

Workshop Students Taking Responsibility for Their Learning

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WORKSHOP STUDENTS TAKING RESPONSIBILITY FOR THEIR LEARNING

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1 INTRODUCTION

Current global challenges are putting pressure on educational systems. Issues such as climate change, global health issues, social injustice, and rapid AI developments are reshaping the landscape of engineering education. Universities are challenged to think afresh about how they can participate in the project of rethinking the responsiveness and relevance of their curriculum and mode of pedagogy regarding those environmental, social, and political realities (Mostafavi 2020).

The central question within this challenge for universities revolves around preparing students with future-proof competencies to take agency and responsibility, that transcend traditional boundaries and equip them for the future (learning for life). What implications does this hold for engineering education, students, and the learning environment they inhabit? Are the university teachers skilled and equipped at guiding students in this direction? Do these learning environments have the flexibility and agility to foster students' autonomy?

Educational theories have evolved, emphasizing interactive, collaborative, and transformative learning experiences, where learners actively engage in knowledge

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construction. VUCA (Volatile, Uncertain, Complex, Ambiguous; Kamp 2016) and BANI (Brittle, Anxious, Non-Linear, Incomprehensible; Cascio 2020) worldviews and pedagogical frameworks such as the CDIO standards (<http://cdio.org>) and the Engineering for One Planet framework (<https://engineeringforoneplanet.org/>) highlight the need for skills beyond the technical domain, stressing resilience, flexibility, and intra- and interpersonal competencies. Engineering education often involves complex concepts and problem-solving skills, and when students are actively engaged in their learning process, they are more likely to understand and retain information effectively (Biwer et al. 2020). However, many of the engineering degree programs still lack the flexibility to facilitate student agency, focusing on specific learning objectives that relate mostly to technical skills or competencies, while neglecting the development of personal and interpersonal skills. In addition, failure as an opportunity to learn is often not acknowledged and the pressure of the assessment system often inhibits students' willingness to take responsibility for their learning.

From a students' perspective, not all students are prepared to take on such responsibility and some may have different expectations from the curriculum. Additionally, the freedom to make choices in learning can lead to moral dilemmas when conflicting obligations arise (Van den Hoven et al. 2012). From the teachers' perspective, many teachers struggle to relinquish control, steer too much and by that hinder student autonomy. Lastly, it remains largely unclear what kind of pedagogical approaches and interventions really 'work' and how they can be adapted to diverse educational contexts.

Addressing these challenges and reconceptualize curricula to foster responsibility is crucial. As part of the broader research programme to which this workshop contributes, we aim to improve our understanding of the theme at hand, and develop evidence-supported strategies, interventions and concrete tools for students, teachers, and the educational organization. The ultimate goal is to empower engineering students to take control of their learning trajectory and professional development within a supportive learning environment that values personal and interpersonal growth.

2 LEARNING OBJECTIVES

The workshop aims to familiarize participants – using input from the workshop organizers as well as from each other – with concrete ideas on how to further enhance their current approaches in engineering education and to stimulate students to take responsibility for their own learning process. For this, we will make use of an action plan template. The template untangles both the pedagogical principles of their current teaching practices at course design level or lesson delivery level or the programme and organizational principles they abide by and the intended interventions for improvement. Second, participants will learn to position those practices and ideas for intervention. This exercise is based on our framework that structures pedagogies and will improve their understanding of the broadness and complexity of the students-taking-responsibility (STR) theme. Third, this workshop introduces them to a network of people interested in the responsibility theme.

As workshop organizers, we aim to learn ourselves as well. We will learn how the participants are currently tackling the responsibility theme, how open they are to

making changes in their teaching practices, and how they perceive the challenges in achieving this goal. Additionally, we aim to build an international network around this theme, as a sounding board for the TU Delft Innovation in Delft Engineering Education (IDEE) research and innovation program.

3 WORKSHOP STRUCTURE

The workshop will be structured across 3 stages (Figure 1): an introductory stage (Steps 1), an analysis stage (Steps 2-5), and a reflective stage (step 6). Involvement across the three stages varies from individual (stage A), to working group (stage B), to the entire group (stage C). One template will be shared with each participant at the beginning of the workshop to collect their personal information. Another template will then be distributed amongst the groups to guide the workshop process by [a] supporting participants to make explicit and document their thinking, and [b] capturing the information exchanged during the workshop so that organizers can further elaborate and reflect on the input received by the participants. The individual and group templates will be collected upon the workshop's completion. Participants who wish to receive more information about the workshop findings will be given the opportunity to fill in their email address in which case a summary of the workshop findings can be sent to them later.

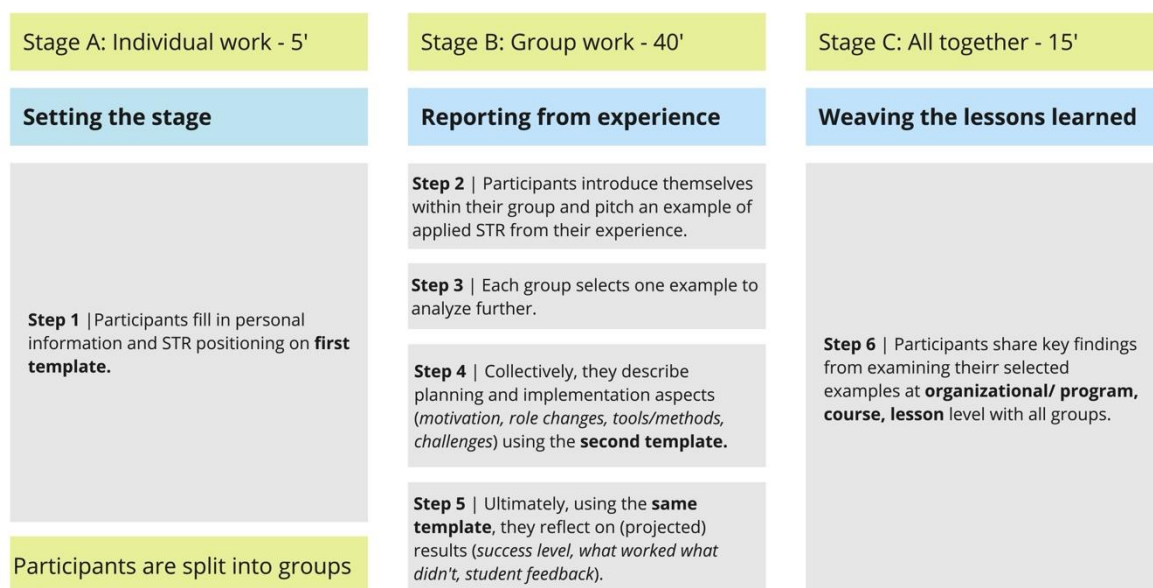


Fig. 1. Workshop structure across stages and steps

STAGE A – SETTING THE STAGE (5')

Step 1 | Participants will be asked to introduce themselves on the **first (individual) template** using one to three keywords. They will also be asked to specify their professional capacity in the institution they represent e.g. learning developers, educators, researchers, program coordinators, etc., and asked for their consent. In addition, they will be asked to provide us with a tentative definition of what the theme 'Students Taking Responsibility for their Learning' stands for and to also identify how relevant it is for them (on a scale from 0-10).

Afterwards, participants will be split into groups of 4 individuals and be given the second (group) template.

STAGE B – REPORTING FROM EXPERIENCE (OR *IMAGINING*) (40')

Step 2 | Participants have a short round of introduction within their group. They are asked to come up with a **case from their personal experiences** where they were challenged to assign students with more responsibility for their learning and pitch it to their group. If there is no real example they can refer to, participants will be invited to sketch a potential case/idea. They can focus on STR on any of the following levels: [a] **organization/program** level; e.g., customizing study program per student, [b] **course** level, e.g., developing multiple online and on campus learning environments, and/or [c] **lesson** level, e.g., experimenting with diverse modes of feedback [12', max 3' each]

Step 3 | For this step, participants will pick one of the examples presented within their group and describe this case in more depth on the **second template** collectively [3'].

Step 4 | They will then be asked to dissect their idea across several points related to planning and implementation as presented on the second template [10']:

- What was/is your motivation in increasing students' responsibility over their learning process? What inspired you to try this idea? (a book, an article, a policy?)
- How were the students' roles changed? (or *how would you like them to be changed?*)
- Were there any additional measures taken by you or your institution to support the changes? (or *would there have to be additional measures taken by you or your institution to support the changes?*)
- Can you identify any (potential) challenges?

Step 5 | After completing the intervention of step 4, participants will collectively reflect on the (projected) results of their chosen example [15'].

- Was their intervention successful? (or alternatively, *what would make the intervention successful?*)
- What did/didn't work? (or *what could hinder implementation?*)
- Was there a way to measure before/after? If yes, how? If not, why and what could it be?
- How did the students react to said changes? (this applies only to real case examples) or *how can student satisfaction from applying STR approaches be measured?*

STAGE C – PLENARY SESSION: WEAVING THE LESSONS LEARNED (15')

Step 6 | During this last stage of the workshop, one person per group will share one main finding of the group (2'-3'' per group, for a maximum of 3 groups, max. 10' in total) with the others. Then, workshop organizers will wrap up (5') the workshop and share information about the IDEE program so that participants who are interested in this project can reach out in the future.

4 EXPECTED RESULTS – COMMUNICATION OF RESULTS

Workshop organizers will collect the templates from the participants and synthesize their input. Based on the workshop structure and the information on the template, several outputs can be harvested:

- Output 1: tentative definitions of STR by participants (stage A, step 1)
- Output 2: an approximation of how relevant this theme is to the workshop participants (Likert scale from 1-7) (stage A, step 1)
- Output 3: examples of different approaches to STR across different levels (stage B)
- Output 4: challenges to implementing STR in education across levels (stage B)
- Output 5: examples of additional measures/features that can support STR practices (stage B)
- Output 6: recommendations to implementing STR (stages B and C)

This workshop will be mostly based on participants' real case experiences or their imaginaries for STR so, it is expected that nuanced interpretations of what STR means to participants can be harvested and further elaborated on the day of the workshop but also during the assessment of the workshop results. The workshop output can be a first step to build a Pedagogical Pattern Language (PPL): a structured framework for capturing, organizing, and sharing effective teaching and learning practices in Engineering Education. The real time cases that will be discussed during the workshop can further be used to populate IDEE's own PPL across all three levels respectively (organization-course-lesson).

5 RESULTS OF WORKSHOP

Seventeen conference attendees participated in the workshop. To define STR, participants distinguished 4 aspects of STR: students [1] willing to search, explore and experiment with learning; [2] taking ownership for their learning; [3] being able to identify their needs, strengths, weaknesses and [4] taking action (e.g. setting goals; seeking help; suggesting learning activities). Organizations and teachers can help them by creating opportunities and provide students with sufficient confidence, skills and means to find a learning path that suits them best.

All participants endorsed the importance of STR (7.6 out of 10); lecturers and course developers (8.1) more than participants that indicated themselves as researchers (5.6).

Most participants are interested in STR on different levels (lesson, course, program, and organization). Nonetheless, they described STR experiences mainly at lesson or course level. These included their experiences of [a] peer-learning, [b] critical reading and reflection as part of their lessons, [c] to implement self-guided parts in their courses, and [d] to add reflection meetings as part of the course. Only one of the participants described an example of STR on curriculum level and related STR as a direct effect of a curriculum that is open in content and flexible in its time limitations. Participants also raised interesting questions like: to what extent is it the students' responsibility to fight for more autonomy and self-regulated learning? And: under what conditions can students take responsibility?

In the second stage of the workshop, as an example, one of the smaller groups advocated for the increase of STR interventions through (a) making lectures more lively, (b) letting students pick their own case and do framing themselves, (c) letting students pick their own team to work with and (d) allowing for a more question-based or consultation-base teaching approach. They also stressed the importance of monitoring the success of these interventions through constant feedback, the assessment of the quality of the projects, and students' reflections on the matter. They also acknowledge that teachers might react that it is more work than traditional education and that students already have a lot on their plate.

6 REFLECTION

The workshop results confirm that no one widely accepted definition of STR exists and that educators assign different attributes to STR. Nonetheless, they are intrigued by the concept and most have already experimented with it using various pedagogical approaches. On the downside, they are challenged by the level of uncertainty as to whether STR approaches are effective or not with some of the participants raising concerns on whether students are well equipped for taking responsibility. Reception of the STR project during the workshops, and the heated discussions reinforce our belief that a Pedagogical Pattern Language (PPL) is a timely and relevant endeavour.

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