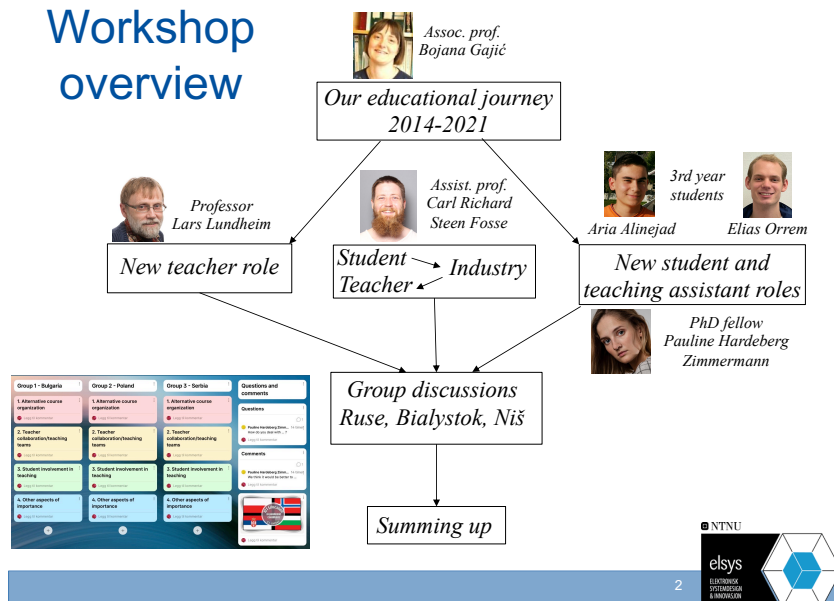# Changing the Culture of Engineering Education

1st NTNUs Workshop on Innovative Education, 25.10.2021

The document gives an overview of the workshop content with associated timeline in the video recording. Some useful links are found at the end. The workshop was organized by Department of Electronic Systems at Norwegian University of Science and Technology (NTNU) in the scope of Erasmus+ project Project ICT_EDUPAND nr 2020-1-PL01-KA226-HE-096196.

Timeline	Content (presenters)
00:00:00	Welcome and practical details
00:01:09	Workshop overview
00:03:16	**Culture of engineering education (assoc. prof. Bojana Gajić)**

- What is culture?
- (Engineering) education culture
  - brick-wall pedagogy
  - course organization and learning spaces
  - didactical contract (roles and communication patterns)

00:07:52	**Our educational journey 2014-2021 (assoc. prof. Bojana Gajić)**

1. Starting point: traditional organization except Electronics intro course
2. The Electronic Engineering Ladder: building engineering identity from day 1
3. Experience, reflection and practice (ERP) in focus
4. Redesigning methematical courses
5. Summary of the culture changing elements

00:13:25   **Teaching at University – A Personal Story (prof. Lars Lundheim)**

- My first encounter with education
- The first 20 years of teaching at university
- Introducing changes
    - 1st step: Electronic introduction course
    - 2nd step: Flipped classroom (video lectures)
        - The first hard lesson: Lectures are not very important!
    - 3rd step: Activity-based course organization
        - ERP-sessions: Experience Reflect Practice
        - Roles and interactions
            - student, teacher, learning assistants and LA leader
- Teaching in team
- Final advices
    - Do not overestimate your role (as lecturer)
    - Do not underestimate your role (as role model)
    - Join up locally and internationally (CDIO)
    - Do it your own way

00:31:22   **From student to engineer (ass. prof. Carl Richard Steen Fosse)**

How innovative education prepared me for the industry
- Collaborative environment
    - facilitating and encouraging collaboration
    - open learning spaces, long student-active sessions
- Innovation project
    - Collaboration with an external partner
- Design reports
    - Training in design, implementation and documentation
- Other important aspects
    - «Guest of the day», excursions, great teachers

00:42:53   How innovative education prepared me for teaching
- all the previous points
- how practical and theoretical knowledge are tied together
- identifying with the study programme

00:44:26   **Fundamentally Changing the Roles of the Learning Assistants**
                    (3ʳᵈ year students Aria Alinejad and Elias Orrem)

- building relationship and trust with students
    - one-to-one meetings, adapt teaching to each individual
- focus on learning, not completing – getting the right answers
- importance of collaborative working environment
- the learning assistant role
    - not to give the answers, not to evaluate
    - being a learning partner, asking reflection questions
    - changing the mindset of students
    - some tensions in the beginning until students get used to the new didactic contract, new roles, new culture)
    - central role both in teaching and course development

- weekly meetings with teachers, flat structure (no us and them, we are all in the same team working towards the same aim)
- the feeling of ownership for the course
- the choice of learning assistants
  - based on interviews, not only grades, motivation is important

00:56:50   **Introduction to Group work with Padlet**
                (PhD fellow Pauline Hardeberg Zimmermann)
                Padlet link: https://padlet.com/paulinehardeberg1/zw9sm4vokwd4ir0r
00:59:05   Summary of group discussions
- 00:59:24 Bulgaria (prof. Teodor Ilev)
- 01:02:00 Poland (prof. Jaroslaw Makal)
- 01:04:53 Serbia (prof. Goran Djordjević)
01:09:57   Concluding the workshop

Related links
- Electronic System Design and Innovation (ELSYS), 5-year master programme www.ntnu.edu/studies/mtelsys
- CDIO: www.cdio.org