for assessment of innovation competencies: a concise summary. Unpublished summary 5.12.2016.

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Why using FINCODA barometer?

- to answer to working life expectations
- to evaluate competence development
- to evaluate the impact of pedagogical practices and different kind of teaching and learning methods
- to make the aims visible both for the students and the staff
- to improve students' self-assessment competences, their understanding of their own competences and their development needs
- To guide learning and teaching towards innovation competences

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How about innovation capacity of organizations?

www.heinnovate.eu

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FINCODA Rater Training

http://fincoda.langebuecher.de/

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FINCODA Barometer

http://fincoda.dc.turkuamk.fi/

THE FINCODA BAROMETER ASSESSMENT TOOL

1	Think differently and adopt different perspectives	(green=CREATIVITY)
2	Be attentive when others are speaking, and respond effectively to others' comments during the conversation	(yellow=TEAMWORK)
3	Use intuition and own knowledge to start actions	
4	Invite feedback and comments	
5	Foster improvements in work organization	(pink=INITIATIVE)
6	Obtain constructive comments from colleagues	
7	Find new ways to implement ideas	
8	Identify sources of conflict between oneself and others, or among other people, and to take steps to overcome disharmony	
9	Take an acceptable level of risk to support new ideas	
10	Go beyond expectations in the assignment, task, or job description without being asked	
11	Meet people with different kinds of ideas and perspectives to extend your own knowledge domains	(blue=NETWORKING)
12	Convince people to support an innovative idea	
13	Systematically introduce new ideas into work practices	
14	Act quickly and energetically	
15	Generate original solutions for problems or to opportunities	
16	Use trial and error for problem solving	(grey=CRITICAL THINKING)
17	Develop and experiment with new ways of problem solving	
18	Acquire, assimilate, transform and exploit external knowledge to establish, manage and learn from informal organisational ties	
19	Challenge the status quo	
20	Face the task from different points of view	
21	Make suggestions to improve current process products or services	
22	Present novel ideas	
23	Forecast impact on users	
24	Show inventiveness in using resources	
25	Search out new working methods, techniques or instruments	
26	Provide constructive feedback, cooperation, coaching or help to team colleagues	
27	Work well with others, understanding their needs and being sympathetic with them	
28	Share timely information with the appropriate stakeholders	
29	Consult about essential changes	
30	Build relationships outside the team/organization	
31	Refine ideas into a useful form	
32	Engage outsiders of the core work group from the beginning	
33	Ask "Why?" and "Why not?" and "What if?" with a purpose	
34	Work in multidisciplinary environments	

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