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The Challenges of Engineering Education, Engineering Practice, Code of Ethics, and Social Justice

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The Challenges of Engineering Education, Engineering Practice, Code of Ethics, and Social Justice

Work in Progress

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PRESENTER

Rachel Shannon

BACKGROUND

Engineering has always been human-centered through the technologies we provide to enrich and make our lives more convenient. The engineering code of ethics uphold that engineers should put “the safety, health, and welfare of the public” first. However, we argue that the code of ethics is not enough, and that we need to reinforce human-centered design in engineering education through designerly ways of thinking, reflective practices, and being more student-centered.

LITERATURE REVIEW

“I have not yet developed a definition of **social justice** in the engineering context, recognizing that the types of critiques levied in engineering will no doubt shape the definition. It is nevertheless important, when working in a specific context, to be clear about what one means by social justice. *To fail to do so can mean the co-optation of the terms of the debate and the morphing of social justice into something less than what is desired by its advocates.*”[1]

Donna Riley

“...over the course of their **engineering education**, students’ beliefs in the importance of professional and ethical responsibilities, understanding the consequences of **technology**, understanding how people use machines, and social consciousness *all decline.*”[2]

Erin A. Cech

“While communities have benefited greatly from engineering, its impacts may increase the gap between social classes and damage the world’s environmental health. As these trends amplify in capitalist societies, we argue that it is compelling to contemplate *a new approach to engineering education*—both in **curriculum** and **pedagogy.**”[3]

Wendy Cumming-Potvin
John Currie

“Technological developments within engineering have contributed to people’s general well-being, *however not without creating unintended new problems to society.* What **responsibilities** and beliefs do engineers hold when exercising their profession? How are engineers educated to solve **local and global problems** with social justice in mind?”[4]

Patricia Jiménez
Jimena Pascual
Andrés Mejía

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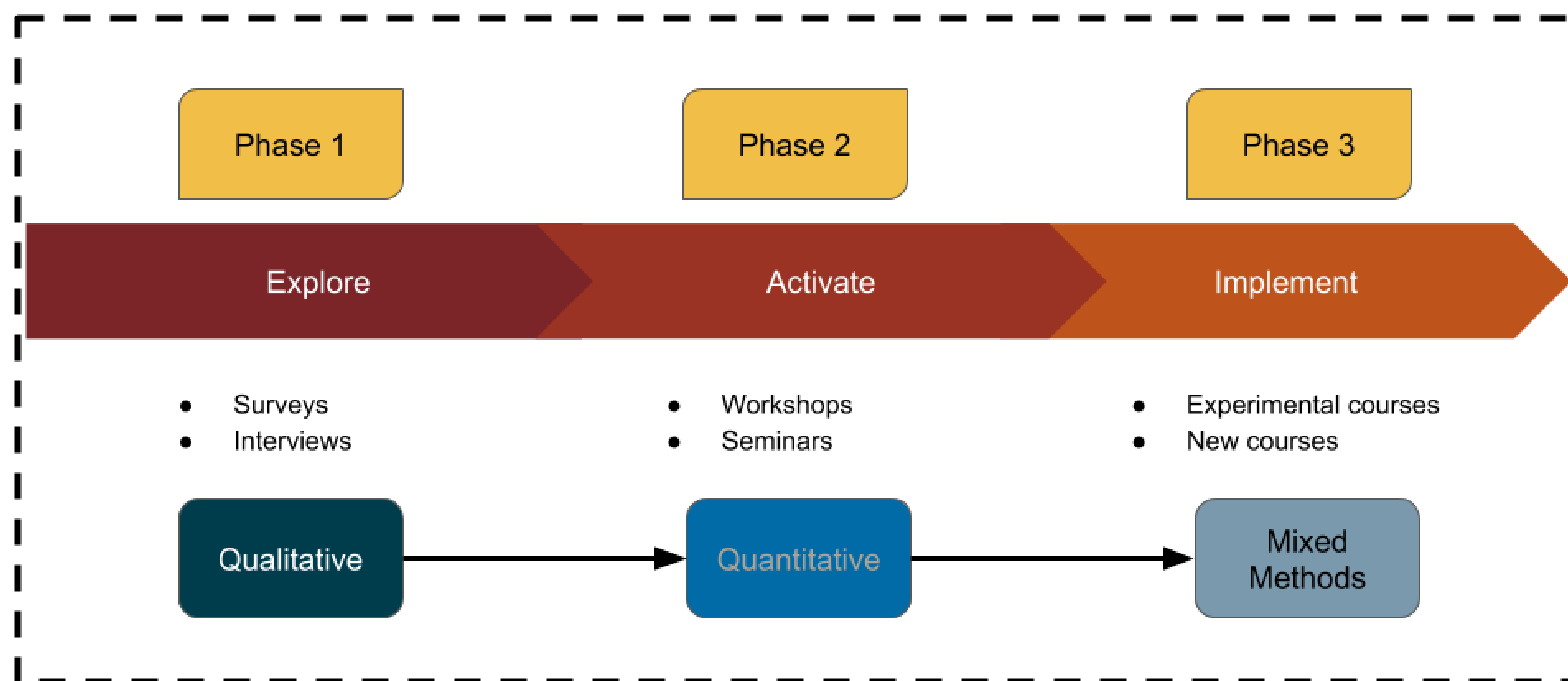
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[4] Jiménez, P., Pascual, J., & Mejía, A. (2019). Towards a pedagogical model of social justice in engineering education. Proceedings of the 2019 8th International Conference on Software and Information Engineering - ICSIE '19. doi:10.1145/3328833.3328861

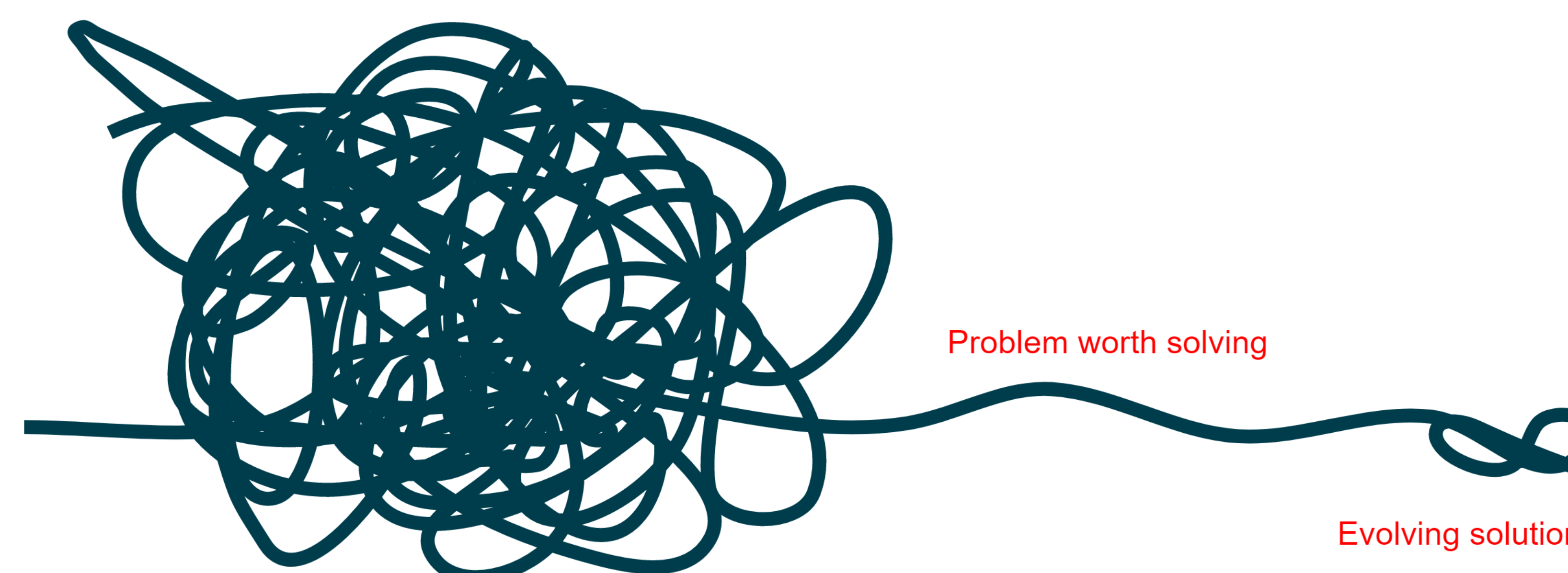
[5] Buchanan, R. (1992). Wicked problems in design thinking. Design issues, 8(2), 5-21.

How might we **help engineering students** feel **empowered** to “do the right thing” now and beyond the classroom?

METHODOLOGY



Mixed Methods Participatory- Social Justice Design



Wicked problem [5]

Social Justice
+
Engineering
=
Wicked Problem!



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