CDIO Introductory Programme

Session 2

Using the CDIO Standards in Educational Development

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INTRODUCTION SESSIONS

Overview of the CDIO Introduction Sessions

Day 1 (Monday)

Session 1

Impact and Benefits of CDIO Approach to Engineering Education, introduces the CDIO initiative, clarifying its purpose, scope, and key resources. Participants gain an overview of how CDIO can enhance programmes and student learning through practical examples and case studies.

Day 1 (Monday)

Session 2

Using the CDIO Standards in Education Development, explores the CDIO Standards as a framework for curriculum design and evaluation. Participants learn to interpret and apply the standards to their teaching practices.

Day 1 (Monday)

Session 3

Using the CDIO Syllabus in Education Development, focuses on the structure and application of the CDIO Syllabus in curriculum planning. Participants practise linking syllabus elements to their course design and educational development initiatives.

Day 3 (Wednesday)

Session 4

CDIO Collaboration and Community, highlights strategies for adopting CDIO, including implementation timelines and early success tips. Emphasises collaboration within the CDIO community and the benefits of shared practices and continuous development.

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Introductory Programme
Objectives of Sessions

Impact and Benefits of CDIO Approach to Engineering Education	Using the CDIO Standards in Education Development	Using the CDIO Syllabus in Education Development	CDIO Collaboration and Community
• Participants will be able to explain the overarching purpose of CDIO Initiative • Participants will be able to describe how their programme and students might benefit from CDIO	• Participants will be able to explain the holistic nature and purpose of the CDIO Standards • Participants will be able to interpret and apply the CDIO Standards • Participants will be able to understand to what extent their current practice is similar to the CDIO Approach	• Participants will be able to explain the nature and purpose of the CDIO Syllabus • Participants will be able to understand how the CDIO Syllabus is organised and can be applied • Participants will be able to define connections between syllabus and their own educational designs	• Participants will be able to describe the nature of collaborative activities in CDIO and the associated benefits • Participants will be able to devise a broad timeline for their own adoption of CDIO

Session 1: Impact and Benefits of CDIO Approach to Engineering Education

Session 2: Using the CDIO Standards in Educational Development

Session 3 : Using the CDIO Syllabus in Educational Development

Session 4: CDIO Collaboration and Community

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Workshop Outline

5 min	Introduction
10 min	The CDIO Standards
30 min	Exploring the CDIO Standards
10 min	Working with the rubrics
30 min	Exploring using the rubrics
5 min	Wrap-up

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What are the CDIO standards?

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The CDIO Standards

Keeping track of developing your engineering education

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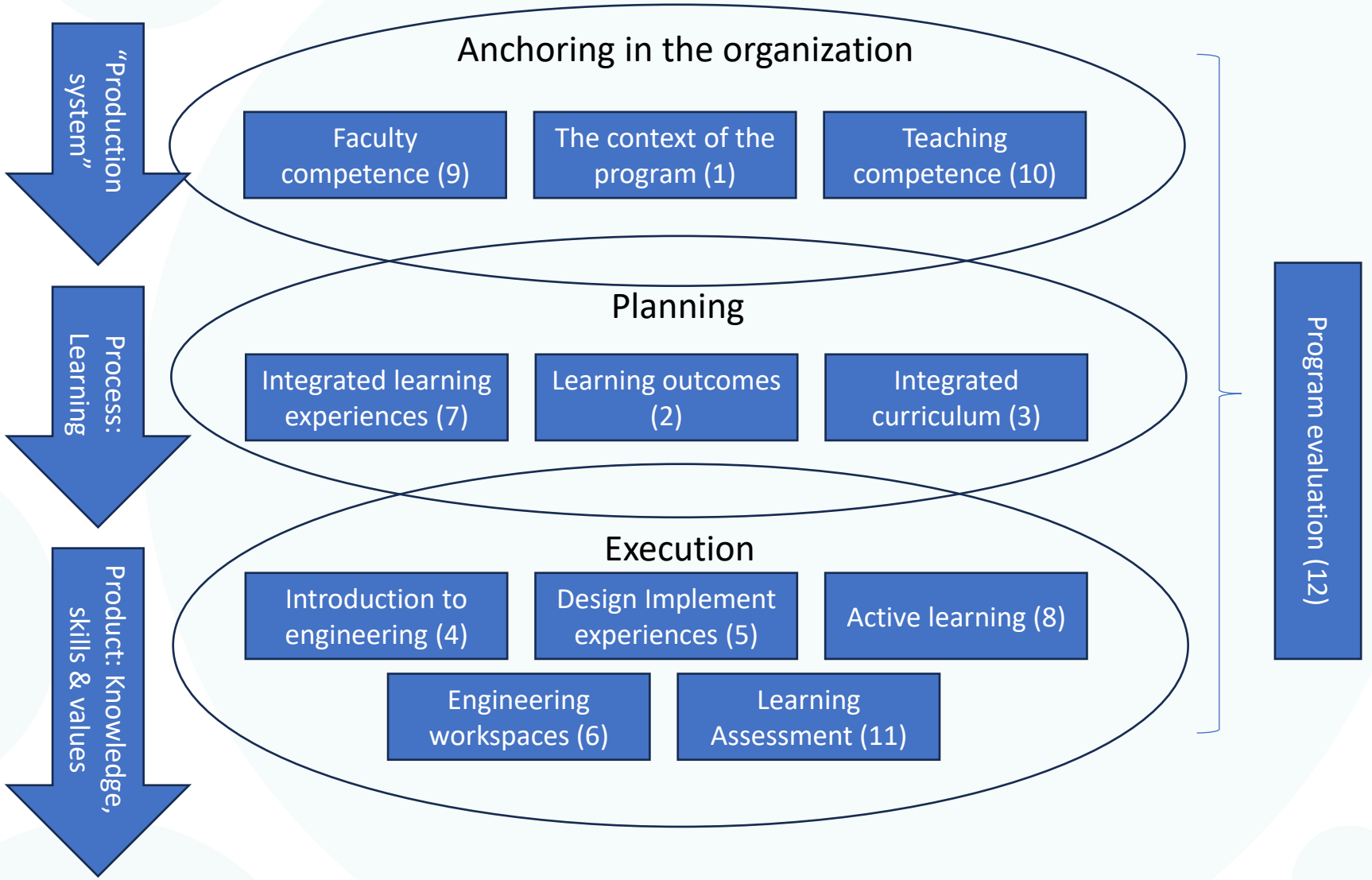
Standards - overview



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Standard of the standards

A standard is described by

- A name and number
- Short description
- Detailed description
- Rationale
- Rubric

Standard 8: Active Learning

Teaching and learning based on active and experiential learning methods.

Description

Active learning methods engage students directly in thinking and problem-solving activities. There is less emphasis on passive transmission of information, and more on engaging students manipulating, analyzing, evaluating and applying ideas. Active learning in lecture-based courses can include such methods as a partner and small-group discussions, demonstrations, debates, concept questions, and feedback from students about what they are learning. Active learning is considered experiential when students take on roles that simulate professional engineering practice, for example, design-implement projects, simulations, and case studies.

Rationale

By engaging students in thinking about concepts, particularly new ideas, and requiring them to make an overt response, students not only learn more, they recognize for themselves what and how they learn. This process aims to increase students' motivation to achieve program learning outcomes and form habits of lifelong learning. With active learning methods, instructors can help students make connections among key concepts and facilitate the application of this knowledge to new settings.

Rubric for self-assessment

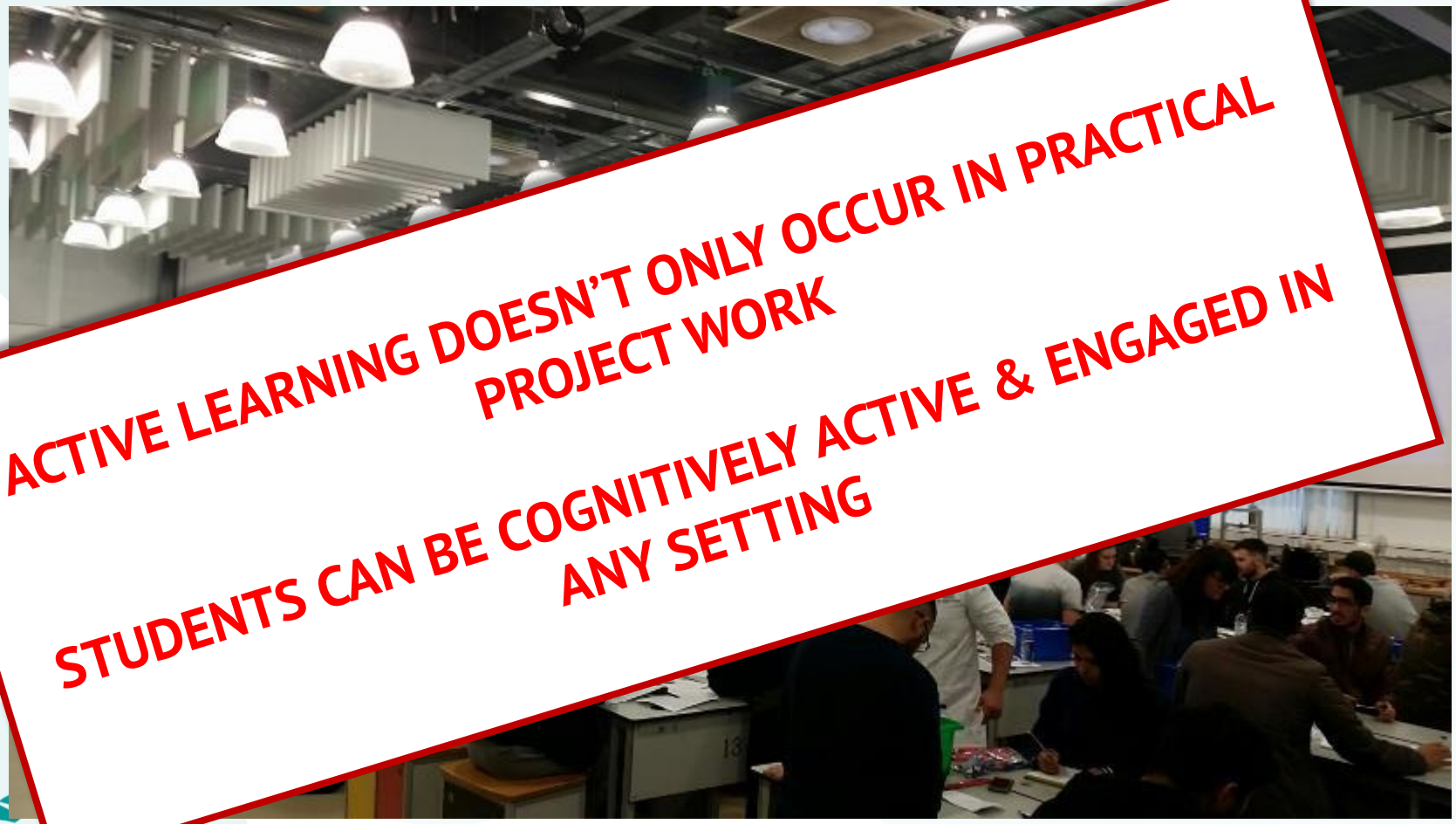
5	Internal and/or external groups regularly review active learning activities on outcome-based learning across the curricula and make recommendations for continuous improvement.
4	There is documented evidence that the CDIO principle is the context of the engineering program and is fully implemented.
3	Active learning methods are being implemented across the curriculum.
2	There is a plan and process to include active learning methods in courses across the curriculum.
1	There is an awareness of the benefits of active learning and it is encouraged to introduce it across the curricula.
0	There is no evidence of active experiential learning methods.

CDIO Standard 8: Active Learning

Teaching and learning is based on active and experiential learning methods

- **Engage** students directly in thinking and problem solving
- **Help** students recognize what and how they learn
- **Increase** student learning motivation
- **Help** students form habits of lifelong learning

University of Liverpool, UK, Engineering Active Learning Laboratory



ACTIVE LEARNING DOESN'T ONLY OCCUR IN PRACTICAL PROJECT WORK

STUDENTS CAN BE COGNITIVELY ACTIVE & ENGAGED IN ANY SETTING

Active Learning

120 1st year Mechanical Engineering students

Sem1 Introductory Design-Build-Test project: ***Dragster Racing***

Active vs Experiential Learning

ACTIVE LEARNING

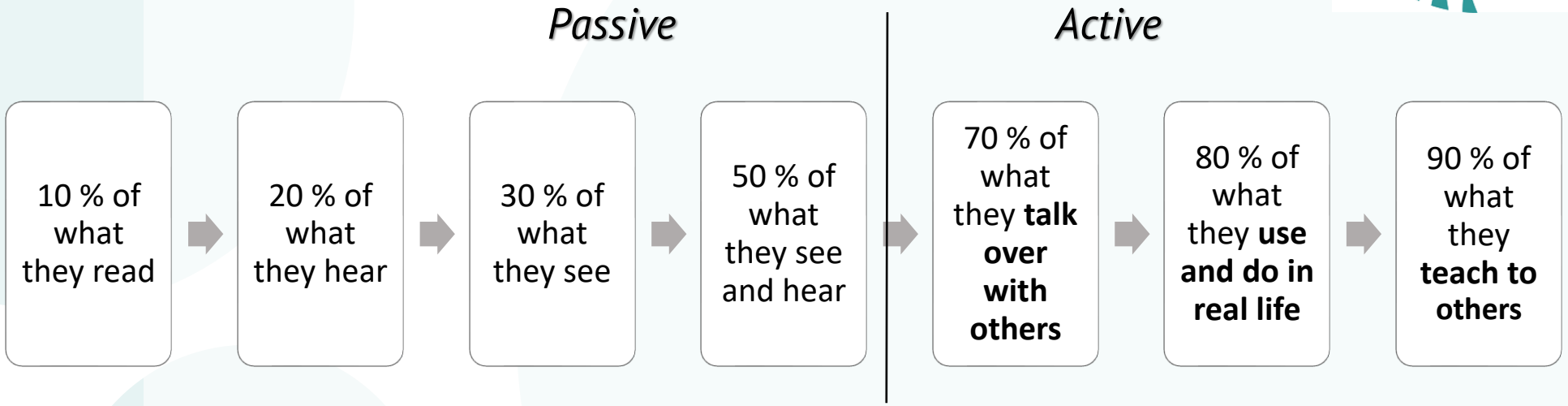
- **Engages** students directly in **thinking** and **problem-solving activities**
- Emphasis on engaging students in manipulating, applying, analyzing, and evaluating ideas
- Examples:
  - Pair-and-Share
  - Group discussions
  - Recitation / Ticking
  - Concept questions

EXPERIENTIAL LEARNING

- **Active learning in which students take on roles that follow professional practice**
- **Examples:**
  - Design-implement experiences
  - Problem-based learning
  - Project-based learning
  - Challenge-based learning
  - Simulations
  - Case studies

The ”learning pyramid” suggests that most people learn _____ % of what they explain to someone else?

Towards effective & efficient learning….



The 2 key factors that underpin effective learning are

- **the learner activity**
- **interaction with others**

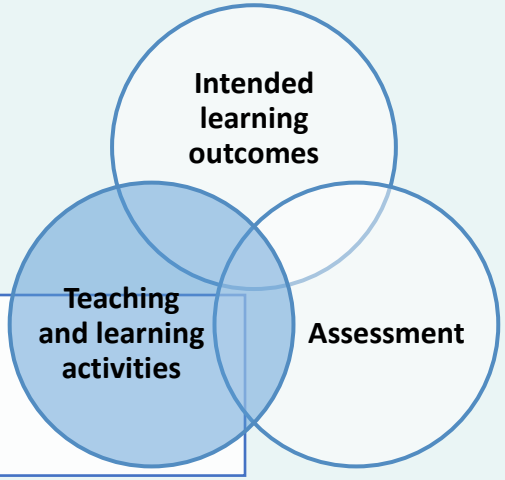
Gibbs, G. (1992) Improving the Quality of Student Learning. Bristol, UK: Technical and Educational Services

Several studies have shown that there is strong correlation between

- **extent of activity** and
- **efficiency of learning**

Biggs, J. (1999) Teaching for Quality Learning at University (pp. 165-203). Buckingham, UK: SRHE and Open University Press.

Teaching and Learning Activity:
Learn CDIO standards with Jigsaw method



Why?

- Provide you deeper understanding of the standards

What?

- Learn three CDIO standards **(2, 5, 7)**
- Maybe think about a preliminary self-evaluation on each standard

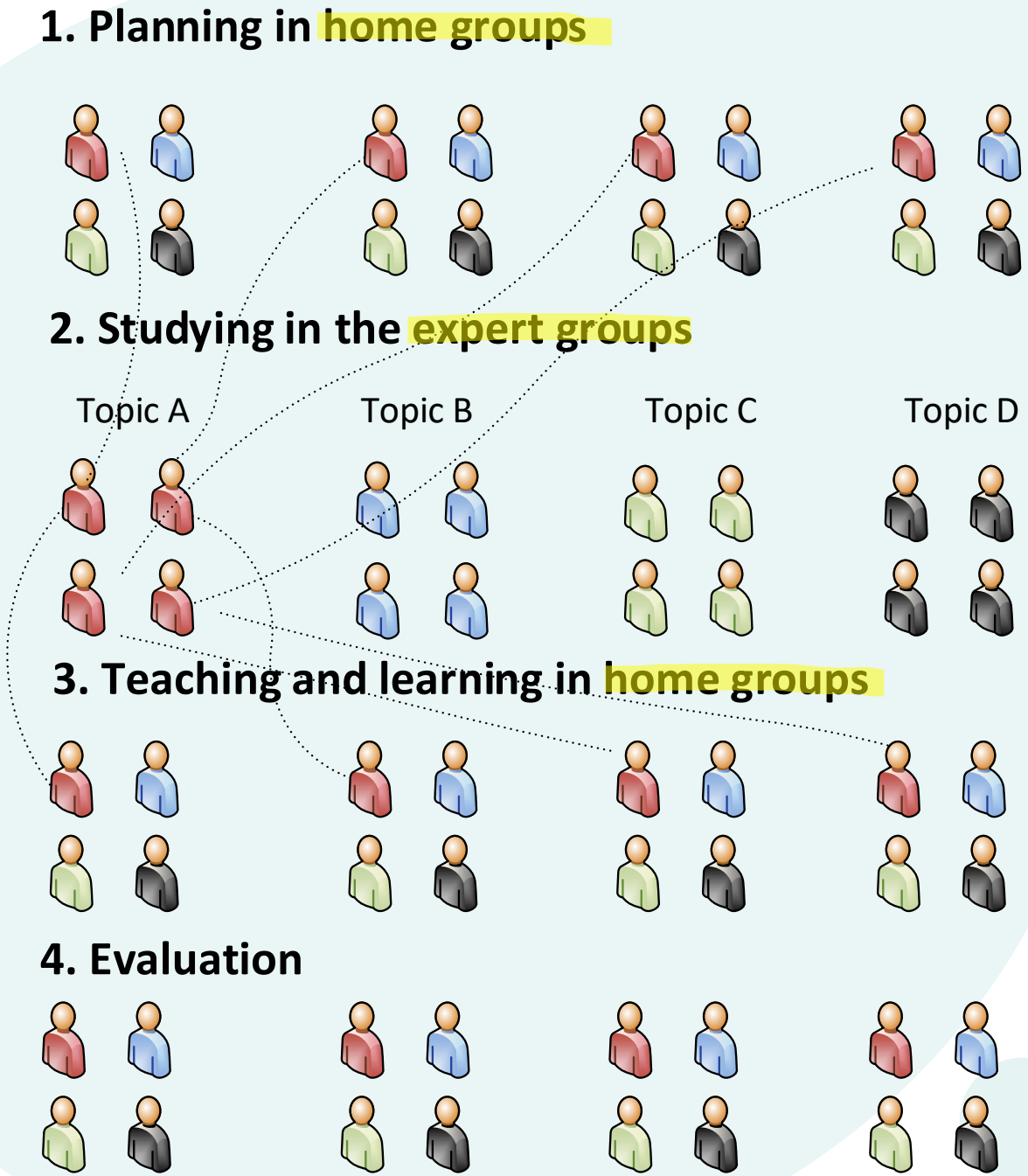
How?

- Active learning with the **Jigsaw** method
- You will be "**expert**" on one of the standards and teach that to the others

You need

- **Standards v. 3.0** from www.cdio.org → Knowledge library → CDIO Standards 3.0
- We have printed the ones we use for you

How the Jigsaw method works (ideal case with 4 topics to learn)



Group Activity: Phase 1 – Home groups

- Let's make Home Groups of 3 persons (suggestion: someone new to you)
- Get to know the people in your group – you are a learning team now!

- For each group → learning resources: 3 standard definitions (2, 5, 7)

- Within the group each person selects just one standard and studies that independently
  - Every member of the group has a different standards to study
  - This phase is for individual studying

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5 minutes

Group Activity: Phase 2 – Expert groups

- **People with same standard join together and form Expert Groups**
- **Get to know the people in your expert group!**

To Do:

- **Discuss what you have learned and identify/agree the main points**
- **Consider how you would explain/teach the standard to others (you will be doing this in Phase 3 to your home group)**
  - Flip chart available
- **Take some notes to help you later when explaining/teaching your *Home Group***

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10 minutes

Group Activity: Phase 3 – Home group

- **Go back to your Home Group**

- **Share your new knowledge**
  - Explain/teach each other the standard you have learned
  - Use your notes and experiences of your expert group to support your teaching
  - 3 standards to learn *as a group*!

15 minutes

JIGSAW Classroom

You've all learnt some stuff but we haven't ***"taught"*** you anything

A cooperative learning approach in which:

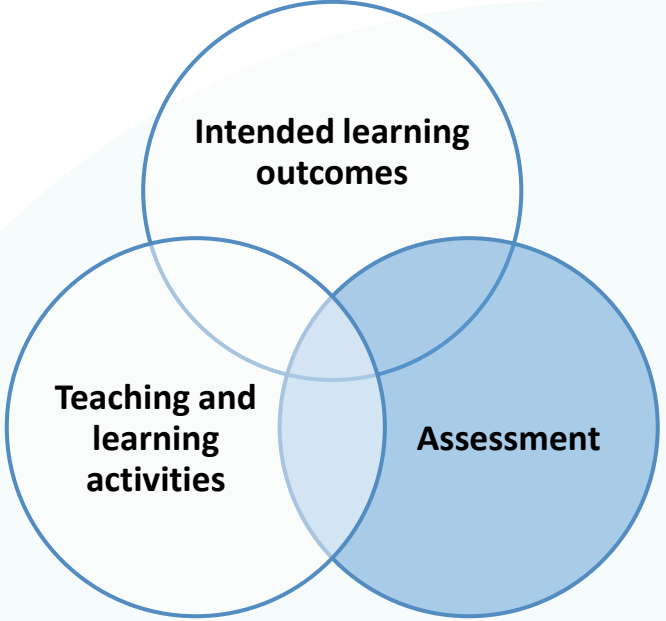
- Instructor facilitates student learning
- The students form 'learning teams' in which they teach themselves and each other

A 'learning contract' is formed between team members

- Students are motivated to take responsibility for their own, and each other's, learning
- Enhances student engagement with material
- Facilitates interaction between students
- Develops communication and teamwork skills

An efficient way to cover content

Assessing the Learning in Jigsaw



Because

- the role of the instructor is not to lecture but is to facilitate student learning and
- students teach themselves and each other

Then

- the instructor must check that appropriate student learning has occurred (with respect to intended learning outcomes)

How might instructors check for understanding?

Assessing your learning

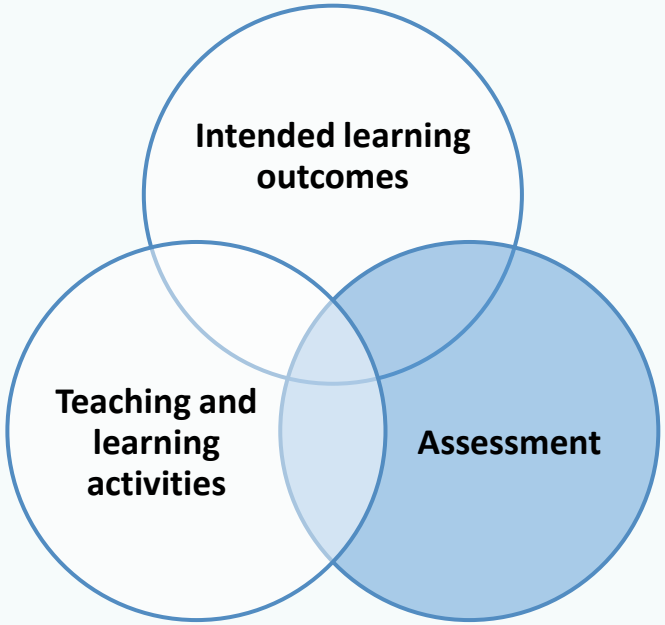
1. How many standards there are altogether in CDIO?

2. Which CDIO Standard helps us to design programmes that deliver appropriate graduate knowledge, skills and attitudes?

3. Which CDIO Standard helps us make more effective use of student learning time to deliver the expected programme outcomes?

4. Which CDIO Standard helps us replicate engineering practice to help our students develop vital professional skills?

Assessing the Learning in Jigsaw



Let's see the results of the quiz!

And remember:

- What's behind a high score!
- Learning pyramid – students retain 90% of what they teach to someone else

Correct answers

1. How many standards there are altogether in CDIO? → 12 or more than 12

2. Which CDIO Standard helps us to design programmes that deliver appropriate graduate knowledge, skills and attitudes? → 2

3. Which CDIO Standard helps us make more effective use of student learning time to deliver the expected programme outcomes? → 7

4. Which CDIO Standard helps us replicate engineering practice to help our students develop vital professional skills? → 5

Standards

Standard 1 — The Context*

Adoption of the principle that product, process, and system lifecycle development and deployment - Conceiving, Designing, Implementing and Operating - are the context for engineering education

Standard 2 — Learning Outcomes

Specific, detailed learning outcomes for personal and interpersonal skills, and product, process, and system building skills, as well as disciplinary knowledge, consistent with program goals and validated by program stakeholders

Standard 3 — Integrated Curriculum

A curriculum designed with mutually supporting disciplinary courses, with an explicit plan to integrate personal and interpersonal skills, and product, process, and system building skills

Standard 4 — Introduction to Engineering

An introductory course that provides the framework for engineering practice in product, process, and system building, and introduces essential personal and interpersonal skills

CDIO Standard 4 - Introduction to Engineering

An introductory course that provides the framework for engineering practice in product, process, system, and service building, and introduces essential personal and interpersonal skills and the rationale of sustainability in the context of engineering

Examples of topics:

1. Roles and responsibilities of an engineer
2. Challenges faced by engineering industries
3. Basic engineering calculations
4. Engineering products / processes / systems
5. Professional code of conducts

CDIO Standard 4 - Introduction to Engineering
CDIO Standard 5 – Design-Implement Experiences

Example: **Water Filter Challenge**

Task Scenario

You are working in a project team, to build a water filter kit, for a non-profit organisation named "Safe Water for the World".

The organisation intended to develop a filter kit that is effective yet environmental friendly.

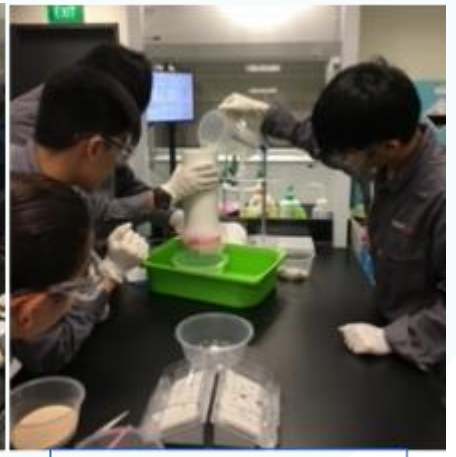
The kit uses raw materials that are naturally available and it is targeted for villages in rural areas of developing countries.

The task for you and your team is to build an effective water filter within budget and on schedule.

Filter design

Different filter materials

Assembling Filter



Testing Fabricated Filter

CDIO Standard 4 - Introduction to Engineering
CDIO Standard 5 – Design-Implement Experiences

Example: **Water Filter Challenge**

- Teamwork & collaboration: Task distribution & communication

→ Real-world engineering practice

- Time and budget constraints

→ Simulated professional environment

- Design-Implement Experiences: Autonomous learning, problem-solving

→ Professional skills development

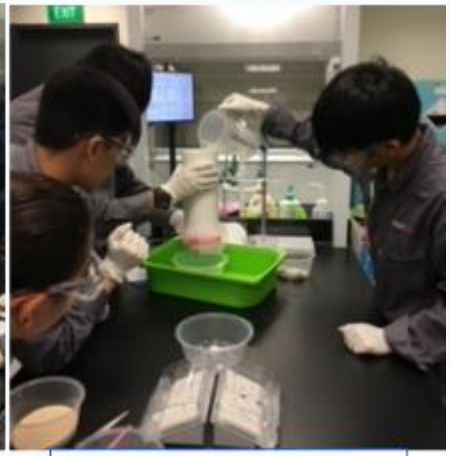
- Learning from failure: Develop resilience and creativity

→ Professional and personal development

Filter design

Different filter materials

Assembling Filter



Testing Fabricated Filter

Standards

Standard 5 — Design-Implement Experiences*

A curriculum that includes two or more design-implement experiences, including one at a basic level and one at an advanced level

Standard 6 — Engineering Workspaces

Engineering workspaces and laboratories that support and encourage hands-on learning of product, process, and system building, disciplinary knowledge, and social learning

Standard 7 — Integrated Learning Experiences*

Integrated learning experiences that lead to the acquisition of disciplinary knowledge, as well as personal and interpersonal skills, and product, process, and system building skills

Standard 8 — Active Learning

Teaching and learning based on active experiential learning methods

Standard 6: Engineering workspaces

- prototype shop
- 3D printers
- (digital) simulation tools
- 24/7 accessible lab
- multipurpose flat room
- EXTRA EXAMPLES

Who of you have good examples of one of these?

Standards

Standard 9 — Enhancement of Faculty Competence*

Actions that enhance faculty competence in personal and interpersonal skills, and product, process, and system building skills

Standard 10 — Enhancement of Faculty Teaching Competence

Actions that enhance faculty competence in providing integrated learning experiences, in using active experiential learning methods, and in assessing student learning

Standard 11 — Learning Assessment

Assessment of student learning in personal and interpersonal skills, and product, process, and system building skills, as well as in disciplinary knowledge

Standard 12 — Program Evaluation

A system that evaluates programs against these twelve standards, and provides feedback to students, faculty, and other stakeholders for the purposes of continuous improvement

Optional Standards

1. **Sustainable Development**
2. **Simulation-based Mathematics**
3. **Engineering entrepreneurship**
4. **Internationalization & Mobility**

- Student Engagement/Ownership
- Research-Integrated Education
- Workplace & community integration/learning
- Industry Enagagement
- Curriculum Agility

Optional Standard 3: Engineering entrepreneurship

Engineering programs that actively prepare graduates for creating technology-based business ventures, in order to produce economic and other values for society.

Description

A curriculum that is permeated with entrepreneurial learning experiences, tailored to the relevant learning goals as defined in Standard 2. Entrepreneurial competence is developed through entrepreneurship learning activities (e.g. by students performing value creation projects in the community), by learning about entrepreneurship (e.g., marketing, intellectual property rights), by learning in entrepreneurial settings (e.g., student incubators or student-run companies) and learning for entrepreneurship (e.g. business model creation tools). The learning experiences are supported by appropriate learning environments, for example various kinds of maker spaces, and by staff with entrepreneurial competence. Throughout the curriculum, projects can be made increasingly authentic and realistic. They can allow students to make real-world connections and interacting with stakeholders. Some projects may involve co-creating solutions with clients or users. Valuable learning occurs not only through the hands-on activities, but also when the students reflect on their experiences, including their processes and methods, successes and setbacks. This is furthered by teacher-facilitated opportunities for reflection.

Rationale

The role of engineers has broadened from designing and implementing technical solutions to also forming business ventures based on technological innovations, thereby creating value for society. Startups are increasingly based on ideas developed by students during their studies, or on ideas and intellectual property owned by university researchers that students further develop and commercialize. The needed competences include for example opportunity identification, business planning, intellectual property rights, company financing and marketing. Entrepreneurial learning activities can be designed to address not only students' abilities in relation to venturing, but also, simultaneously, many learning outcomes that are broadly desired in all engineering programs, such as personal and interpersonal skills, and other engineering skills.

Rubric for self-assessment

5	The entrepreneurial learning experiences are regularly evaluated and revised, based on feedback from students, instructors, and other stakeholders.
4	There is documented evidence that students have achieved the intended learning outcomes of the entrepreneurial learning experiences.
3	At least two design-implement experiences of increasing complexity are being implemented.
2	There is a plan to develop entrepreneurial learning experiences at basic and advanced level.
1	A needs analysis has been conducted to identify opportunities to include entrepreneurial experiences in the curriculum.
0	There are no entrepreneurial learning experiences in the engineering program.

Working with the Rubrics

Self-reflection and assessment

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Scoring ”the CDIO way”

5. Yes, and the process is evaluated and adjusted regularly

4. Yes, and there is evidence of structural implementation

3. Yes, initiative has been taken at least incidentally

2. Almost, there is an action plan

1. Not yet, but there is awareness

0. No, not considered yet, not applicable, not wanted, not possible

picture generated by perplexity.ai

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Exploring the CDIO Standard Rubrics

In the **expert** groups

Individually: Fill in the rubric and reflect on why you'd give that score. Would others in your organisation give another score? Find "evidence" for the score (good examples to share)

1. Discuss your scores and the argumentation behind it with each other

Exploring the CDIO Standard Rubrics

In the **home** groups

1. Explain your score and the argumentation behind it with each other
2. Discuss how often you would want to fill in the rubrics at your home organisation and with whom you would do that to follow progression?

A typical sequence of activities in adoption of CDIO in Curricular & Pedagogic Reform

1. Determine the focus of your education development project	Are you going to develop your teaching activity at institutional, school, programme, or course level?
2. Adopt CDIO as the context for your engineering education	(see CDIO Standard 1 – CDIO as Context) Secure agreement and support from leadership at appropriate level Bring those involved in development and delivery on board
3. Specify the learner outcomes for the educational activity under development	(see CDIO Standard 2 – Learning Outcomes) Refer to CDIO Syllabus; local / national standards; accreditation requirements; School strategies; employer feedback etc.
4. Review the existing education activity to define the priorities for development	Benchmark your existing activity in three thematic areas: CURRICULUM; WORKSPACES; LEARNING, TEACHING & ASSESSMENT Refer to CDIO Standards 3-8 and 11 – evaluate your current practice against the self-assessment rubrics This will help you identify areas for development and enhancement
5. Complete, implement and evaluate your education development	Use the CDIO Standards 3-18 and 11, the knowledge base and collaborator support to guide and inform your work Refer to CDIO Standard 12 as you evaluate your development and plan further iterations

Adopt CDIO as the context for engineering education.
1. CDIO as Context

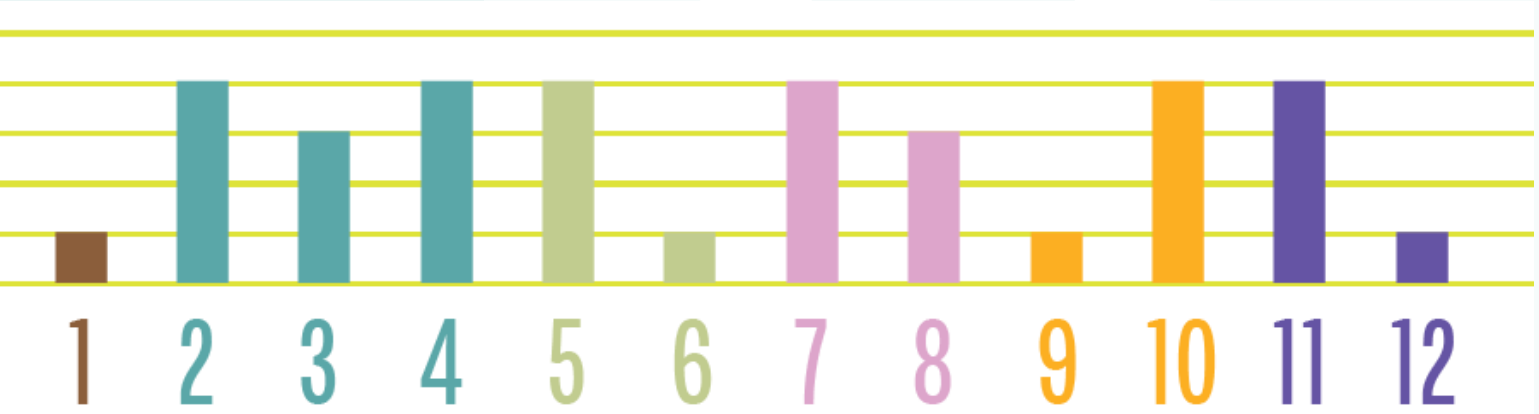
Determine the intended learning outcomes for the educational activity
2. Learning Outcomes

Develop & evaluate new approaches

Curriculum	Workspaces	Learning, Teaching & Assessment	Evaluation & Iterative Development
3. Integrated Curriculum 4. Intro to Engineering	6. CDIO Workspaces	5. Design-Build-Test Experiences 7. Integrated Learning Experiences 8. Active Learning 11. Learning Assessment	12. Programme Evaluation
• Review existing curriculum, pedagogy and learner activities with reference to the CDIO Standards & Self-assessment Rubrics • Draw on CDIO resources, knowledge base and collaboration to inform your development			• Implement and evaluate your new approach • Plan further development

Improve your engineering education by establishing / strengthening efforts in:
9. Enhancement of Faculty Competence & 10. Enhancement of Faculty Teaching Competence

CDIO self evaluation



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Value:

Positioning in regards to engineering internationalisation

Prioroty standards: 1,6,9

Rubric for self-assessment

5	Evaluation groups recognize that CDIO is the context of the engineering program and use this principle as a guide for continuous improvement.
4	There is documented evidence that the CDIO principle is the context of the engineering program and is fully implemented.
3	CDIO is implemented in one or more years of the program.
2	There is an explicit plan to transition to a CDIO context for the engineering program.
1	There is a willingness to adopt to a CDIO context for the engineering program.
0	There is no plan to adopt the principle that CDIO is the context of engineering education for the program.

Section 4: ***Joining CDIO as a Collaborating School***

Get to Know CDIO

The CDIO website has a range of resources that will help you to get started:

- History and philosophy of the CDIO Initiative
- Database of CDIO conference papers, free to access
- Calendar of upcoming events
- Contacts for regional leaders and collaborator leads

Get Involved

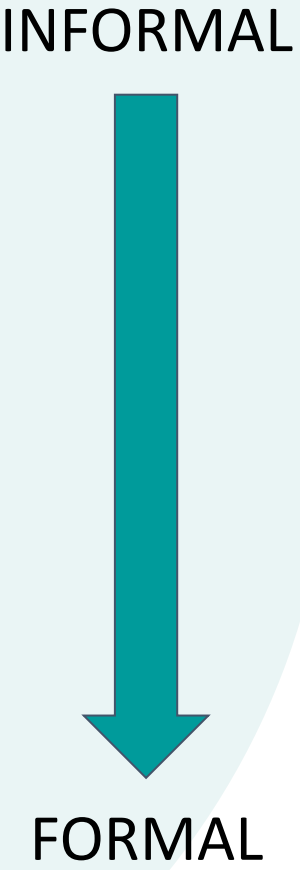
- Attend one of the meetings/conferences described above. You don't have to be a member to attend
- Use the website contact list to reach out to someone local- Just say hello and introduce yourself
- Arrange a visit to an existing, local collaborator to see CDIO in action – via Regional Group

Self Evaluation

- Benchmark against the rubrics in each Standard. Where are you now – where might you be in 2 years?
- Development ambition is most important; no one will be scoring 4s and 5s across the board.

Formal Application

- Formally state interest with CDIO Office to receive application form.
- Submit application to be reviewed by Regional Group before presenting your case at a CDIO meeting.
- Region will make a recommendation to CDIO Council. Upon acceptance you will receive a welcome letter from CDIO office.



Optional Standard 1: Sustainable development

A program that identifies the ability to contribute to a sustainable development as a key competence of its graduates. The program is rich with sustainability learning experiences, developing the knowledge, skills and attitudes required to address sustainability challenges.

Description
The program emphasizes environment
principles as the context for engineeri
attitudes, are explicitly addressed in pr
development are integrated in several
combination with specific sustainabilit
limitations of science and technology
early stage of the education (Standard
apply and contextualize sustainability
technology and in the reuse, redesign,
and digital learning environments enal
interaction with various external stake
with the learning of disciplinary knowl
service building skills (Standard 7). Act
key competences for sustainability (Sta
related teaching competences is active
sustainability related learning outcome
development is evaluated by students,
UN and other frameworks (Standard 1

Rationale
To address the issues of sustainability
implications of technology on social, e
appropriate technical solutions in colla

Rubric for self-assessment

5	Sustainable development is fully integrated in accordance with the description in the optional CDIO standard for

"A program that identifies the ability to contribute to a sustainable development as a key competence of its graduates.

The program is rich with sustainability learning experiences, developing the knowledge, skills and attitudes required to address sustainability challenges."

Sustainable development

A program that identifies the ability to contribute to a sustainable development as a key competence of its graduates. The program is rich with sustainability learning experiences, developing the knowledge, skills and attitudes required to address sustainability challenges.

1	The program emphasizes environmental, social and economic sustainability in the adoption of the CDIO principles as the context for engineering education
2	Sustainability related knowledge, skills and attitudes, are explicitly addressed in program goals and learning outcomes
3	Aspects of sustainable development are integrated into several mutually supporting disciplinary courses and projects, possibly in combination with specific sustainability courses
4	Concepts of sustainability, potentials and limitations of science and technology and related roles and responsibilities of engineers, are established at an early stage of the education
5	Design-implement experiences provide students with opportunities to apply and contextualize sustainability knowledge, skills and attitudes, both in the development of new technology and in the reuse, redesign, recycling, retirement, etc., of existing technology
6	Physical and digital learning environments enable interdisciplinary and transdisciplinary collaborative learning and interaction with various external stakeholders
7	Sustainability learning experiences are integrated with the learning of disciplinary knowledge, personal and interpersonal skills, and product, process, system and service building skills
8	Active experiential and transformative learning activities develop students' key competences for sustainability
9 & 10	Enhancement of faculty competencies for sustainability and related teaching competences is actively promoted
11	Approaches appropriate for assessing sustainability-related learning outcomes are implemented
12	The integration of sustainable development is evaluated by students, faculty, industry and societal stakeholders, and in relation to relevant UN and other frameworks

Rubrics – How would your own program score?

0 – There are no sustainable development learning experiences in the program.

1 – Minor sustainable development learning experiences are implemented in at least one course and needs and opportunities for extended integration of sustainable development have been identified.

2 – At least two sustainable development learning experiences, where at least one is substantial, are implemented and there is a plan for extended integration of sustainable development.

3 – There are explicit program goals and intended learning outcomes considering knowledge as well as skills related to environmental, social, and economic sustainability and students learning towards these goals and outcomes are supported by at least four sustainable development learning experiences, where at least two are substantial, including an introduction early in the program.

4 – The integration of sustainable development is pervasive, well adapted to the program context, promoting progression of knowledge, skills, attitudes, and key competencies for sustainability, and there is documented evidence that students have achieved the related intended learning outcomes.

5 – Sustainable development is fully integrated in accordance with the description in the optional CDIO standard for sustainable development.

In 2020, KTH tested it by evaluating 100 programs

You can see that some programmes had really low scores!

It was done when the CDIO Standard for Sustainable Development was still new

Program	Level (0-5)
A	3
B	3
C	2
D	2
E	1
F	2
G	1
H	2
I	2
J	1
K	1
L	3
M	2
N	1
O	1

Rosén, A., Hermansson, H., Finnveden, G. & Edström, K. (2021) Experiences from applying the CDIO standard for sustainable development in institution-wide program evaluations. In *Proceedings of the 17th International CDIO Conference*, CDIO 2021.

Definitions that helped KTH evaluate the programs

What counts as a minor sustainable development (SD) learning experience?

- It is typically a small SD related module, with related learning outcomes and assessment, integrated in a core engineering course or in a program introductory course
- Corresponding to about one ECTS credit.

What counts as a substantial SD learning experience?

- A course that is more or less completely dedicated to SD
- Or extensive integration of SD in a core engineering course in terms of several intended learning outcomes and related learning activities and assessment
- Corresponding to several ECTS credits.

Rosén, A., Hermansson, H., Finnveden, G. & Edström, K. (2021) Experiences from applying the CDIO standard for sustainable development in institution-wide program evaluations. In *Proceedings of the 17th International CDIO Conference*, CDIO 2021.

The evaluation helped KTH to see opportunities for integrating sustainability

Much variation between programmes

- In 2020, 25% of Master programs did not address sustainability
- PhD education had just started addressing this

From "learning about" to also "learning to do"

- Learning objectives related to sustainability often only address knowledge & understanding, values & attitudes ("know", "describe", "explain", "reason about", "define", "discuss", "reflect on").
- More focus was needed on skills and abilities, e.g. to be able to develop and design sustainable products, processes, systems and services.

Sustainability needed to be implemented *across the whole* curriculum

- Early introduction
- Progression through the curriculum

Address *social* sustainability

- Environmental sustainability was often the only perspective

Hermansson & Rosén (2021) KTH:s hållbarhetsmål för utbildning: Uppföljning av målperioden 2016-2020. Rapport. KTH.

KTH Sustainability objectives and measures for education 2021-2025

The university-wide objectives are defined as levels for the CDIO Standard:

- All Bachelor and Master in Engineering programmes, including the Architecture programme, have reached at least level 3 in the CDIO standards for sustainable development.
- All master's and doctoral programs have reached at least level 2 in the CDIO standards for sustainable development.

This policy was a direct result of the evaluation!

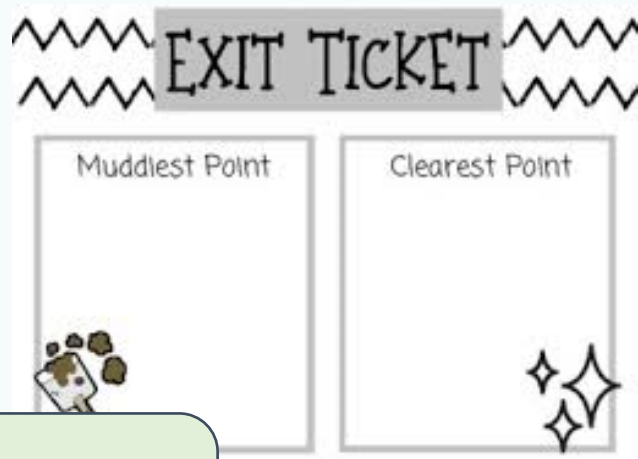
It showed that the CDIO Standard for Sustainable Development could help operationalise the ambition level.

Conditions

We need teachers with

1. sufficient pedagogical competence,
2. sufficient sustainability competence,
3. sufficient space for action,
4. sufficient capacity for coordination across the curriculum, and
5. sufficient motivation / incentives

Wrapping up with Muddy Cards



Please give us feedback on today's session

On a GREEN post-it....

Write down the most valuable thing you gained from today's session.

On a YELLOW post-it....

Write down the thing that could be improved in the session.

Stick them on the wall on the way out.

cdio™ INTRODUCTION SESSIONS

Thank you!