

# THE CDIO STANDARDS' AGILITY

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## OVERVIEW OF THE ROUNDTABLE

Since the start of CDIO, both the standards and the syllabus have developed over time. The syllabus has been revised and is now on version 3.0, motivated by the three external drivers sustainability, digitalization, and acceleration (Malmqvist et al., 2022). The CDIO standards have also been reviewed (Malmqvist et al., 2020). The purpose of this revision was to respond to the external developments in engineering education in order to make the CDIO framework future-proof. Therefore, the construction of optional standards (the first four being Sustainability Development, Simulation-based mathematics, Engineering Entrepreneurship, and Internationalization and Mobility) has been created to be able to add new important topics that contribute to the continuous development of the quality of engineering education.

In both modification processes, keeping the original structure of the CDIO standards framework has been a high priority, for well-argued reasons. But will the present structure continue to serve us well? From the perspective of Curriculum Agility (Brink et al, 2020), which indicates a necessary level of organisational responsiveness, dynamic contents, educational flexibility, and continuous development of all people working with/in/for engineering education, it will be interesting to rethink whether the current CDIO framework has sufficient agility with respect to responding to changing demands in our world.

## KEYWORDS

Optional Standards, Agility, CDIO Framework, Standards: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

## ACTIVITIES

We invite you to jointly explore Standards structures that may be more agile with respect to responding to changing demands. Should we reframe, regroup or relabel them? Maybe some standards should be given a different weight or priority? What is the status of an “Optional

Standard”? For instance, why is Sustainability labelled as an Optional Standard? Is sustainability really optional, or is it a prerequisite for good engineering education? Sustainability is stated to be part of Core Standard 1 “The consideration of environmental, social, and economic sustainability is an integral part throughout the lifecycle.” Should Sustainability be more explicitly stated in Core Standard 1, so CDIO becomes CDIOS – Conceive, Design, Implement, and Operate Sustainably), or should the current optional standard even be made standard ‘0’, one all CDIO members are expected to be working on? Together with Sustainability, some standards may have a more overarching character of importance to the quality of all higher education, not limited to engineering education quality. Should such standards be a separate category of standards? Also, some of the other Optional Standards can be argued to be more about how to integrate specific competencies into the CDIO Syllabus.

Join us in an open, explorative discussion at this roundtable about the framing of the CDIO standards in line with the latest developments in engineering education and society. Your contributions will help to form another perspective of the CDIO Standards.

## **TARGET AUDIENCE**

All CDIO members who work with the standards, or have done so in the past, have enough pre-knowledge to take part in the discussion.

## **FOLLOW-UPS**

This discussion may continue in future meetings and conferences at CDIO, amongst members and the council.

## **REFERENCES**

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## BIOGRAPHICAL INFORMATION

**Suzanne Brink** is an associate professor in Higher Education Pedagogics at Umeå University and does her doctoral research at ICLON, Leiden University. She has an interdisciplinary background in Industrial Design Engineering and Educational Sciences and twenty years of experience in pedagogic leadership in higher education. She is a Distinguished Teacher (Excellent Lärare). Her research currently focuses on design thinking Curriculum Innovation in engineering and design education, Curriculum Agility, and Curriculum Perspectives in co-creation of education. She serves as European Regional Co-Leader for CDIO.

**Sonia Gomez Puente** (PhD) is Strategic Advisor in Innovations in Teaching and Learning at the General Academics Affairs department at the Eindhoven University of Technology (TU/e). Her research focus is in innovations in engineering education; Design-based learning (DBL)/Challenge-based learning (CBL) and PBL-alike active learning methods, blended-learning, pedagogy in engineering education, and self-directed learning. Sonia has broad experience in instructional design, active methods in teaching and learning, professionalization and coaching of teachers, and, development of training and educational programs.

**Elizabeth Keller** is a lecturer at the Department of Learning in Engineering Sciences at KTH Royal Institute of Technology, Stockholm. She has been involved in pedagogical development of young engineering faculty. In addition, her interests involve intercultural communication and the use of digital tools in higher education.

**Reidar Lyng** is Associate Professor at The Dept. of Physics at NTNU, and Expert in Educational Development with the Centre for Science and Engineering Education Development (SEED) at NTNU in Trondheim. He holds an MSc degree in Chemical Engineering and a PhD degree in Physical Chemistry. He has more than 30 years' experience of education development from NTNU and several Swedish universities. His research and development interests are wide ranging and include the systemic interplay between teachers, students, and learning spaces. Reidar is a regional co-leader for the EU within CDIO.

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