

| Skills for Sustainability

Continuing the work together

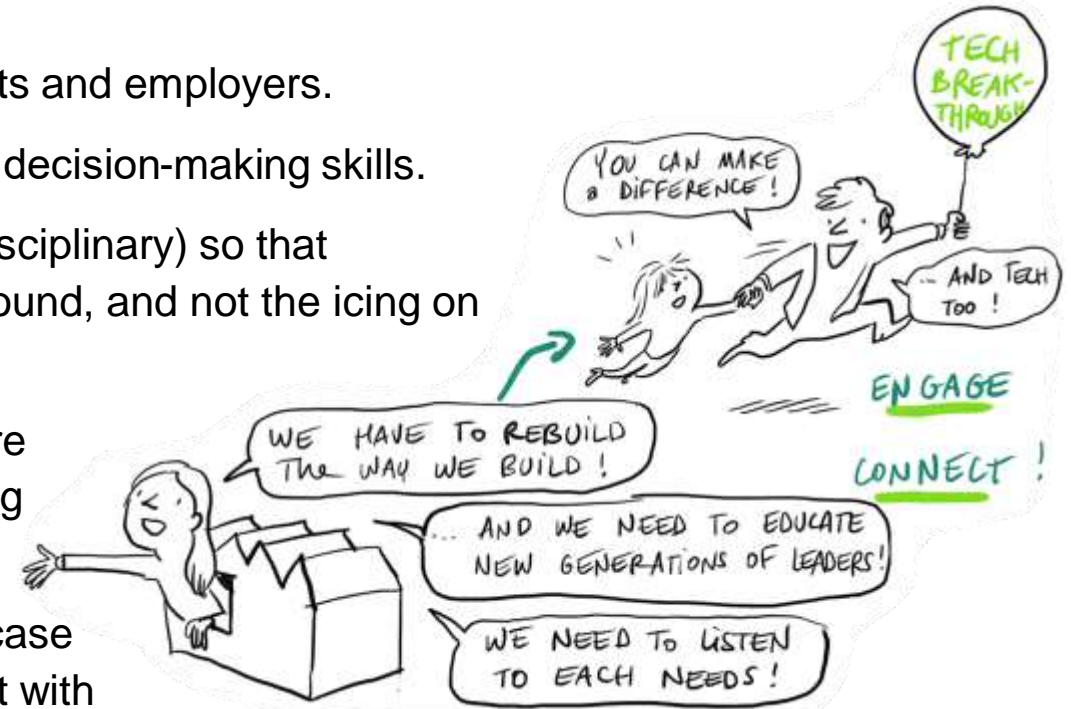


You are not required to complete the work, but neither are you at liberty to abandon it.

-Rabbi Tarfon

Skills for Sustainability Network

- Strong link between sustainability and employability – both for students and employers.
- Sustainability is ‘messy’ and ‘complex’ requiring strong analytical and decision-making skills.
- Strong demand for this to be part of year 1 for ALL students (+ interdisciplinary) so that sustainability is the base on which higher education is built on and around, and not the icing on the cake. All would like to see it baked in and not added on.
- Faculty do not feel prepared. They feel they and their peers need more professional development to be able to deliver sustainable engineering education.
- A huge demand for more resources from industry; live data, positive case studies, practical experiences and to work together to deliver a tool kit with the means and tools for students to address each of the 17 SDGs.



<https://blogs.sw.siemens.com/academic/calling-all-faculty-siemens-skills-for-sustainability-network/>

Voice of the Student

- 'Climate Change' is the most covered topic by respondents in their studies to date.
- The second least covered topic currently studied is the SDGs
- The 'circular economy' is the least covered topic
- In an open question, the top career skills students felt they needed to address sustainability included professionalism, communication, creativity and problem-solving.
- Only 22% of recent graduate respondents said they had experienced community or hands-on project work in their first year and nearly 20% of all respondents had had no experience in this area

<https://resources.sw.siemens.com/en-US/analyst-report-the-student-voice-report-for-the-skills-for-sustainability-survey>



Students need real-life applications, and the universities still do not provide that enough, so people are looking for those somewhere else.

-Mihai Filimon, President
Board of European Students of Technology

Engineering Professors Council and Royal Academy of Engineering - Sustainability Toolkit

- Collaborative project to develop an open-source toolkit for engineering educators to ensure that all new graduate engineers are motivated and equipped to tackle the serious sustainability challenges facing the environment and society
- Development, Production and/or Gathering of Educator Tools in three key areas:
 - Knowledge. (e.g. Sustainability Learning Outcomes for Engineering, Degree Map, Links to Accreditation Standards, Guidance Articles, Disciplinary Trends towards Sustainability)
 - Skills. (e.g. Pedagogies, Teaching Resources like case studies, project briefs, and lesson plans, Assessment Strategies)
 - Mindsets. (e.g. tools for embracing Interdisciplinarity, Advocacy, Engagement, Visioning)

<https://epc.ac.uk/>

GEDC Industry Forum - Educational Transformation

- Micro-credentials are key to allowing learners to demonstrate agile, timely skill and proficiency throughout their career – especially in addressing sustainability
- Industry must be involved in developing and evaluating curriculum, offering guidance about what is expected of students in the workplace
- Accrediting bodies must provide a clear path for the recognition of both sustainability and microcredentials within the larger context of engineering education

<https://www.gedc-industryforum.com/>

Microcredential with CU Boulder - Design for the Circular Economy

- Technical knowledge and skills: enable engineers, technical professionals, and others in industry to understand and apply concepts of the circular economy to areas of product design and development, social and environmental impact analysis, industrial ecology, zero waste and systems thinking.
- Business knowledge and skills: enable learners to develop innovative new business models, create and manage projects incorporating sustainable finance and reporting, marketing and brand management, as well as sustainable and resilient operations and supply chains.
- Leadership knowledge and skills: enhance the leadership abilities of early to mid-career professionals by building confidence in communicating to internal and external stakeholders and developing the skills to navigate uncertainty and implement transformational change in their organizations.

<https://www.coursera.org/degrees/me-engineering-management-boulder>

Engage younger, more diverse audiences

<https://resources.sw.siemens.com/en-US/e-book-exploring-with-sammie>



"What flavor would you like?"
Ms. Kai, the ice cream truck driver, asked.
"What flavor will melt the slowest?"
Sammie responded.

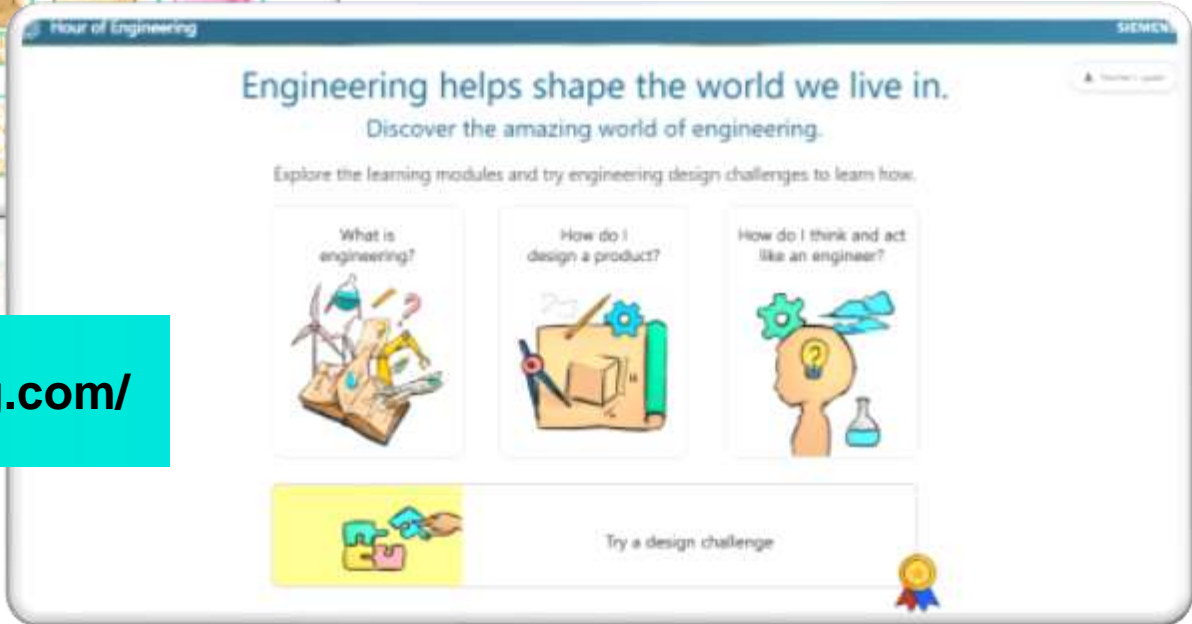
Ms. Kai pondered an answer, "Hmmm. When there are frozen chunks of strawberries or chocolate, the ice cream stays cold longer. And, the colors make a difference, too. Darker colors absorb more heat. What flavor would you like, Sammie?"

"I would like Strawberry, please. Addy, next time, can we get an extra scoop to see how long it takes to melt?" asked Sammie.
"Great idea! Next time, we'll compare two flavors," remarked Addy.

Ice Cream Making Experiment

Flavor	Chocolate chip	Vanilla ice cream	Cookie	Strawberry
Time to melt				
Characteristics	Chunks of chocolate in vanilla ice cream	Smooth vanilla ice cream	Chunks of cookie in vanilla ice cream	Chunks of strawberry in vanilla ice cream

<https://hourofengineering.com/>



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