INNOVATION COMPETENCIES DEVELOPMENT

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INCODE at a Glance

INCODE is funded by the Lifelong Learning Program of the European Union (2011- 2013)

- With partners from:

  Finland (*Turku University of Applied Sciences, TUAS*),

  Spain (*Universitat Politècnica de València, UPV*),

  Belgium (*Karel de Grote Hogeschool, KDG*) and
  Germany (*Hochschule für Angewandte Wiss. Hamburg, HAWH*)

- Connecting professional working life with professional education

- To ensure the successful transfer from innovative ideas into innovative products

- By using a specialised Teaching and Learning Method and a specialised Assessment-Tool

INCODE – General Aim

Facilitate the transfer from innovative ideas into innovative products

- By integrating pedagocial knowledge into working-life innovation activities and

- By enhancing innovation potentials in higher education institutions

In 3 Steps:

1. targeting general features of innovation competencies

2. developing them in different Higher Education Curricula

3. assessing the Learning Outcomes with a special tool

INCODE - Structure

Innovation Competencies

aim
desired learning outcomes

Innovation Competencies
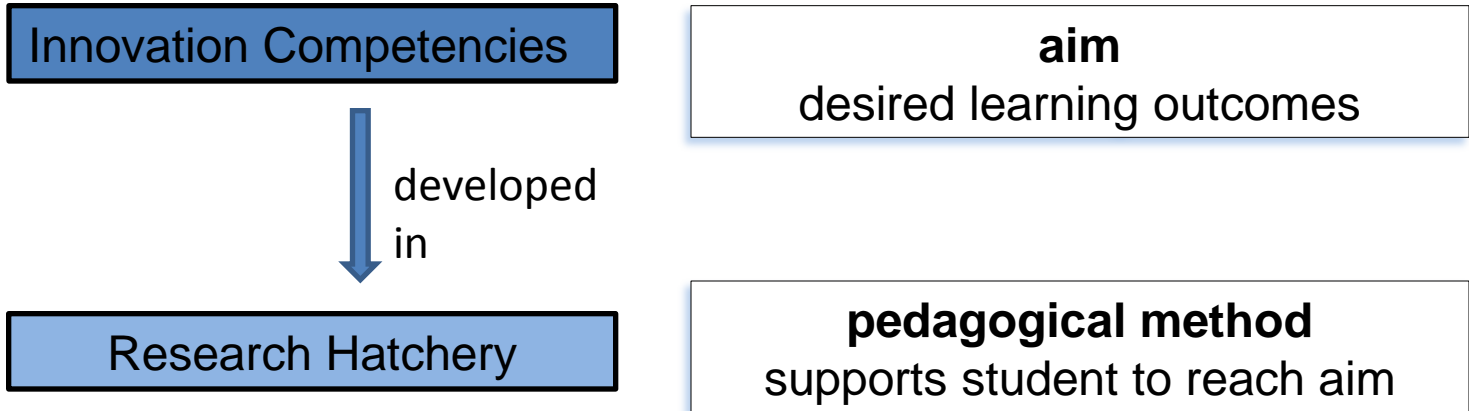
Innovation Competence - a complex construct

- Preliminary Definition of Innovation:

  Process of constantly improving knowledge that leads to new ideas, further knowledge or other practices applicable in working life (Nuotio 2010)

- Preliminary Definition of Innovation Competencies:

  Individual qualities and capabilities which are needed for a successful innovation (Forsman 2009)

Innovation Competencies

- **Competence:** Complex know-how resulting from the integration, mobilization and adaptation of capacities and skills to situations having common characteristics
  - **Capacity:** Medium complex know-how integrating skills
    - **Skills:** Simple know-how from disciplinary knowledge
- **The five most important capacities considered by UPV to be contained in innovation competence:**

  creativity, initiative and leadership, forward thinking, communication, team work.

INCODE - Structure

Innovation Competencies

developed in

↓

Research Hatchery

aim
desired learning outcomes

pedagogical method
supports student to reach aim

Research Hatchery (REHA)

- Innovation-oriented Teaching and Learning Method

- for combining learning, innovation and research as well as serving the purposes of working life

- Functional Learning Environment, where students, under counseling, can create new information with reliable methods

- Actors: students, student assistants, Research and Design expert and a project leader or teacher

- Learning through self-study, counselling and guidance as well as with the help of fellow students and more experienced researchers

- Integration into the Curriculum is flexible

Research Hatchery (REHA)
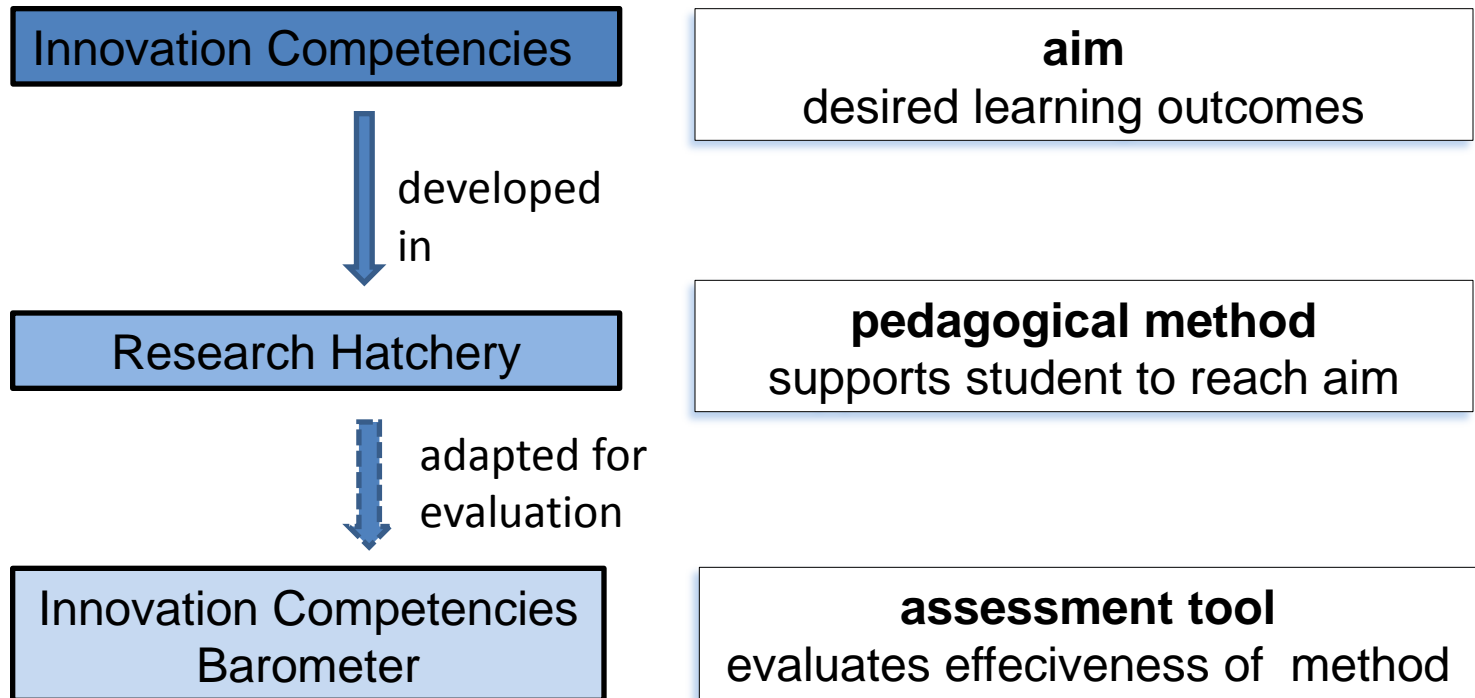
Example: „The Company" (KdG)

- Part of the Curriculum of the Engineering Department

- encompassing both the bachelor and the master level of the studies

- aim at specific competencies: the relation between innovation and entrepreneurship

- led by the master students. They get a (limited) introduction to management and have to apply this in real time as managers of "The Company". The CEO, the director of projects and the director of communications are all students

Research Hatchery (REHA)

Example: „The Company" (KdG)

- Features:

➢ students (freshmen to masters) coming from different technical fields (biochemistry, chemistry, civil engineering, mechanics, electronics-ICT, electrical engineering) regularly work together

➢ students build an e-portfolio of their work

➢ linked to innovative companies. They provide continuous feedback and help to develop the curriculum design

➢ functions as a Research Hatchery within INCODE and is used as a testing ground for the Innovation Competence Barometer (ICB)

INCODE - Structure

Innovation Competencies	**aim** desired learning outcomes
↓ developed in	
Research Hatchery	**pedagogical method** supports student to reach aim
↓ adapted for evaluation	
Innovation Competencies Barometer	**assessment tool** evaluates effeciveness of method

INCODE

Innovation Competencies Barometer (ICB)

- Measurement of Generic Capacities:

   a) written performance - general capacities to be assessed like critical thinking, analytical reasoning, problem-solving and written communication

Example: European Project "Assessment of Higher Education Learning Outcomes" (AHELO)

   But: use of active learning methods like the new REHA calls for assessment criteria that meet intended learning outcomes (which often cannot be tested by written performance criteria)

   Therefore:

   b) oral and behavioural performance should be assessed
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Innovation Competencies Barometer (ICB)

- Assessment tool that fulfills the requirements that arise from the principle of constructive alignment in curriculum design

- Assesses Capacities and Skills expressed in student`s **behaviour** in the REHAs which pertain to Innovation Competencies

- Used for student-feedback and adaptation of REHA-learning methodology

- According to the proposal of Innovation Pedagogy (TUAS) measurement of behavioural features takes place in three *dimensions*: individual, interpersonal and networking

- Three *forms*: teacher-, peer-, self-assessment

Innovation Competencies Barometer (ICB)

	INDICATORS OF CAPACITY / SKILL	5	4	3	2	1
	INDIVIDUAL					
1	I make proposals appropriate to the demands of the task.					
2	I offer ideas that are original in content.					
3	I offer new ways to materialize the ideas.					
4	I critically evaluate the fundaments of contents and actions.					
5	I identify relationships among different components of the task.					
6	I approach the task from different perspectives.					
7	I use resources ingeniously.					
8	I foresee how events will develop.					
9	I show enthusiasm.					
10	I am tenacious.					
11	I take intelligent risks.					
12	I orient the task towards the target.					

Part of ICB – self-assessment

Observations:

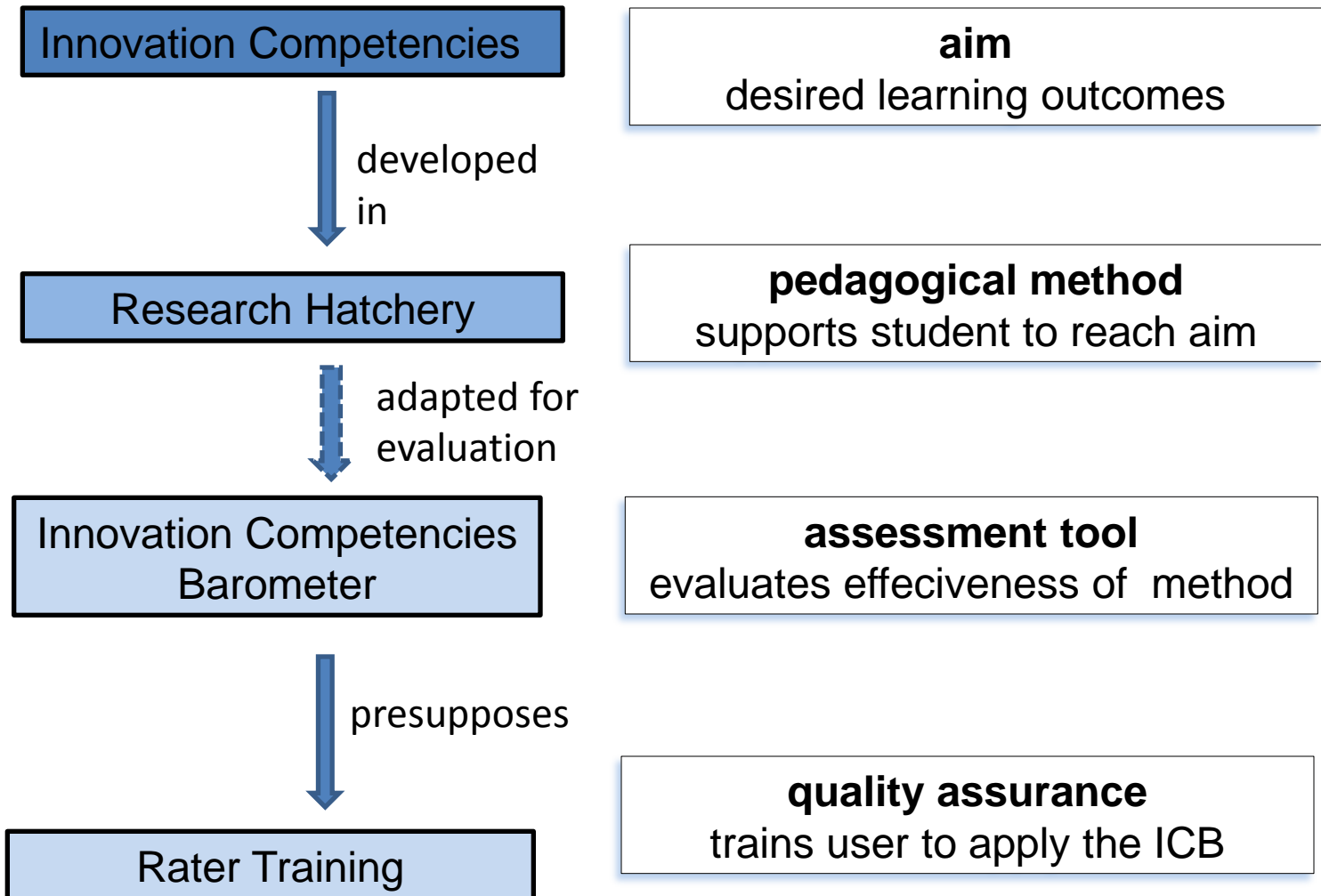- 5 = Excellent;
- 4 = Good;
- 3 = Pass;
- 2 = Needs to improve;
- 1 = Needs to improve very much

Innovation Competencies Barometer (ICB)

- Present situation of ICB in INCODE:

- first versions of the ICB were revised and the testing situations were selected

- trial rating of two video recordings with all partners training the lead raters from each country

- reduction of the number of items to avoid redundancy

- ICB and instructions for use sent out to all partners to be used in validation

- Validation included 2 raters each from the 4 partner universities who rated 8 videos that had been produced at the different partner universities (2 each)

- All the data from the ratings (8 videos X 8 raters) were centralized and are presently under statistical analysis for validation of the instrument

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↓ presupposes	
Rater Training	**quality assurance** trains user to apply the ICB

Rater Training

- Means of Quality Assurance of the ICB

- ICB will mainly be used by teachers and pedagogical staff with different backgrounds and experience and who are not familiar with the assessment criteria and their use in Research Hatcheries

- Innovation Competence is a cluster competence

    =>

- Need to assure that the different individual traits can be discriminated and assessed by different users of the instrument
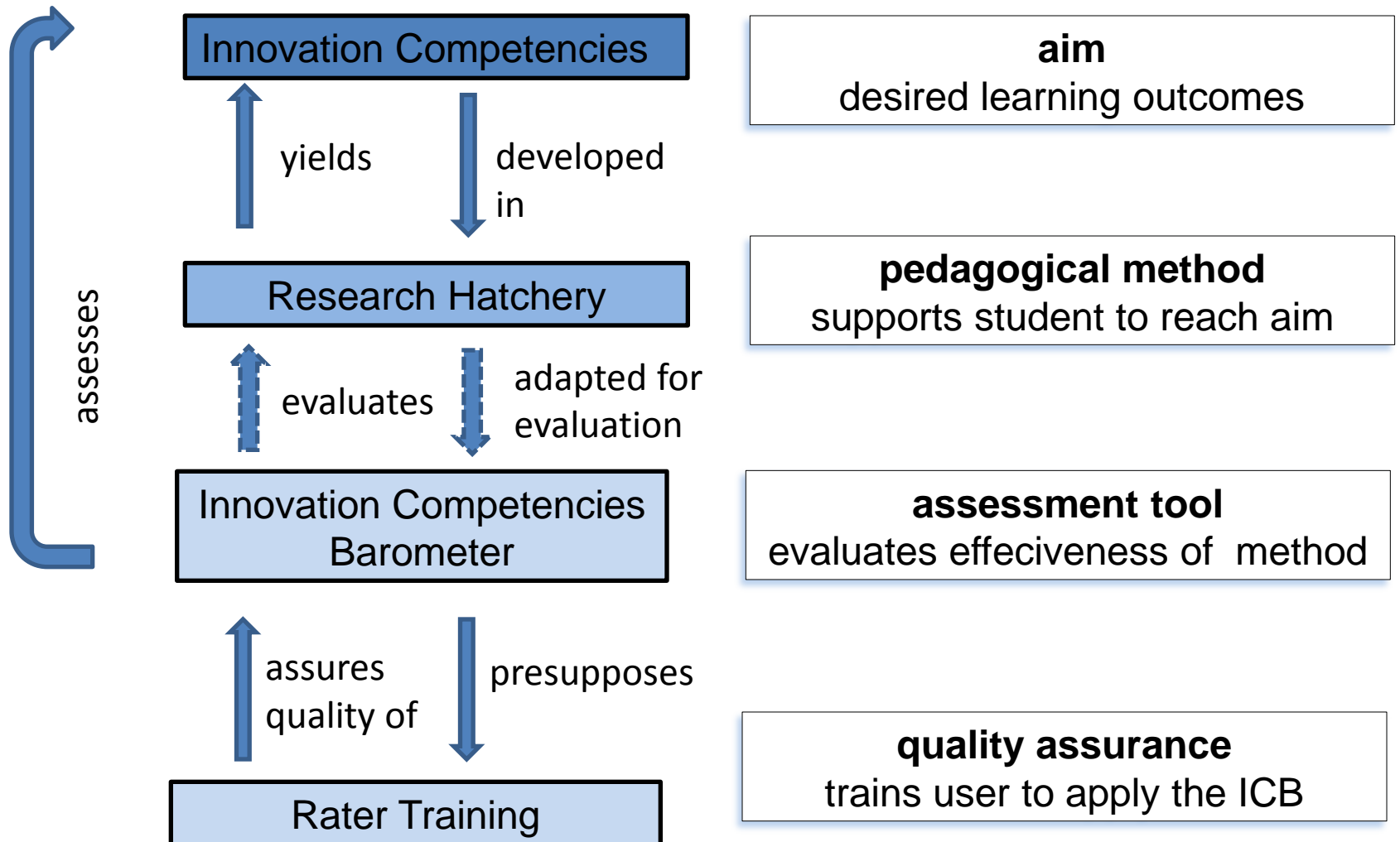
Rater Training

- Rater Training has 3 main parts
1. Behavioral Observation Training (BOT)
2. Rater Error Training (RET)
3. Frame of Reference Training (FOR)

➢ Behavioral Observation Training (BOT)

- focuses on observation of behaviors, which includes the detection, perception, and recognition of specific behavioural events and how to use information about performance.

Rater Training

➢ Rater Error Training (RET)

- to improve accuracy of observation by decreasing common rater errors, or rater biases by confronting raters with examples of common rating errors such as leniency, halo, central tendency, and contrast errors.

➢ Frame of Reference Training (FOR)

- to provide raters with a frame of reference for making evaluations of the ratee's performance.

- to reduce arbitrary performance standards

- to get raters to share a common perception of performance standards.

INCODE - Structure

Innovation Competencies

yields / developed in

Research Hatchery

evaluates / adapted for evaluation

Innovation Competencies Barometer

assures quality of / presupposes

Rater Training

assesses

aim
desired learning outcomes

pedagogical method
supports student to reach aim

assessment tool
evaluates effeciveness of method

quality assurance
trains user to apply the ICB

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Education and Training

Education and Culture DG
Lifelong Learning Programme

EACEA
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Cooperating Universities:

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TURKU UNIVERSITY OF APPLIED SCIENCES

Karel de Grote-Hogeschool
start met voorsprong

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Hamburg University of Applied Sciences