Webinar Q & A

Webinar: How the EWB Challenges develop professional skills for participants
13 April 2021

Q: Hi is the EWB challenge need to solve the real-world problems and we need to work in a team?

A: Hi, that's right - students at participating universities work on real-world problems in a team to come up with sustainable solutions as part of their course. You can see who the participating universities are here: https://edu.ewbchallenge.org/about/program-partners.

Q: To join EWB do we contact our university or EWB directly?

A: You can see if your university is participating in the EWB Challenge (it's usually run in first-year) here https://edu.ewbchallenge.org/about/program-partners/, or you can find out if there is a local university Chapter to join: https://ewb.org.au/our-chapters/ We also have later-year research projects available within the EWB Research Challenge. Professionals can join EWBA or volunteer – see here: https://ewb.org.au/get-involved/volunteer/professionals/

Q: How do we get involved as a reviewer?

A: As a professional engineer you can get involved as a review on the EWB Australia Challenge. See http://bit.ly/ewbchallengereviewer

If you're in the UK, you can join Engineers Without Borders UK's mailing list to keep up to date on upcoming reviewer and other volunteer opportunities: https://www.ewb-uk.org/

Q: How does the EWB Challenge develop professional skills for participants?

A: The EWB Challenges are designed as project-, problem-, and service-based learning exercises. These pedagogical methods are being increasingly introduced into engineering education for the creativity they demand from and the real world-simulating experience they provide to students. Research has shown that these types of experiences offer practice and develop a wide range of skills for participating students. The professional skills that are practiced in this type of environment include verbal and written communication, teamwork, project management, and more. The EWB Challenges also bring unique sustainability and human-centred considerations into focus, which can often be lacking in engineering curriculum.

Q: Just out of curiosity, is Engineering Ethics incorporated into EWB projects?

A: Basic concepts of engineering ethics are certainly introduced and promoted in the challenges and other EWB projects. Indeed, these are some of the implicit, fundamental pillars of the work as a whole. Rigorous and extensive sociological exploration of these issues, however, is not commonly a part of the programs as they are designed to address other learning outcomes and framed for first-year students

Q: Is there an opportunity for students to conduct further work on their solution after the EWB Challenge is complete?

A: Yes, students can certainly conduct their own further design work and research for their solution - either independently or as a discreet project, however this only happens occasionally. For the Australian context with EWB Australia, you might like to contact us about possibilities to support them in doing so as part of our EWB Research or Technology Challenge programs, e.g. as part of the student's thesis. We're also always open to having conversations about supporting potential collaborations between universities and our partners where there is an interest from both students and academics to develop ideas further to support our partner's work.

Q: It was mentioned that a co-design approach is used in the EWB Challenge and related projects for communities. How can this approach be utilised in mainstream engineering practice, where we have clients that may be governments or other agencies for example?

A: Thanks for this great question, both the panelists and others behind the webinar agree that this is an important challenge to be tackling. Co-design approaches are becoming increasingly popular in mainstream environments and catching on even within some government spaces, due to the recognition of the successful outcomes it enables.

Governments use the IAP2 as a tool to decide the level of public participation that a project will require. Co-design falls neatly under collaboration on the IAP2 spectrum. The disconnect is between community engagement and engineering. Community participation in an engineering project is traditionally on the lighter end of the spectrum, with the public being informed of the project or at best, being consulted. Governments departments and other clients might not understand engineering as a socio-technical profession and might not understand the importance of collaborating with communities when designing an engineering solution.

I suggest familiarising yourself with co-design approaches (there are plenty of resources online) and bringing the co-design idea with you to your clients, linking it to the IAP2, share what the benefits are (e.g. a better long term solution), and ask if they'd be willing to give it a go on a project, or piloting it on a small discreet part/phase of the project to start with. Also, set expectations that it will require more up-front time and energy to do this approach, and some wiggle-room in timelines should be factored in to do co-design meaningfully. Just have the patience to have multiple conversations, to get the client onside with the value of it for engineering projects (and potentially up the chain of command)..

One way that EWB is working towards this is influencing the wider sector, such as leading by example with our engineering work and aiming to mainstream co-design and/or community-centred and community-identified principles through our education programs, and show that co-design is not only possible but it's a very effective way of doing good technology development and leads to good outcomes. Other leaders in the engineering sector are increasingly integrating co-design styles of working, so highlighting these examples you can find would be good.

Q: I'm from Malaysia, I have never heard of these challenges before. I'm in my final semester of study and about to graduate. Am I able to participate after completing my studies?

A: Currently there is not an opportunity for graduates to participate at the student level in the challenge. The challenge is rapidly expanding, however, and hopefully it will not be long before universities in Malaysia are offering the challenge broadly to students. In the meantime, we encourage you to volunteer as a reviewer to apply your newly gained skills and share them with participating students across the world!

Q: Is there a greater push for gratis/pro bono work from industry (stemming from recent graduates having been exposed to and interested in the humanitarian / development sectors)?

A: In a way we see this more as a 'pull' effect rather than a 'push' from others - industry is increasingly aware of the benefits of being seen as an employer that undertakes CSR (Corporate Social Responsibility) and any efforts to offset their environmental and other harmful impacts (impacts from both the operation of the business and the projects and services the business delivers). Leading businesses are recognising that some of the best graduates are attracted to and passionate about CSR, and so this is seen as an effective attraction strategy and to help with staff retention and satisfaction. As you're suggesting, recent graduates who have undertaken studies in the growing field of humanitarian engineering in Australia for example are taking that into their work and influencing projects around them such as pro bono work in these areas.

Q: EWB in many places tracks the long-term retention/success of the implemented projects. Many of these do not last, how has this evolved over time to adjust EWB's training, methods, and the university collaborations?

A: This is a great question, and there's not enough room here to address all of it! It's true that some projects in the broader engineering, and humanitarian/development sectors do not last and experience failings, however many do last too. At EWB we have always employed iterative design principles as part of our human-centred engineering approach as a way to mitigate this as much as possible in a response to seeing these issues occur in all organisations and contexts. That way potential issues can be identified early on and reduced, avoided altogether or sometimes we might decide that a project shouldn't go ahead at all for these reasons. We work in complex social, technical, environmental, cultural, and political spaces (such as the dynamics of the people who manage or use the technology) so our staff is made up of a diverse range of practitioners to reflect this. So, in that sense, learning from issues that arise and taking on a holistic approach to mitigate these has always been core to our mission.

An example of how we've evolved our work comes from our Engineering on Country program that works to support Indigenous communities to access technology projects that they decide will be most beneficial to their community and owned by them. These projects have always been community-identified from the get-go, so they are more likely to remain in operation and be looked after as they are owned and largely managed by that community. However, they began as being EWB-led and intensively project-managed by us, which meant we could only effectively deliver one project at a time and forego other opportunities which became problematic for the sustainability and reach of the program. As a result, we leveraged pro bono partners to manage and deliver projects which increased the number of communities we could support, but meant EWB wasn't involved enough in each of the many projects to directly follow the outcomes through properly after the pro bono partner completed their work. We rely on the long-term relationships with local community partner organisations who can be our eyes on the ground and ensure their communities have someone to go to when issues arise, and we can respond accordingly. We maintain close ongoing relationships with communities to support long term utilisation of infrastructure.

In terms of how our university collaborations have evolved, we also similarly work with partner organisations by engaging in long-term relationships e.g. with the EWB Challenge program. Another example is we now often need to anonymise real communities that feature in student projects due to cases in the past where students directly contacted and visited communities unannounced or invited by communities without EWB's knowledge which risked those trusting relationships with communities that enable us to collaborate on impactful projects.

We have also undertaken failure reporting to ensure we reflect and acknowledge failures and what we might do differently in the future. This demonstrates how we try to rethink how we do things and pivot into the future based on our learnings.

Q: Is the EWB program only for students? Is there a similar program for professional engineers?

A: In the case of EWB Challenges, there are opportunities for professional engineers to participate, as reviewers, advisors, mentors, or similar. This participation provides insight into the human centred engineering process the students have followed to complete their EWB Challenge project.

Pre-Covid EWB Australia ran national and international Professional Immersion Programs for engineers and other professions to visit communities and participate in human centred engineering on-country (Aboriginal communities) or in-country (e.g. Cambodia). Each professional program immersion usually has a key focus, e.g. water, buildings, renewable energy. These professional immersions will be re-introduced post-Covid.

In Australia professionals can get involved with their state-based Chapter.

EWB Australia also offers a number of field placements each year. EWB works in partnership with community organisations and local communities in Timor-Leste, Cambodia and Vanuatu, assisting them to gain access to the knowledge, resources and appropriate technologies they need to improve their livelihoods. Pre-Covid field professionals lived and worked in country (e.g. Cambodia, Timor Leste or Vanuatu) for a period of up to 18 months. During Covid these placements have been undertaken remotely (i.e. the field professional is based here in Australia and supports their partner organisation remotely via digital means). Post-Covid it is anticipated that in-country field placements will resume.

Professionals can also instigate pro bono projects in their workplace with the support of their employer. Expertise is often required from disciplines such as urban design, engineering, civil and infrastructure development, quantity surveying, land surveying, energy/renewables, architecture and landscape architecture, product development and software development. Services can range from one-on-one professional development support, technical projects, long term project partnerships, short/long term secondments and pro bono field trips as an example.

EWB Australia is also developing training programs with professionals at our corporate partner engineering organisations and for professional individuals, so keep an eye out for these opportunities.

To see the opportunities for professionals, please go here: https://ewb.org.au/get-involved/volunteer/professionals/

individual journey

purpose	To orient EWB activities and resources around a coherent development progression for engineers.

life stages	**school**	**university**	**professional practice**

individual	primary	secondary	under graduate	post graduate	junior engineer	senior engineer

ewb focus / guiding principles	Interest and participation in STEM Encouragement for further learning	Social/environmental engineering application Social innovation Poverty reduction Community/belonging	Technical skill development Personal development Curated development experiences	Leadership development Financial value: Employee retention Capability breadth: Community engagement

ewb programs

university and region chapter (member engagement)

K-12 Outreach Program

Digital Accessibility & Safety
WASH
Shelter
Energy
Disability Access

Regioneering Program

EWB Challenge

Design Summits

Dialogues on Development

Research & Appropriate Technology Program

EWB Connect (pro bono engineering)

Challenge Design Program (mentors)

Pre-departure training

Corporate Challenge / Training

Engineering In-Country Program

volunteer sending deployment

Sanitation in Challenging Environments

Sanitation for all

Assistive Devices Program

Professional Skills Program

link festival

engage summit