Abstract summarising nomination (150 words)

The ENG ME! peer mentoring program has transformed the University of Canterbury's (UC's) first-year engineering experience. It is a student-led, faculty-enabled program that runs during semester one. It was co-designed with students and support groups to create an inclusive and effective mentoring program that gives students a feeling of belonging to UC Engineering. It is run by student leaders (300+ to date) and has impacted the lives of 6000+ students. ENG ME! is committed to supporting underrepresented students, offering valued special mentoring groups for Women, Māori, Pasifika, international, and older students. Participation in this voluntary program is over 90% in the first three weeks. Research has shown that first-year engineering students have higher social connection scores than their first-year peers at UC, and 62% of Mentors have expressed a desire to take on higher leadership roles. Being student-led, ENG ME! adapts to each cohort, bringing value for years to come.

Focus and relevance of ENG ME!

The opportunity

The step to university from high school, often moving away from home, is a large step for first-year students, especially those who are "first in family", or from Māori or Pasifika backgrounds. A South African study showed that 11.5% of students consider dropping out in the first three weeks of university (Fourie, 2019). Engagement during this critical initial stage is important for student retention.

On arrival at the University of Canterbury (UC), first-year engineering students are faced with large courses of up to 1100 students taught by a variety of separate departments. There was no sense of community until they entered their chosen technical discipline in their second year. The transition to the university environment is challenging and early support and intervention are critical for student learning, retention and success. In addition, engineering still faces persistent issues with sexism, racism and micro-aggressions towards under-represented populations. Combined, these factors presented an opportunity: to develop an initiative that would help change the culture of engineering, foster belonging to engineering, and support the transition into tertiary study.

Vision

Our vision was to create an inclusive first-year engineering experience where **all** students could thrive and excel. We wanted all students to feel welcomed and supported as they started their tertiary studies in engineering and their journey to becoming engineers in Australasia. Our aim was to build belonging, community, connection, and identity as part of UC Engineering. The goal was to ensure that there would be a personal touch and every student could have someone to turn to for support. We knew students were more likely to turn to their peers than staff, therefore we put a ***student-led, faculty-enabled*** peer mentoring program at the core of bringing our first-year vision to life. This approach allows the students to constantly evolve the program, so it meets the needs of each new and unique cohort of 1000+ students.

Student centred co-design

The Engineering Mentoring Experience (known as ENG ME!), is focused on supporting first-year engineering students (1000+ students each year) as they transition to a university environment and UC Engineering. ENG ME! was inspired by the *"student-led, faculty enabled"* CEED peer mentoring program in America (Center for the Enhancement of Engineering Diversity, 2022). ENG ME! is uniquely ours as it was built from the ground up drawing not only on expertise from overseas, but also from expertise across UC.

One core element was the process of co-creation with the Māori development team (MDT), the Pasifika development team (PDT), UC mentoring, Student Care, and six student clubs (UCSA, ENSOC, WIE, CompSoc, WitSoc and ProdSoc). Having diverse voices involved in creating ENG ME! was crucial in achieving an inclusive program relevant to today's students. The student voice has been at the centre of its design, creation, implementation and evolution. There is a healthy turnover every year as ENG ME! student leaders enter the engineering workforce. This helps the program stay innovative and relevant resulting in a program uniquely designed for the ever-changing New Zealand engineering educational environment. A novel decision log approach has been developed to ensure institutional knowledge is passed between leadership cohorts by logging all key decisions made. This was an innovative application of an approach used in engineering project management (Dando & Ormerod, 2017) to the brand-new area of student-led programs.

When the COVID-19 lockdowns came in, ENG ME! needed to be quickly redesigned for online delivery from in-person. A key question was how to structure activities for online

delivery. We needed to work out how to keep students engaging in ENG ME! during this time. This resulted in focusing sessions on fun and pastoral needs first (for example running Kahoots), and academic needs (Tutors) second. We also created special groups for international students caught overseas who faced unique challenges.
Another key component is the student-led ENG ME! Board that has operational and strategic oversight of the program. Representatives are invited from MDT, PDT, Rainbow Support, student clubs and the student association. This continuous approach to gathering information, refinement and evolution means **ENG ME! is uniquely designed for each specific cohort each year**.

"It's (ENG ME!) an evolution. I'm sure next year will take it even further in terms of support and structuring of the model." – Mentor Leader

Empowering student leaders
Student leadership is at the core of ENG ME! as seen in our leadership pathway. We receive over 200+ applications in our competitive recruitment process for ~60 Mentors (Figure 1) who lead groups of up to 30 first year students. The following year, these Mentors can apply to become one of five Mentor Leaders (Figure 2) who are responsible for the strategic and operational management of the program, including recruitment, training and setting the direction of the program. By design, **student leaders are given the authority and agency to change the program to meet the needs of each new cohort**.

Figure 1: ENG ME! Training event (2023).

Figure 2: ENG ME! Program leaders (2022).

Fostering inclusion and belonging to UC Engineering and the profession
Fostering a **sense of belonging** is particularly important for non-majority members of the community who have historically been under-estimated or even discouraged from entering the engineering profession. As a result, we ensure we have a diverse group of Mentors and Mentor Leaders in the program. Having a diverse group of Mentors is changing the perceived face of engineering right from their first week interactions. In addition, we have special mentoring groups for traditionally under-served students, specifically for Women, Māori, Pasifika, international, and over 22 years old students. In 2023, we added LGBTQIA+ Mentor training as part of continued efforts to make UC Engineering more inclusive.
ENG ME! engages first year students in terms of peer social support, but also offers group tutoring support to help with challenging courses, especially as assessment starts to ramp up. This helps students navigate the new expectations of university in a safe and friendly environment of peers. Additionally, the **program links students to industry**. This has been achieved by bringing in junior and senior industry representatives to speak with ENG ME! participants emphasizing the importance of lifelong mentoring, and helping students make

informed decisions about engineering disciplines, before selecting their engineering specialisation.

Evidence and impact of ENG ME!

Building an inclusive student community

ENG ME! builds **community,** belonging and connection to UC Engineering in the important first 10 weeks on campus. It is the first step in building a student's sense of identity as an engineering student. Its success is demonstrated by the overwhelming student participation in this non-compulsory program. Participation is 90%+ (1000+ students) in the first two weeks. ENG ME! typically provides 110+ hours of additional tutorials in a group environment during the first 10 weeks of the semester. The engagement in ENG ME! has steadily grown over the lifetime of the program as it has evolved to become truly student led. At this point ENG ME! has become a household name where every current undergraduate engineering student in the faculty has come through the program.

Our ENG ME! mentoring groups bring students together, help them form friendships in engineering, gives them academic support, and help them realise **they are not alone** in their struggles. This has an impact beyond the first year as illustrated in Figure 3, where a group got together for a meal to celebrate their one-year anniversary. Showing impact well beyond the 10-week official peer mentoring program. UC surveys of first-year students have shown that in 2019-2022 (during which ENG ME! has been running), first year engineering students scored social connection metrics higher than non-engineering first year students: 7-11% higher on "made at least 2 friends", 5-15% higher on "made a personal connection", 4-12% higher on "know people in my classes" and 6-12% higher on "feel I belong socially". Student engagement, social connections and belonging are central to retention and success in higher education programs (Thomas, 2012) (Washington and Mondisa, 2021). ENG ME!, by contributing to improving the social setting of the first-year students, therefore improves student retention at UC.

Figure 3: An ENG ME! mentoring group holds a reunion meal one year after starting.

Making UC Engineering more **inclusive** was a core goal of ENG ME! and the special groups are an important component of this. The **special groups** give Māori, Pasifika, international, over 22 years olds, and female students a chance to connect with others in their group. This helps them get relevant support as well as find community with people who understand them. Special groups, especially Women, Māori and International have been a success story with

participation almost doubling from previous years. This year ENG ME! added another Māori group due to demand, thanks in part to modifications made to the program in collaboration with the Māori support team at UC.

"As soon as [Mentor] said we were all older students, we all breathed a sigh of relief.... Through ENG ME! I have met some life-long friends." - ENG ME! mentee in over 22 group.

Empowering student leaders

Research by master's student Nora Kwok (2021) revealed that over half the mentees in ENG ME! indicated a **desire to lead** because the program was a memorable experience, and almost two thirds indicated a desire to take on higher leadership roles in the future. ENG ME! plays an important role in developing future engineering leaders. Professional development activities are compulsory for ENG ME! Mentors and Mentor Leaders. These can be added to the students' Co-curricular Record (CCR). ENG ME! has trained and empowered diverse engineering student leaders, which has broadened perceptions of who an engineer is. We now see these diverse student leaders entering the engineering profession.

"I am trying to empower [Mentors] to be the best leader and Mentors to their group. I'm not just mentoring students, but I am empowering students to do their job well." - ENG ME! Mentor Leader.

Elevating the Student Voice in the Faculty of Engineering

ENG ME! has had a positive **educational impact** on students by providing community and belonging alongside academic support (tutoring and group study sessions). As such, it provides important support for the secondary to tertiary transition. It is a safe place to ask questions, which results in it being an information/communication pathway between students and staff. This has even influenced the curriculum. For example, student feedback through ENG ME! was used to reduce PHYS101 content to address COVID-19's impact on the preparation of school leavers. It has also resulted in course coordinators adapting teaching based on student feedback. Students then experience changes that benefit them, as opposed to simply reporting issues so the course can be improved for future years. This is important as large class sizes make it hard to speak up. As a result, the program has raised the **student voice in UC Engineering**.

Program resilience

The **pandemic** has had a significant impact on first year engineering education. Moving education swiftly online, and large unstructured breaks from study was detrimental to the formation of connections to UC Engineering and fellow students. The ENG ME! team rapidly responded to this change offering mentoring throughout the various pandemic lockdowns. Mentees reported that the mentoring sessions were, on many occasions, the only personal connection they received from the university (outside bulk emails). This made students feel more connected to the university and their fellow students stuck in similar, often lonely, situations.

Impact beyond the Faculty of Engineering

Our success has **inspired others to duplicate** ENG ME! and we have supported them as they have implemented their programs. For example, the Faculty of Law created LawME! and the Faculty of Arts are experimenting with a similar model to replicate ENG ME!'s success. ENG ME! expanded to include product design students with the help of Dr Bahareh Shahri, and to include second year international students. Now aspects of the program are being used to

support second year students entering mechanical engineering. As such the program is having a positive institutional impact.
ENG ME! has an impact on the engineering profession in New Zealand, not just at university. This is evidenced by ENG ME! winning Engineering New Zealand's ENVI Engineering Education Award (a national award from our professional body) (Figure 4).

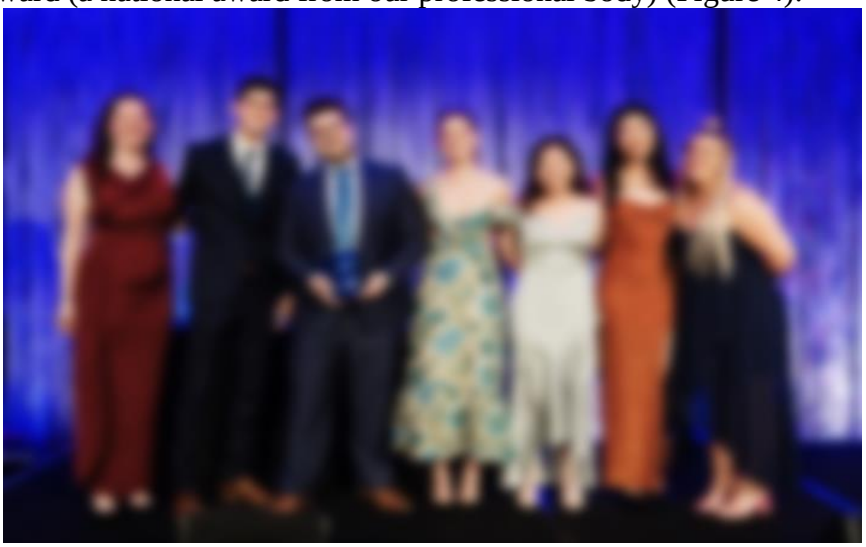

Figure 4: Engineering New Zealand ENVI Award presentation.

Conclusion

Not only does ENG ME! assist our first-year students as they begin their engineering journey, but research shows that ENG ME! also impacts those who become Mentors as it builds their leadership capabilities and interpersonal skills. By arming our engineering graduates with a wide range of skills, this prepares them to make a difference when they enter the industry. The way in which ENG ME! has engaged students, supported them, and helped them to grow as people and engineers is the pride of the Engineering Faculty at UC. It is making a positive change in engineering education and growing inclusive, engaged, and inspired engineers who one day will be the leaders of Engineering in Australasia.

References

Center for the Enhancement of Engineering Diversity. (2022). CEED Peer Mentoring Program. Verginia Tech. Blacksburg, Virginia, USA. Retrieved from: https://eng.vt.edu/ceed/ceed-undergraduate-programs/mentoring.htMentor Leader

Dando, C. J., & Ormerod, T. C. (2017). Analyzing decision logs to understand decision making in serious crime investigations. Human factors, 59(8), 1188-1203
.

Fourie, C.M., 2020. Risk factors associated with first-year students' intention to drop out from a university in South Africa. Journal of further and higher education, 44(2), pp.201-215.

Kwok, N., Understanding and Examining the Development of Mentoring Leadership in ENG ME!, Masters Dissertation, University of Canterbury, 2021.

Thomas, L. (2012). Building Student Engagement and Belonging in Higher Education at a Time of Change, What Works? Student Retention and Success Program. London: Higher Education Academy.

Washington, V., & Mondisa, J. L. (2021). A need for engagement opportunities and personal connections: Understanding the social community outcomes of engineering undergraduates in a mentoring program. Journal of Engineering Education, 110(4), 902-924.

List of Additional Items (optional)

Items listed above are redacted for privacy