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Workshop report

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Staff Capacity Building for Educating Socially Responsible Engineers: Considerations Related to Culture and Emotion

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1 MOTIVATION AND OUTCOMES

1.1 Motivation

This workshop was organised by the Capacity Building SIG: an international and interdisciplinary group of educators and researchers interested in a broad understanding of capacity building, such as teacher pedagogical training and PhD student and researcher development. The aim of this workshop was to explore the intersection between capacity building and the conference theme of educating socially responsible engineers.

Educating socially responsible engineers requires moving beyond developing students' technical knowledge and skills to also fostering their personal and social responsibility [1]. The literature variously uses terms such as "21st century skills" [2], "professional competencies", but also "empathy" [3][4], "inner development goals" [5], and "educating the whole engineer" [6]. Redirecting engineering education in these areas can be challenging for educators who have not received any training for teaching other than the technical aspects of engineering. Therefore, capacity building is particularly important for educating socially responsible engineers.

With this motivation, there were three parts to the session: brief introduction to the workshop goals and terminology, rotating pair conversation, and panel discussion. After establishing common language and situating the workshop aim, the second part provided participants with the opportunity to self-select into three topical groups that explored how we approach teaching material at the intersection of technical

skills and skills for responsible citizenship, and the responsibilities and pressures that this places on the educator. Through these pair conversations, participants developed reflective questions that they posed to the panellists in the third part of the workshop. There was no background knowledge or capacity building experience required for participants.

1.2 Outcomes

The aim of the workshop was to provide a safe space for exploring staff capacity building related to educating socially responsible engineers. The session was designed to achieve the following outcomes:

- Develop a better understanding of how we, individually and collectively, approach capacity building for educating socially responsible engineers
- Develop awareness of diverse ways in which emotion and culture influence our approaches to capacity building for educating socially responsible engineers
- Share concrete ideas of how we can improve capacity building practise in this context
- Build a community of educators and researchers who, from diverse disciplinary and practice-based vantage points, share an interest in strengthening capacity building for educating socially responsible engineers.

2 BACKGROUND AND RATIONALE

2.1 Positionality

As the SEFI SIG for Capacity Building, we lean on previous research (outlined above) that points to the importance of teaching not only technical knowledge and skills, but to also engaging students in the social, emotional, and professional aspects of being and becoming socially responsible engineers. Changing engineering education in this way requires transforming assumptions, practices, and structures, both individually and collectively. Exchanging experiences, ideas, dreams, and concerns is an important first step for fostering a community of research and practice of capacity builders who, over time, can support momentum for transformative change in engineering education.

2.2 Capacity Building

Capacity building is defined as the process of developing and strengthening the skills, instincts, abilities, processes, and resources that organisations and communities need to survive, adapt, and thrive in a fast-changing world [7]. Within SEFI, this is translated into the aim to empower the process of developing and strengthening the competencies that trainers (faculty, staff, student teachers, and researchers) in engineering higher education need to support and impact their students.

3 WORKSHOP DESIGN

The workshop was organised in three parts to facilitate conversation and engagement between the participants, facilitators, and panellists.

Part 1 of the workshop introduced the participants to the topic of the workshop, outlining the aims; our definitions of capacity building, socially responsible engineers, emotional responsibility, and cultural context; what is already known in literature about the intersection between these concepts and how it plays out in engineering education practice.

Part 2 of the workshop provided participants with the opportunity to self-select into three topical groups: (1) capacity building to educate socially responsible engineers, (2) the emotional load or labour of teaching the social and professional aspects of becoming socially responsible engineers, and (3) the relevance of cultural context in teaching social responsibility. Within each group, participants engaged in brief, rotating one-on-one conversations. In these conversations, participants were encouraged to share their thoughts and emotions related to their chosen topic and to share and/or co-develop reflection questions that could guide further exploration of the topic, both individually and collectively. Focusing on reflection questions allowed us to take into account that specific tools or methods for capacity building are context dependent. Thus, our aim was not to simply share best practices that may or may not be relevant to different cultural and disciplinary backgrounds but rather generate reflective dialogue that participants could use to develop good practices for their own specific context.

Part 3 of the workshop consisted of a panel discussion in which participants posed the reflective questions they developed during Part 2 to panellists who have expertise in each of the three topic areas. The aim of this part was to consolidate understanding, bring different perspectives to the forefront, and learn from experts, enabling participants to leave with new knowledge, contacts, and plans for the future.

4 WORKSHOP RESULTS

Participants recorded questions and reflections on Padlet to guide the panel discussion and provide a community resource. Three primary themes emerged in the panel discussion. (1) Defining social responsibility in a globalised context and reconciling different world views: One takeaway was that social responsibility takes on different meanings in various contexts, and our goal as educators should not be convergence. We can celebrate differing world views and learn from them through inter- and transdisciplinarity. (2) Choosing 'safe' topics for the classroom: The group reflected that cultural and political factors can make it challenging for educators to know which topics are safe to bring into classroom conversation. Creating group norms around respect and openness can support the classroom environment, but some level of discomfort can be expected and should be acknowledged. It is important for educators to consider how much discomfort is reasonable and whose discomfort is generally tolerated in engineering education – both of which are affected by privilege. (3) Supporting staff: A final theme centred on support staff need for educating socially responsible engineers. Considerations include how comfortable staff are in pushing the boundaries of students' learning and making a conscience effort to show such teaching has a purpose on which students should reflect.

5 SIGNIFICANCE

The contemporary practice of engineering involves the consideration and negotiation of varied perspectives and interests in achieving sustainable economic, social, and environmental outcomes. Therefore, it is critical that engineering educators have the capacity -- which consists of a combination of knowledge, pedagogical skills, and understanding of global context and emotional aspects of teaching and learning -- to prepare their graduates to practice engineering in a socially responsible manner. This workshop modelled and explained transferrable approaches to engaging teaching staff and students in contextually appropriate capacity building activities.

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