

THE NEXTGENG PROJECT: FIRST STEPS OF AN INTERNATIONAL CO-TEACHING EXPERIENCE

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NextGEng

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This **paper** presents the first steps in the design and preparation of team teaching activities carried out in the International Cooperation Framework for Next Generation Engineering Students (**NextGEng**) project



It is a recently granted Erasmus+ Cooperation partnership in higher education project that involves a consortium of **six partners** from European **universities** and **companies**

Aim

To develop an international cooperation framework that promotes international team-teaching aligned with the European Education Area 2025 and labour market needs, including actions to support collaborative international and experiential learning in engineering

**Tailored training
process for teachers**

**International team
teaching pilot program**

**Cases for experiential
learning**

Taking advantage of past collaborations



Smart HEI-Business collaboration for skills and competitiveness [HEIBus] is an Erasmus + Knowledge Alliances 2 project that aims to develop **smart and innovative models** for Higher Education Institution (HEI) -company cooperation

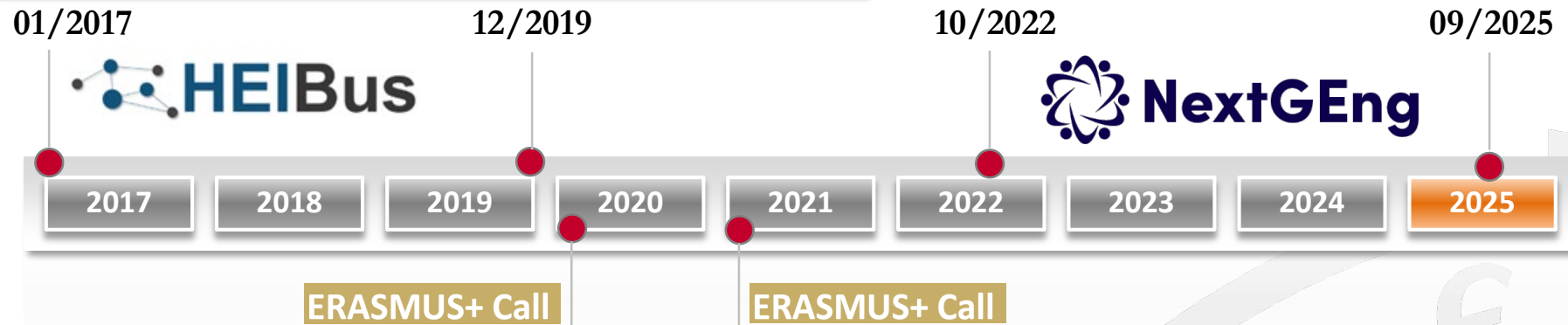
Multidisciplinary Real Life Problem Solving (RLPS)

Expert Level Real Life Problem Solving (EXPERT)

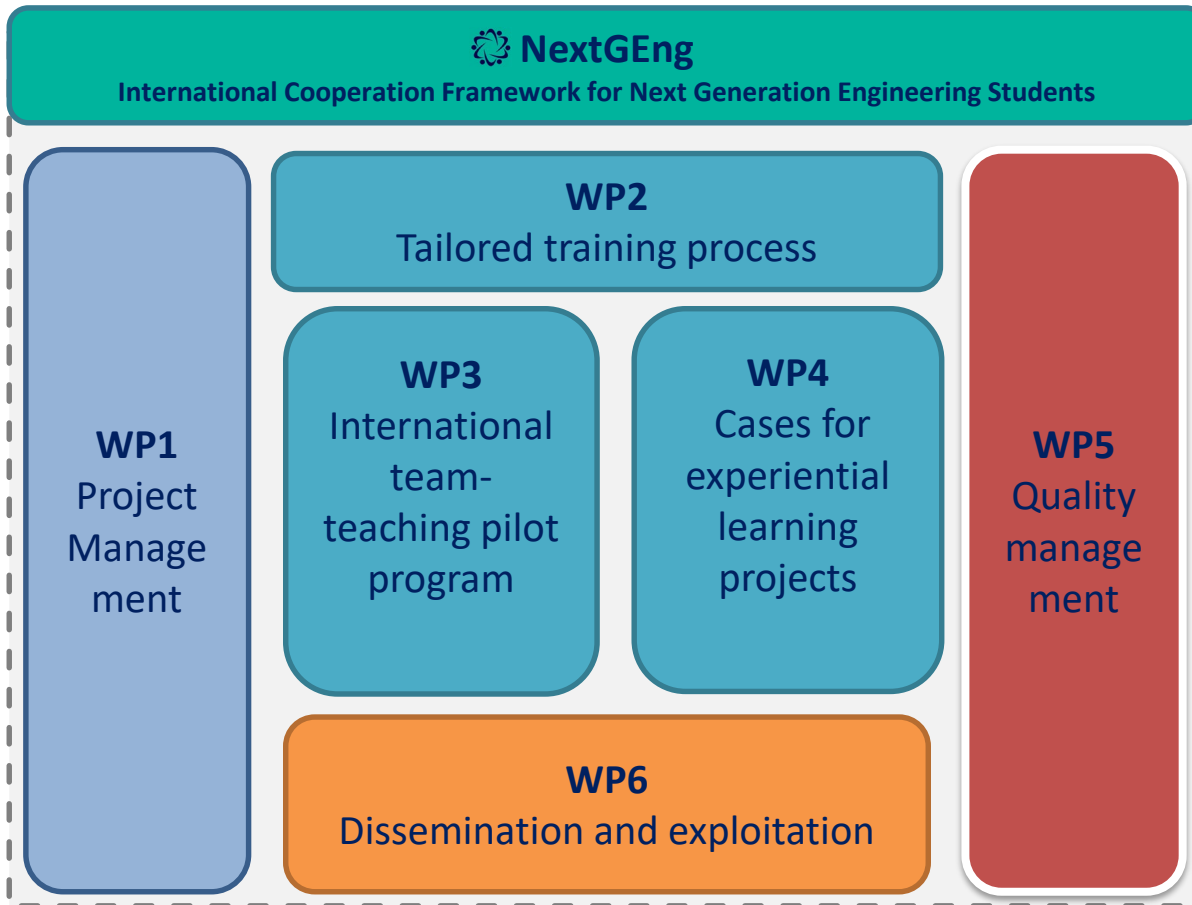
Flexible Student Mentoring by Companies (Flex Mentoring)

Consortium: 5 universities and 7 company partners from five different EU member countries

Taking advantage of past collaborations



NextGEng



- **WP1** deals with the overall project management
- **WP2, WP3** and **WP4** are implementation work packages
- **WP5** provides guidelines for quality assurance and evaluation
- **WP6** focuses on the dissemination and exploitation of the project's activities and results

WP2: Tailored training process

10/2022-03/2024

Aim

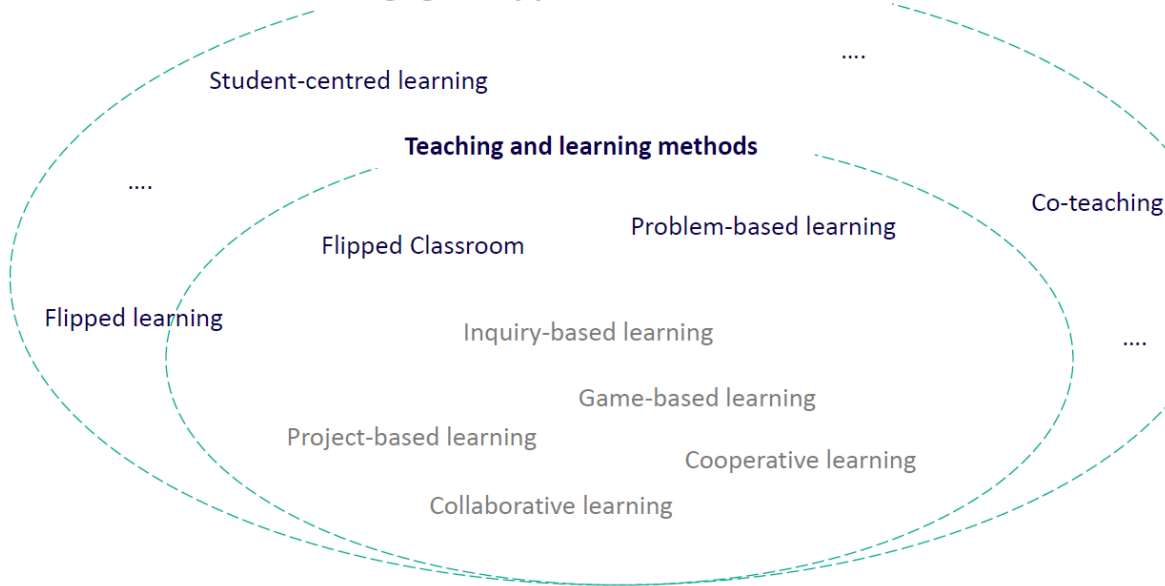
First **analyze** and then **improve** the pedagogical tools used in each of the HEI partners. Through the analysis, lecturers become aware of methods used elsewhere, get help to evaluate their own ones, and are involved in creating and evaluating new cooperative international teaching methods.

Training seminar (30-31/01/2023) was organized by one of the HEI partners, the JAMK University from Finland. **JAMK** is forerunner in developing student-centered, competency-based education, digital learning, lifelong learning and reforming work-related pedagogy and teacher training.



(i) Pedagogical tools analysis

Pedagogical approaches and methods

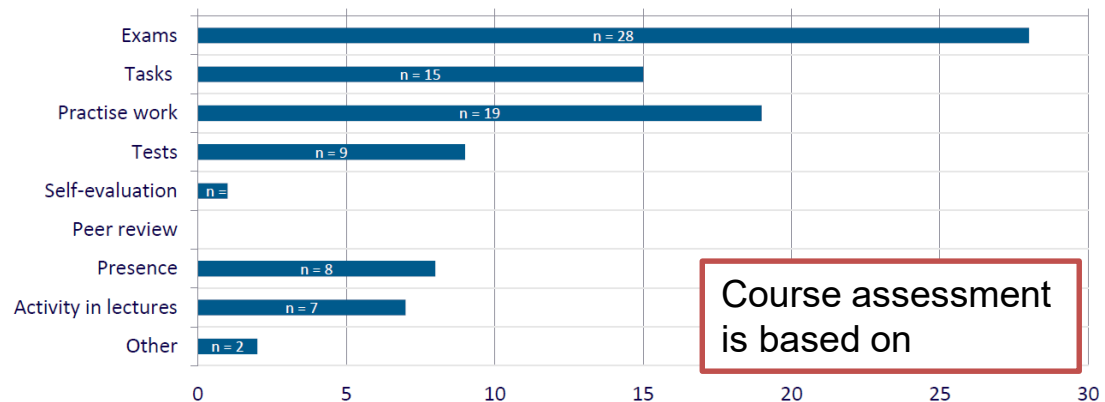


Pre-assignment:

Courses for the international team teaching pilot program (upgraded courses)

Courses	n
C1: Strength of Materials	7
C2: Industrial automation	6
C3: Design projects	4
C4: Quality assurance and applied methods	3
C5: Computer aided design	4
C6: Manufacturing Technology	4
<i>Respondents</i>	<i>28</i>

75% of respondents have teacher-centred approach as a main teaching method



Course assessment is based on

(ii) Pedagogical tools improvement

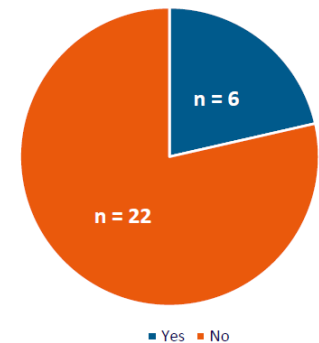
1. Problem-based learning (14)
2. Project-based learning (13)
3. Collaborative (14) and Cooperative learning (12)
4. Flipped Classroom (13)
5. Learning by teaching (11)
6. Game-based learning (8)
7. Inquiry-based learning (6)
8. Others: Blended learning, Thinking Routines

Future plans

Teaching together

Now

at the same time
in the same course



Expectations from co-teaching

- Should be well coordinated
- Roles and tasks should be clear
- Need to be willingness to improve the process
- Requires trust and transparency
- Can activate students and enrich the learning process
- Courses could be more interactive
- Deepens teachers' knowledge and competence

WP2: Tailored training process

Summary of expected results

Development of a pedagogical tailored training program for sustaining the skill improvement of HEIs partners through workshops and guidance material

Activity	Results
Background research of the teaching method	Internal report based on the pre-assignment task of the training seminar (DONE)
Training seminar of teaching first round	Training seminar (30-31/01/2023) at the University of Applied Science, JAMK (Finland) (DONE)
Assessment of the quality of seminar and workshops	Creating a survey to find out how training days have changed the learner-centeredness of curricula and the planned use of teaching methods and digital tools (DONE)
Research on implementation quality for upgraded courses	Creating a survey for the teachers and students of the upgraded courses to find out the situation after upgrade of the selected courses (DONE)
Training seminar of teaching second round	Virtual seminar for co-teaching improvement (02-03/2024) (DONE)

WP3: International team teaching pilot program

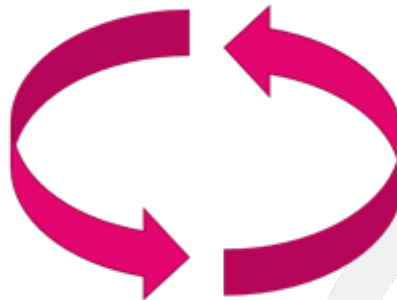
12/2022-09/2025

Aim

Develop a **PILOT PROGRAM** that promotes and implements **international team-teaching** as part of the educational process in all HEI partners for specific **engineering courses** in their curricula

Six upgraded joint courses (C1-C6)

C1 – Strength of Materials
C2 – Industrial Automation
C3 – Design Projects
C4 – Quality Assurance and Applied Methods
C5 – Computer Aided Design
C6 – Manufacturing Technology



Developed by a co-teaching team

For each of the courses (C1-C6) an international co-teaching team is created that includes **HEI course responsible teachers** and **company experts** that work together in the development of **new teaching materials** and **teaching methods**.

Course Upgrade

Cooperative teaching implementation

Analysis & Improvement

Two rounds

WP3: International team teaching pilot program

Summary of expected results

Development of an international team teaching pilot program for upgrading a number of six joint courses belonging to the HEI partners' curricula

Activity	Results
Course upgrading first round (C1-C4)	24 new course modules (2 modules/course, 8 modules/HEI) 11 new laboratory work/tailored seminars from companies (ISR:3, VALMET:4, BOSCH:4)
Cooperative teaching implementation first round at TUCN / JAMK / UJA	At each HEI: 8 course team-teaching sessions. 11 laboratory team-teaching sessions with participation of BOSCH, ISR and VALMET experts
Course upgrading second round (C5-C6)	12 new course modules (2 modules/course, 4 modules/HEI) 5 new laboratory work/tailored seminars from companies (ISR:1, VALMET:2, BOSCH:2)
Cooperative teaching implementation second round at TUCN / JAMK / UJA	At each HEI: 12 course team-teaching sessions 16 laboratory team-teaching sessions with participation of BOSCH, ISR and VALMET experts
Analyses of pilot program implementation and continuous improvement	Feedback questionnaires & reports

One Teach, One Assist

One teacher acts as the primary teacher while the other assists and supports the learners. The co-teacher assists by monitoring student work, addressing behavior issues, answering student questions, distributing materials, or asking the lead teacher to clarify any developing student misconceptions.

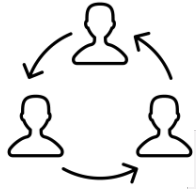


Station Teaching

Co-teachers divide their class into small groups to provide instruction at separate stations. Activities should be designed to function independently of each other and require approximately the same amount of time with student groups rotating stations. This approach reduces the student-teacher ratio, increasing student participation and effective monitoring of the students.



Sharing strenghts: Main benefits in a nutshell



- New teaching models featuring a student-centered approach in cooperation with other international institutions and companies
- Tailored training program for sustaining the skill improvement of HEIs partners
- Multidisciplinary and international cooperation
- Real life problems from industry and HEIs research groups