An engineering curriculum or a curriculum to shape engineers? Professional identity development in engineering curricula

Motivation and learning outcomes

How do we attract more students to engineering education and how do we keep them in the engineering field after their graduation? What makes them stay in engineering? We found that their professional identity is a key concept to understand the study and career choices they make. In this workshop you will have a closer look at professional identity and the way it is developed in your degree programmes. At the end of the workshop you will be able to indicate what types of socialising experiences can be identified, what socialising experiences your students are exposed to and how these experiences shape their professional identity.

Goal

We developed an instrument to analyse curricula on professional socialisation. In the workshop, you will experience how this instrument works by analysing you own curriculum and, at the same time, help to validate the instrument for an international context. You will get insight in how your degree programme is shaping the professional identity of your students. You will reflect on the impact of the socialising experiences you organise for your students. Issues like role models, in-company experiences and reflection will be discussed in smaller groups in order to create a joint understanding of the impact of the engineering curricula on the professional identity development of students.

Background

In the Netherlands, around 40% of technical alumni leave the technical sector. When trying to understand this phenomenon, professional identity proves to be a useful concept. PI can be defined as the professional self-concept of an individual, based on attributes, beliefs, values, motives, and experiences, (Ibarra, 1999; Schein, 1999). In the project Mind the Gap!, the Career Compass was developed to understand the professional identity of STEM students and professionals. This tool was used to collect data on the professional identity of STEM students. We found five different profiles of engineering professionals that show a clear relationship with the willingness to remain or leave the technical field. The project Bridge the Gap! seeks to explore how professional identity of STEM students and professionals develops over time. First-year students are monitored to understand the development of their professional identity. Last-year students are followed while making the transition from university to the labour market. At the same time, we explore what learning experience in the engineering degree programmes shape the professional identity of the students.

Rationale

Research on the formation of professional identity acknowledges a role of the educational context, but is not explicit on how this process takes place (Trede, Macklin, & Bridges, 2012; Morelock, 2017). Nevertheless, developing a professional identity is the result of a socialisation process. Students participate in experiences – lectures, practical classes, excursions, internships, guest lectures etc. - and make a transformation that starts from their preconception/stereotype images on what it means to be an engineer or a STEM professional and then become more informed about what is formally expected from them as a professional. In a next stage, students get aware of norms, values and beliefs that are inherent to a profession or professional field and start contrasting these actively with their own mental models. In the last stage, the student has internalised norms, values and beliefs of the professional field and considers himself part of the professional group (Weidman, Twale, & Stein, 2001). Abrandt Dahlgren et al. (2006) argue that professional learning contexts help students to identify the boundaries of their own professional context and to sharpen their professional identity. Through the contact of students from other disciplinary areas, for example in multi-disciplinary projects, students become more aware of their own identity as a professional from a specific field. Engineering curricula provide, to a greater or a lesser extent, experiences that shape the professional identity of a student.

Activities

At the workshop, you will share your experiences on how students make the choice for their first job by walking through the workshop room while answering specific question on this process. After this first warming up, you will form groups and brainstorm on experiences that shape the professional identity of your students. A plenary categorisation of the identified activities, a refinement of what was found, and an analysis of your own degree programme based on this categorisation will follow.

Results

At the end of the workshop, you will have a clear(er) picture of how you can adjust the curricula of your engineering programme in such a way that you have a stronger focus on the professional identity of your engineering students and prepare them, as such, better for well-considered choices for study and career.

References

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