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Written and Oral Communication across the Engineering Curriculum

An integrated learning trajectory

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Conference Topic: Curriculum Development

Keywords: Communication skills, learning trajectory, assessment instrument, didactic training

In this article, we document our plans and efforts in an education project at the Faculty of Engineering Science at KU Leuven designed to strengthen written and oral communication skills across the engineering curriculum. To begin with, we provide an outline and critical analysis of the communication aspects in the current programme of study. In the next section, we document our plans and efforts towards developing a learning trajectory to incrementally build up written and oral communication skills. In this respect, we also describe the creation and intended implementation of an extensive assessment rubric and didactic training sessions. Finally, we will conclude and discuss and recommend future work.

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The necessity for this project stems from the current lack of systematic approach to the development of written and oral communication competences among engineering students in our Bachelor's and Master's engineering programmes. In our view, the achievement of effective writing and presentation abilities requires extensive practice and efforts throughout the engineering curriculum. Based on this premise, we have chosen to further embed and promote written and oral communication in selected project-based courses of the existing curriculum, so that skill acquisition can occur as part of the discipline-specific coursework. Taking the Problem Solving and Engineering Design module in the Bachelor's programme as a starting point, we want to expand our emphasis on written and oral communication to cover the full curriculum. Therefore, we promote written and oral communication instruction in the mandatory courses concluded in the module as well as in equivalent courses in the Master's programmes. These courses are arranged into a learning trajectory that will enable all students to acquire a more complete set of communication competencies throughout the full engineering curriculum at KU Leuven. The Master's thesis in the final year of the Master's programmes should be seen as the final project in which engineering students are enrolled.

The learning outcomes of the Master's thesis are closely related to the attainment targets of the study programme and will be used as input for the learning trajectory. These outcomes and related assessment criteria will be structured and integrated into each of the courses selected to form part of the learning trajectory. Furthermore, students are ought to attain a certain level of performance in written and oral communication in each stage of the trajectory. In short, we expect that students progress from an apprentice level in the beginning of the Bachelor's programme over a practitioner level to a master level at the end of the Master's programme. Our future work includes translating these performance levels in an extensive assessment rubric aligned with the stated learning outcomes. In support of the trajectory, we will also create guidelines and learning material as well as training for academic staff. Together, these tools will inform students how to perform in order to achieve a given grade and provide teaching staff with detailed guidance on how to assess student' achievement.

It is the ultimate goal of our education project that communication skills constitute a continuous line throughout the five-year engineering programme at our university. In bringing together all existing but disparate efforts throughout the curriculum, we wish to improve the academic and professional success of our students and to respond to the requirements of the present engineering workplace. ■