FROM SHARING TO SYNERGY: CULTIVATING INCLUSIVE EDUCATIONAL ENVIRONMENTS THROUGH EDI IN CDIO

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ABSTRACT

This paper is a product of the Monash Equity, Diversity, and Inclusion Sharing Circle (EDISC) and seeks to highlight alignments between the Conceive-Design-Implement- Operate (CDIO) framework and Equity, Diversity and Inclusion (EDI) concepts and provide inspiration for how to operationalise these. EDISC builds connections between education practitioners from across the Monash community who influence teaching practices in Monash courses, including those offered in the multiple disciplines and specialisations of the Faculty of Engineering. The shared mission of the group members producing this paper is to identify opportunities to influence and advocate for equitable practices and considerations during the conceive, design, implement and operate stages of learning experiences. By leveraging these synergies, the group aims to contribute towards the cultivation of environments that are diverse, equitable, and inclusive, and observe the results of these. As such, this group is well placed to advise on how this can be achieved through frameworks such as CDIO. This can influence better educational outcomes, fostering a holistic approach in CDIO that incorporates social and ethical dimensions alongside technical excellence. This paper highlights the opportunities for embedding EDI in the CDIO framework and philosophy, identified by members of our Sharing Circle.

KEYWORDS

Equity, Diversity and Inclusion (EDI), Universal Design for Learning (UDL), Accessibility, Standards: 1-12

INTRODUCTION

Inclusion and equity have emerged as pivotal concerns in engineering education, where diverse perspectives and equitable opportunities are crucial for cultivating innovative, ethical, and socially responsible engineers. The CDIO (Conceive- Design- Implement- Operate) framework, widely adopted for its emphasis on practical, real-world engineering education, provides a robust platform for addressing these challenges. This paper explores how the principles of inclusion and equity can be systematically embedded into the CDIO framework, ensuring that engineering curricula and practices are accessible and beneficial to all students, regardless of their backgrounds or circumstances. By integrating these values into the framework's processes and outcomes, this study aims to advance a more inclusive and equitable future in engineering education.

Alignment of CDIO with Equity, Diversity and Inclusion:

The CDIO syllabus aligns closely with the United Nations Educational, Scientific, and Cultural Organization (UNESCO) framework (Delors et al., 1996), particularly in its application to engineering education (Crawley et al., 2009). At its core, the CDIO Syllabus is divided into four categories, which correspond to UNESCO's four pillars of education, as shown in Table 1.

Table 1. Mapping CDIO to UNESCO

CDIO	UNESCO
Technical Knowledge and Reasoning	Learning to Know
Personal & Professional Skills & Attributes	Learning to Be
Teamwork and Communication	Learning to Live Together
Conceiving, Designing, Implementing and Operating Systems in the Enterprise and Societal Context	Learning to Do

The connection between the CDIO Syllabus and the UNESCO framework underscores the need for equity, diversity, and inclusion (EDI) to be core elements of the CDIO framework. Educational practitioners and decision-makers must apply EDI fluency for effective implementation. In line with CDIO Standard 10 (2010), programs should enhance faculty competence through integrated learning experiences (Standard 7), active and experiential learning (Standard 8), and student learning assessments (Standard 11). However, a review of 17 years of CDIO submissions (Meikleham et al., 2018) reveals that faculty development has been underrepresented in CDIO literature, highlighting a gap that needs to be addressed for more effective implementation.

CASE STUDY CONTEXT: EDI SHARING CIRCLE AT MONASH UNIVERSITY:

An example of applying these principles in practice is the EDI Sharing Circle (EDISC) at Monash University, ranked as the number one engineering school in Australia (THE, 2023 & 2024). The newly established EDISC initiative aims to foster partnerships with the Monash Engineering Equity, Diversity, and Inclusion (EDI) Faculty Committee and Faculty EDI academic representatives. There is enormous potential for educators in formal and informal positions of influence, where supported by senior leaders, to cultivate supportive cultures and drive change on equity matters (Jacobs et al., 2014), and the purpose of the Monash EDI Sharing Circle is exactly that. It exists to support members in their efforts to influence educators, curriculum, leaders and policy towards the implementation of positive and inclusive

educational practices that respect and celebrate diversity. The EDISC consists of Monash staff in advisory roles who influence educational practices within programs (courses or subjects), focusing on indirect practice. It is less about 'how can I be more inclusive' and more about 'how can I encourage inclusive practices in our courses/subjects'. Members of the sharing circle also recognise that the higher education sector is predicated upon a flawed belief in a meritocratic society (Stein & Andreotti, 2018) where in fact all peoples have constrained agency in their aspirations and outcomes (Polesel et al., 2017). As such, the EDI Sharing Circle seeks to strike a delicate balance between working with the structures and system of the higher education sector and problematising them.

Figure 30. Structure of discussion of EDI frameworks influencing Monash Engineering

EDI Frameworks

A variety of frameworks shape the practice of EDI principles (see Figure 1). Monash's engineering degrees are offered at campuses in both Malaysia and Australia. The Australian programs are accredited by Engineers Australia to the Stage 1 Competency Standard (Engineers Australia, 2019). As the peak body for engineering in Australia, Engineers Australia has outlined the following strategic priorities related to inclusion and diversity: **Creating Tomorrow's Engineers**: Enhance the diversity of the engineering profession to attract the best talent and retain top performers, **Provide a Professional Home for Life**: Celebrate individual differences that reflect the communities we serve, and **Be the Trusted Voice of the Profession**: Advocate for programs and support that foster a diverse engineering workforce.

The EA Diversity and Inclusion Positioning Statement (2022) defines a diverse workplace as one that values individual differences, reflecting community diversity. An inclusive workplace ensures fair treatment, equal access to opportunities, and full contribution to success, fostering a sense of belonging where every employee feels valued and heard. These principles align with the United Nations Sustainable Development Goals, UN SDGs, (2016, 2017), including Goals 4 (Quality Education), 5 (Gender Equality), 8 (Decent Work and Economic Growth), 10 (Reduced Inequalities), 16 (Peace, Justice, and Strong Institutions), and 17 (Partnerships for the Goals).

Advancing EDI Goals through EDI Sharing Circle

Under the Monash University EDI Framework (2021), there are aspirations to build an inclusive community. The Enabling and Evaluation Plan 2023-2024 outlines these goals, and these overarching principles must be translated into actionable steps for engineering educators. By aligning these principles with the strategic priorities of the UN SDGs, Engineers Australia, and Monash's strategic plan, the engineering faculty can take concrete steps to implement inclusive practices and foster an equitable learning environment. The Monash EDI

Sharing Circle (EDISC), aims to support faculty in advocating for and implementing inclusive practices in the curriculum. Through its collaborative structure, the Circle envisages empowering educators to integrate EDI principles, contributing to Monash's commitment to a diverse and inclusive engineering community. This paper represents the first step in empowering faculty and positioning the group to drive meaningful change as it develops.

METHODOLOGY

Mapping the CDIO Standards to the EDI Frameworks

While other frameworks exist, such as Higher Education Standards Framework (Threshold Standards) (TEQSA, 2021), this paper adopts the lens of inclusion and accessibility as outlined by Advance Higher Education (Advance HE), formerly known as the Higher Education Academy. Advance HE offers a globally recognised program for acknowledging contributions to higher education, with a standard that supports professional progression from Associate Fellow to Principal Fellow, reflecting various stages of experience in both academic and professional roles. Advance HE collaborates with 400 institutions globally (Figure 2) to promote institutional, staff, and student success, including some CDIO members. Through its global reach, Advance HE supports institutions foster diversity, inclusion, and equitable opportunities across varied cultural and institutional contexts.

Figure 2. Geographic comparison of global distribution CDIO collaborating institutions (CDIO Initiative, 2024) and Advance HE member institution.

By exploring the CDIO framework standards, the EDI Sharing Circle aims to identify opportunities to embed inclusion and accessibility, while addressing the benchmarks set by Advance HE (Hanesworth, 2019). The five domains of the Advance HE program standard (Curriculum Design, Curriculum Delivery, Assessment and Feedback, Learning Environments and Staff Engagement) were used in the structuring of the process, as shown in Table 2.

The mapping, summarised in Table 2, was a collaborative effort by the EDI Sharing Circle members, combining asynchronous work with regular online meetings. Drawing on their expertise in the Advance HE EDI standard, Universal Design for Learning (UDL), inclusive practices, programmatic assessment, constructive alignment, and other related guiding principles, they significantly contributed to guiding the mapping process. This collective knowledge is evident in the emerging themes, which integrate these diverse elements.

Table 2. Overview of mapping between Advance HE EDI Framework & CDIO Standards. Ticks (✓) show alignment between an element of the EDI Framework and a CDIO Standard.

		CDIO Standards											
Advance HE EDI framework (Hanesworth, 2019)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Curriculum Design:	8 principles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Curriculum Delivery:	8 principles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Assessment & Feedback:	8 principles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Learning Environments:	7 principles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Staff Engagement:	8 principles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Thematic Analysis

The analysis employs a two-pronged approach; an unsupervised machine learning clustering techniques to identify patterns and provide a quantitative basis for underlying themes, followed by qualitative insights from the EDI Sharing Circle to enrich the analysis with expert perspectives. This combined methodology helps identify patterns and connections between words and concepts in the data, making it easier to see how they are linked and interact with each other.

RESULTS AND DISCUSSION

By combining both computational and human perspectives, we aim to provide a multi-layered analysis of the patterns and relationships within the data. In this section, we first present results from computational clustering methods applied to our dataset, offering a data-driven approach to identify underlying patterns. We then turn to insights from human subject matter experts, whose expertise adds a qualitative layer to the analysis. The curious can find the documentation of the complete mapping located in the Appendix.

The computational analysis begins with the use of word embeddings, which serve as a key tool in mapping relationships within the data. Word embeddings, a type of natural language processing, detects patterns in text to extract meaning by learning from a collection of unlabelled sentences. The algorithm considers surrounding words for context, creating a numerical representation of each word as a high-dimensional vector (for example, 100-D), which is then used to train the model. We use t-distributed stochastic neighbor embeddings (t-SNE) (Van der Maaten and Hinton, 2008) to visualise and identify broad patterns in the results of our analysis.

This method consolidates complex, multi-dimensional data (like language sequences) into a two-dimensional graphical space, as shown in Figure 4. Each plotted point represents the mapping of one CDIO Standard element to the Advance HE EDI framework, with the same data points appearing in both subplots; CDIO standards-based designations on left and computationally detected themes on the right.

In Figure 4, we observe that the themes identified through computational analysis (described in Table 3) transcend the individual CDIO standards, revealing broader, interconnected patterns. This suggests that the equity, diversity, and inclusion themes span multiple

dimensions of the CDIO framework, offering a more holistic view of the data. These findings indicate that the computational approach has uncovered cross-cutting themes that may not be apparent when considering each standard separately.

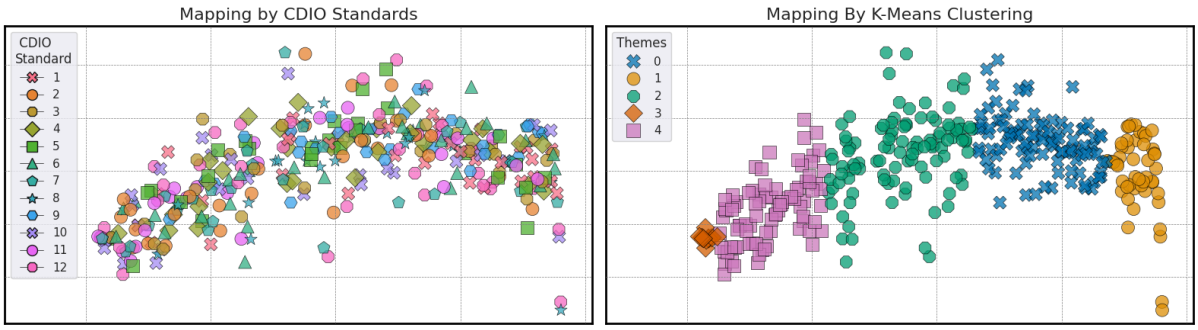

Figure 4. Note: The axes in this visualisation are defined through Principal Component Analysis (PCA), capturing the primary directions of variance in the data. While they reveal dominant patterns, they do not directly align with specific, easily interpretable meaning

Table 3. Themes extracted from unsupervised machine learning cluster analysis

Theme Number: Theme
0: Inclusivity → ['students', 'skills', 'learning', 'faculty', 'edi'] *This cluster highlights EDI (Equity, Diversity, Inclusion) alongside foundational educational elements, suggesting a focus on inclusive learning environments.*
1: **Curriculum Relevance** → ['edi', 'students', 'relevant', 'perspectives', 'disciplinary', 'faculty', 'curriculum', 'needs'] *Combines EDI, disciplinary relevance, and curriculum responsiveness to diverse perspectives and needs.*
2: Equitable Assessment → ['students', 'learning', 'assessment', 'staff', 'edi'] *Assessment and EDI together point towards fairness and inclusivity in evaluating student learning.*
3: Learning Design → ['outcomes', 'assessment', 'learning', 'design'] *A cluster pointing to structured and intentional learning experience design.*
4: Competency Mapping → ['assessment', 'students', 'learning', 'outcomes', 'engineering', 'skills', 'curriculum'] *This reflects an emphasis on aligning assessment with learning outcomes and engineering competencies.*

This alignment is not surprising, as effective frameworks often share foundational principles grounded in inclusivity, adaptability, and student-centred approaches. Such overlap reflects the universal importance of key educational priorities, such as fostering equitable learning environments, ensuring accessibility, and promoting cohesive programmatic structures. The findings reinforce the notion that well-designed frameworks naturally converge around common goals, which practitioners can leverage to create more integrated and impactful educational practices. To further explore these findings, it is useful to compare the computational theme identification with the human insights from the EDI Sharing Circle. While the computational analysis reveals broad, interconnected patterns across the CDIO framework, the human analysis highlights specific, actionable practices for fostering inclusion and agency, as specified in Table 3.

The themes in Table 4 emphasise the importance of co-design and agency, with student feedback being central to course improvement and fostering motivation. Scaffolding supports student transition into higher education through structured guidance, while diversity and accessibility in the curriculum are crucial for effective learning outcomes and reducing biases.

Additionally, faculty competence in inclusion is essential for enhancing student success and creating an inclusive learning environment.

Table 4. Themes identified by members of the EDI Sharing Group during the mapping of Advance HE EDI framework against CDIO Standards

Themes	Description	Examples of practice
1: Agency > Co-design	Emphasising the value of student and stakeholder feedback is key. This theme recurs across Map Staff Engagement and Map Assessment and Feedback mapping. Integrated/circular feedback and co-design practices enable meaningful evaluation of the assessment, course, and workspaces, and incorporating it into course cycles enhances student agency. Focus on enacting feedback, not just collecting it ('listening'). Two-way communication is important, and student's voice is critical for accurately evaluating programs. Co-design fosters student agency, motivation and engagement, and supports more personalised learning in traditionally fixed pathways, and strengthens inclusion and belonging through real-world relevance.	Expanding networks to include representation, advocacy and allies (disability, women/LGTBIQ in engineering, and culturally diverse engineering firms) Student focus groups within units and courses to inform all aspects of the CDIO standards. Students co-creating the curriculum.
2: Scaffolding	Effective scaffolding supports students transitioning from school (or non-traditional backgrounds) to higher education by guiding them through disciplinary knowledge and skill development. Implementing feedback cycles and iterative approaches, especially in early stages, ensures continuous growth.	Using near-peer mentoring to bridge the gap between educators and beginner students.
3A: A diverse student cohort yields better learning outcomes and artefacts	To be effective engineers who can contribute to society's future needs, students must design for a wide range of human experiences and consider diverse perspectives. Engaging with peers from diverse backgrounds is essential for this. Failing to do so increases the risk of creating artefacts that are unfit for purpose and perpetuate inequity, discrimination, and bias. Students' fresh perspective, free from prior expertise or bias in design standards, makes them well-positioned to identify EDI issues within systems.	Students designing digital technology for in-home care must access the experiences of those with disabilities, carers, families, and support workers. An accessible learning environment ensures that students with disabilities or caregiving duties can contribute meaningfully, enriching both their learning and that of their peers.
3B: Accessibility of curriculum, learning spaces, etc. essential for individual student success	Incorporating accessibility practices, cultural safety, and equity throughout the curriculum and teaching practices is vital to ensure student success. Integrating these practices ensures students acquire the necessary skills and knowledge, while a lack of accessibility hinders their potential.	Students reviewing a engineering design drawing/model are provided with accessible materials, considering diverse sensory and neurodevelopmental needs (e.g., vision and auditory differences, dyslexia, ADHD).
4: Faculty competence in implementing inclusion into CDIO Framework to improve student experience and learning outcome	While faculty are recognized as subject matter experts, their qualifications often lack specific training in inclusion and equity beyond mandatory compliance. Demystifying inclusive practices and building confidence in faculty is essential to maximise student success, belonging, and well-being. Institutions must integrate inclusion and equity into faculty development, fostering both teaching competence and an inclusive learning environment. Additionally, recognizing system and structural issues that hinder faculty diversity is crucial in addressing barriers to diverse hiring practices.	Faculty development should include training on universal design for learning, unconscious bias, and equitable participation, while institutions should implement diverse hiring panels and mentorship programs to support underrepresented groups in academia.

CONCLUSION

This paper explores how the CDIO framework can be enhanced with principles of equity, diversity, and inclusion (EDI), using the EDI Sharing Circle as a case study. Our analysis shows that EDI themes, such as co-design, scaffolding, and faculty competence, span multiple CDIO standards, highlighting the interconnectedness of these concepts. The integration of computational analysis and expert insights demonstrates that embedding EDI within the CDIO framework promotes more inclusive, student-centred educational practices. This approach offers a practical pathway for engineering educators to foster more equitable and accessible learning environments..

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AI Usage Declaration

During the final editing phase, generative AI (ChatGPT) was employed to provide feedback on the tone, clarity, and overall flow of the writing. The author carefully reviewed the AI-generated suggestions, making adjustments to improve readability and coherence where appropriate. However, no text directly generated by the AI was substituted for the author's original content.

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Aster Cosmos is an Educational Designer at the Faculty of Information Technology at Monash University and holds a Master's in Education with a specialisation in equitable practice. They run training for teaching staff, provide guidance and feedback in the pedagogical and educational technology spaces, adopting a pedagogy-first approach. They are a stalwart advocate around equity and inclusion and are part of several equity related committees and grassroots allyship networks.

Helmy Cook, PhD, leads the eLearning team in the Monash School of Medicine. She is an Educational Designer interested in innovative approaches to teaching and learning that are evidence-based and expert-guided.

Prudence Perry is an Educational Designer within the School of Public Health and Preventive Medicine, and conducts education research as a member of the Medical Education Research and Quality unit. She specialises in STEM discipline teaching and learning within higher education, and delivers 'train the trainer' programs for more than 100 educators, providing consultation for assessment innovation across 11 courses. Prudence is passionate about removing barriers to educational engagement and fostering rich learning environments to drive academic excellence.

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APPENDIX: PART 1A (OF 5) CURRICULUM DESIGN
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (1-3)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 1: Context	Standard 2: Learning Objectives	Standard 3: Integrated Curriculum
Accessibility of and flexibility in programmes of study that allow students to input on their learning pathways and experiences. (1/8)	Connectivity: The CDIO context encourages student input, with a variety of project choices offering flexibility. --- Tip: Evaluation groups should consider the diverse student body, recognising that some may struggle to engage in engineering processes. While some students may have prior experience, others may find CDIO less accessible. --- Example: CDIO provides the context for engineering education, but each student's pathway within that framework can be unique, as long as the overall structure remains consistent.	Connectivity: Internal and external groups regularly review and revise program learning outcomes and/or program goals based on changes in student and stakeholder needs. --- Tip: Ensure multiple learning pathways can be used to achieve learning outcomes. --- Example: Learning outcomes include creativity and critical thinking, nurtured through a student-centered approach. As long as technical and disciplinary knowledge is covered, students can choose their topic and assessment method.	Connectivity: Internal and external stakeholders regularly review the integrated curriculum; they could consider the accessibility and flexibility of the integrated curriculum. --- Tip: Allow students flexibility in the level/rate at which their learning experiences lead to the acquisition of personal and interpersonal skills. --- Example: Some students have strengths in product, process or system skills but lack interpersonal skills, while others' strengths may lie in interpersonal skills and need to work on disciplinary knowledge.
Accessibility of learning outcomes and/or competence standards. (2/8)	Connectivity: The CDIO program inherently increases the accessibility of learning outcomes by encouraging effort and persistence because it mimics an authentic engineering design experience --- Tip/Example: Optimise the relative emphasis of task 'challenge and support' to ensure sustained effort. Students are offered scaffolds where required and freedom to build confidence in their capability.	Connectivity: The CDIO standards emphasise the need to regularly review learning outcomes based on stakeholder needs, which is directly linked to accessibility requirements and that learning outcomes are clearly linked to the profession's core competencies. --- Tip: Check that learning outcomes are free from unnecessary barriers. --- Example: The review includes checking that learning outcomes do not disadvantage individuals or groups.	Connectivity: The integrated curriculum explicitly maps specific learning outcomes to courses and co-curricular activities. This makes learning goals clear and accessible. --- Tip: Prioritise student feedback on the accessibility of learning outcomes and their connections to learning experiences. --- Example: Students should report they are clear about their learning goals across the program and find them meaningful.
Considerations of EDI in learning outcomes and/or competence standards. (3/8)	Connectivity: Integrating EDI principles into learning outcomes and competency standards ensures that engineering education promotes the development of sustainable products, processes, systems, and services that are inclusive and equitable, encouraging diverse perspectives and solutions for addressing global challenges. --- Tip: Demonstrate how the CDIO process and EDI principles are inherently connected to increase buy-in. --- Example: The CDIO adoption in a course is aligned with explicit standards and outcomes that reflect core EDI practices.	Connectivity: These are inherently connected in that the learning outcomes are the centre of the program and the most critical place to situate EDI principles. --- Tip: Create a spreadsheet aligning the learning outcomes to the Advance HE EDI framework to identify areas for improvement. --- Example: EDI considerations involve ensuring that learning outcomes include the ability to work effectively in diverse teams and understand the impact of engineering solutions on different communities.	Connectivity: Integrating EDI principles into learning outcomes and core competencies ensures an inclusive curriculum that develops both interpersonal and disciplinary skills for an internationalised society. --- Tip: Embed EDI concepts in all levels of learning outcomes to ensure a more integrated alignment. --- Example: The curriculum offers opportunities for interpersonal and disciplinary skill development through an ePortfolio, capturing evidence of analysing diverse perspectives and designing inclusive engineering solutions for various contexts.
Tackling of the impact of own identity beliefs, cultural assumptions and unconscious biases as part of the design process. (4/8)	Connectivity: Engineering programs that challenge personal assumptions and biases as part of the CDIO process help students Conceive–Design–Implement–Operate complex, sustainable products, processes, systems, and services in team-based environments. --- Tip: Students may not recognise how their cultural beliefs and assumptions differ from others unless they are exposed to alternative perspectives. --- Example:A reflective framework with prompting questions to critically examine unconscious bias and cultural sensitivity, integrated into each phase of the CDIO program.	Connectivity: The CDIO syllabus and program learning outcomes should reflect the importance of personal and interpersonal skills alongside technical knowledge, which aligns with the need to address assumptions and biases in the design process. --- Tip: Unpacking assumptions and biases do not have to be explicit in the program learning outcome. --- Example: Feature critical reflection practices, personal goal setting and effective teamwork and communication as part of learning outcomes	Connectivity: Combining these standards creates a curriculum that requires students to reflect on their own biases and how these might impact their engineering decisions. This can lead to more sustainable and culturally sensitive design practices. --- Tip: Front-load /scaffold critical reflection on bias as a core component of personal and interpersonal skills. --- Example: Using ePortfolio and programmatic assessment allows curriculum designers to systematically embed critical reflection on biases, increasing in complexity throughout the course. This approach also allows skills within the discipline to develop progressively over time.
Opportunities for students to co-create their curricula. (5/8)	Connectivity: Co-creation of the curriculum allows for diverse voices in the realisation of the CDIO format and increases student agency and motivation. --- Tip: Co-creating the curriculum allows students to develop negotiation skills. --- Example: A mechanical engineering program that allows students to co-design a semester-long project focused on sustainable product development.	Connectivity: Allowing students to co-create learning outcomes helps them understand the bigger picture of their program and its design and alignment. --- Tip: While some learning outcomes are fixed by institutional and industry policies, those related to specific classes or weeks are more flexible for co-creation. --- Example: Show students how a subject learning outcome aligns with the program learning outcome, and have them co-create learning outcomes for the next class.	Connectivity: Co-creating the curriculum allows students to recognise areas for improvement in their personal, interpersonal, and professional skills and product, process, system, and service building skills. --- Tip/Example: Have students begin the second year using a self-audit of their skill sets and areas for improvement, then co-create their assessment to target the cohort's common areas.
Course content that facilitates exploration of themes of equality, diversity, inclusivity and cultural relativity. (6/8)	Connectivity: CDIO is part of the cultural environment in which skills and knowledge are formed. A cultural environment that is holistic, responsible and considers broader societal impacts. --- Tip: Embedding themes of equality in a process ensures a more systematic coverage. --- Example: Have students consider the development of a new public transportation system that considers inclusive transport design from conception through to operation.	Connectivity: Themes of equality, diversity, inclusivity, and cultural relativity can be embedded within the program learning outcomes to develop well-rounded professionals capable of navigating complex social contexts while applying technical skills. --- Tip: Equity themes align with ethics and serve as a strong starting point for these outcomes. --- Example: Students can evaluate how socioeconomic factors impact design requirements or describe diverse user needs in product design.	Connectivity: When students explore themes of equality, they develop key interpersonal skills, such as empathy, cross-cultural communication, and collaborative problem-solving. --- Tip: Equity themes can be unpacked both within the project focus and also in the group communication style and the scaffolding of teamwork skills. --- Example: Students could collaboratively develop a support-based app for unhoused people from different cultural backgrounds and ability levels.
Course content that covers multiple perspectives, theoretical standpoints and contributions by people from multiple cultures and backgrounds. (7/8)	Connectivity: Perspectives and theories influence every stage of the CDIO model, requiring diverse contributions for a holistic application in engineering education. --- Tip: Integrating multiple perspectives can cause friction when standpoints differ, so ensure faculty are prepared with safe mediation strategies. --- Example: When implementing or reevaluating the CDIO model across a program, elicit and enact feedback from stakeholders from multiple cultures and backgrounds with multiple perspectives.	Connectivity: The most impactful area for integrating multiple perspectives is in the learning outcomes, as they shape all learning across a program. This becomes challenging if the outcomes are developed with a singular cultural or theoretical bias. --- Tip: If your work area lacks diversity, seek feedback from third-space professionals such as educational designers, academic skills advisers, and equity and inclusion consultants. --- Example: During a program or subject review, consult with people from various roles, cultures, and theoretical perspectives.	Connectivity: Robust personal and interpersonal skills overwhelmingly require knowledge and acceptance of diverse perspectives and theoretical standpoints. --- Tip: Eliciting and enacting multiple perspectives while creating the integrated curriculum reduces potential weaknesses across the program and highlights areas for further development. --- Example: Identify the perspectives available within the program curriculum development team and, where there are blind spots, seek ways to improve the diversity of those represented in the integrated curriculum design group.
Incorporation of the embedding of EDI in the curriculum in classroom observation and peer review activities. (8/8)	Connectivity: CDIO prioritises team-based learning, with observation and peer review as integral components. Incorporating EDI into these tasks ensures the curriculum is accountable for EDI integration. --- Tip/Example: Map observation, peer review, and other essential personal and interpersonal skills within the CDIO syllabus to identify where they occur across a program. When focusing on teamwork in observation and peer review, include criteria that address equity principles to ensure learning outcomes do not disadvantage any individuals or groups.	Connectivity: Integrating EDI themes into Learning Outcomes (LOs) is essential for meaningful impact. Evaluating the teaching of EDI within those LOs ensures effective coverage. Peer review and class observations are effective mechanisms for this. --- Tip/Example: When planning peer reviews, unpack EDI themes in the learning outcomes and consider how students can demonstrate this. This helps identify what to look for in educator practices that support EDI. Pairing educators for peer review can also bring diverse perspectives to uncover elements they may have missed.	Connectivity: By incorporating EDI principles into peer learning systematically across a program, educators gain exposure to different viewpoints and experiences. This supports the development of better integrated technical engineering skills and interpersonal competencies. --- Tip/ Example: Develop a program-wide observation rubric that prompts reviewers to analyse the equity practices present in their educator colleagues' assessment tasks.

APPENDIX: PART 1B (OF 5) CURRICULUM DESIGN
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (4-6)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 4: Introduction to Engineering	Standard 5: Design-Implement Experiences	Standard 6: Engineering Learning Workspaces
Accessibility of and flexibility in programmes of study that allow students to input on their learning pathways and experiences. (1/8)	Connectivity : The course incorporates "personal and interpersonal knowledge, skills, and attitudes" in the program, offering flexibility as these evolve with each new cohort. --- Tip: Build flexibility in the Intro to Engineering course, allowing students to influence learning pathways and experiences. --- Example: While the educator selects the core disciplines to be covered, students choose from various applications to explore from those disciplines.	Connectivity: Design-implement (D-I) experiences progress in complexity, offering students input on their learning pathways and experiences. --- Tip: Seek feedback from students with diverse experiences on the flexibility and input they felt they had in shaping their learning pathways within D-I experiences. --- Example: Educators collaborate with students to design challenges that are motivating and facilitative for them.	Connectivity : Students are expected to have input and 'directly engage in their own learning' according to Standard 6. --- Tip: Social learning is emphasised in this standard, so it is important to foster interdependence and collective learning. --- Example: From UDL - "Construct communities of students engaged in common interests or activities or who identify in similar ways."
Accessibility of learning outcomes and/or competence standards. (2/8)	Connectivity: The introductory course is well-suited to making the competence standards accessible by starting with simple design exercises preparing students for more advanced engineering experiences. It sustains effort by drawing on personal and interpersonal knowledge/skills/attitudes. --- Tip: Educators and students can work together to define what competence looks like in Engineering to ensure students have buy-in and are clear on their learning goals. --- Example: The educator might ask students to share their ideas of what is needed in Engineering: what makes a competent engineer? What perspectives do they bring to the field?	Connectivity: Design-implement experiences are structured to promote early success, with increasing levels of complexity that make learning outcomes and competency standards accessible. --- Tip: Emphasise real-world contexts and encourage students to explore personal, professional, and career interests to connect with learning outcomes.. --- Example: Include reflective practice in the design-implement experience, allowing students to examine what matters to them and ensure they are invested in their work.	Connectivity: This standard recognises that "competencies are best developed in workspaces that are student-centred, user-friendly, accessible, and interactive." --- Tip: Ensure students are involved in reviews and listened to, with action taken if they report any barriers to achieving learning outcomes due to workspace flexibility/constraints. --- Example: Students report they feel the workspaces support hands-on skills and activities but do not have easy access to tutors for guidance.
Considerations of EDI in learning outcomes and/or competence standards. (3/8)	Connectivity: Consideration of EDI practice in the introductory course learning outcomes emphasises the importance of creating sustainable and inclusive engineering solutions that benefit diverse communities. --- Tip: Introductory students, with their fresh perspective, can identify gaps in EDI practice in engineering designs that experts may overlook. --- Example:In the introductory course, have students reevaluate a historical engineering design, such as public bathroom spaces, to assess its alignment with EDI practices.	Connectivity: Aligning the design-implement experiences to EDI-themed learning outcomes helps students develop inclusive engineering designs that address diverse user needs. --- Tip: Use the campus as a real-world setting for design-implement experiences, encouraging students to design systems and products that enhance inclusion in their environment. --- Example: Create two design-implement experiences that build on disciplinary knowledge and EDI principles. The first could involve designing a simple, accessible ramp system, and the second, more advanced experience, could focus on designing an adaptive public transport entrance. These experiences progressively deepen students' understanding of user requirements across systems.	Connectivity: This relationship is important because it ensures that all students, regardless of their background or abilities, have equal opportunities to develop essential engineering skills and knowledge through hands-on experiences and digital tools. --- Tip: Leverage your institution's framework for inclusive practice to highlight issues in digital and physical learning spaces. --- Example: When creating program learning outcomes, EDI themes can reveal potential disadvantages in both physical and virtual engineering learning spaces by considering whether all students have equal opportunities to achieve the stated outcomes.
Tackling of the impact of own identity beliefs, cultural assumptions and unconscious biases as part of the design process. (4/8)	Connectivity: Having students critically reflect on bias during the design process helps them become more effective problem-solvers and team members in the introductory course. --- Tip: Assume students have little capacity to reflect on bias, so they all learn the same skills over time without anyone being disadvantaged due to a lack of prior knowledge. --- Example: Begin with an anonymous diagnostic survey in the introductory course, asking students to consider their own identity and beliefs, then build towards critical reflection on bias and assumptions.	Connectivity: Creating design-implement experiences that encourage students to unpack their own biases is a comprehensive approach to design that considers both technical skills and cultural competence. --- Tip: When assumptions are clear to the educators, you can prompt the students with questions like 'Why do you know that?', 'Why do you hold that as true?' and 'Could there be other possibilities?' --- Example: As students work through the design-implement process, they are required to document how they are addressing potential biases and incorporating cultural considerations into their engineering solutions.	Connectivity: Personal biases and cultural assumptions can affect the design of learning environments, limiting their effectiveness for diverse student populations. --- Tip: Questioning frameworks help identify unconscious biases. --- Example: Ask questions to uncover biases when developing the curriculum: What assumptions are we making about people's abilities in online content? Are we assuming everyone can differentiate colors equally? What assumptions are we making when designing lab spaces, such as a specific height standard for workbenches in educational spaces?
Opportunities for students to co-create their curricula. (5/8)	Connectivity: Co-creating the introductory course allows students to voice their needs early in the program. --- Tip: Since students may struggle to fully articulate their needs, a set of reflective questions can help them express these needs. --- Example: Have students complete initial problem-solving tasks and ask evaluative questions afterward. Use their feedback to create follow-up tasks that address the ideas raised.	Connectivity: Students can co-create their advanced design-implement experience to target their interests and needs. --- Tip: Students will need to experience something before they can form opinions and offer their voice, so this is best completed for the second design-implement experience. --- Example: Student teams create their own project timelines and deliverables and develop presentation formats that best suit their projects.	Connectivity: The physical and digital learning spaces allow opportunities for real-world exploration of equity themes. --- Tip: Integrate an evaluation of the equity considerations present (or not present) in the digital and physical workspaces into the program. Highlight quality design practices along with unsatisfactory practices. --- Example: Have students analyse their digital workspace and its adherence to accessibility principles.
Course content that facilitates exploration of themes of equality, diversity, inclusivity and cultural relativity. (6/8)	Connectivity: Embedding equity themes into the introductory course prioritises equity from the outset and develops students who can design products, processes, systems, and services that better serve all members of society. --- Tip: In introductory projects, have students visit the client community to connect with them as people rather than as a concept. --- Example: A project developing a water filtration system for communities with limited resources, where students learn fundamental engineering design principles while considering how community challenges impact sustainability.	Connectivity: Design-implement experiences lay the foundation for understanding the ethical and sustainability aspects of engineering. Immersing students in equity themes enhances their skills in these areas. --- Tip: Ensure evaluation is present in the design-implement experience to assess students' understanding of the equity themes in the project. --- Example: Create a design-implement experience for a hearing-impaired client, then have students analyze which aspects of the design would benefit all clients.	Connectivity: The physical and digital learning spaces allow opportunities for real-world exploration of equity themes. --- Tip: Integrate an evaluation of the equity considerations present (or not present) in the digital and physical workspaces into the program. Highlight quality design practices along with unsatisfactory practices. --- Example: Have students analyse their digital workspace and its adherence to accessibility principles.
Course content that covers multiple perspectives, theoretical standpoints and contributions by people from multiple cultures and backgrounds. (7/8)	Connectivity: Highlighting how different cultures and people approach problem-solving and design in the introductory course broadens students' understanding and prepares them for the global and collaborative nature of modern Engineering. --- Tip: Create a safe space for discussion by presenting a scenario with differing approaches and having students analyse potential conflicts. This encourages students to consider perspectives beyond their own. --- Example: .Showcase contributions from multiple perspectives by exploring the history of Engineering and how it has evolved to become more inclusive of diverse practices.	Connectivity: Faculty can encourage students to consider how cultural, social, and economic contexts influence the design and implementation of a product, process, or system in design-implement projects. --- Tip: Students do not always innately know how to engage respectfully when discussing multiple perspectives. Explicitly teach and offer guidelines for interpersonal skills before engaging students in discussions eliciting their own diverse perspectives. --- Example: Form diverse student groups to bring multiple perspectives to the table, enhancing creativity and innovation in the design process. With proper scaffolding, students can learn to appreciate and integrate different viewpoints.	Connectivity: The physical and digital learning infrastructure provides a practical space for students to explore how multiple perspectives, or the absence of them, impact the design of these spaces. This hands-on approach demonstrates how engineering affects people from diverse cultures and backgrounds. --- Tip: To ensure multiple perspectives are considered, it's important to evaluate who is involved in decision-making. --- Example: Have students analyse the design of physical and digital workspaces to identify which perspectives were prioritized and uncover representation gaps based on missing features.
Incorporation of the embedding of EDI in the curriculum in classroom observation and peer review activities. (8/8)	Connectivity: EDI concepts are simplified in introductory subjects to match student readiness. A review by another educator ensures the concepts are appropriately pitched. --- Tip/Example: Students from secondary education may be familiar with some EDI concepts but not within the Engineering context, so additional scaffolding should be considered during peer review.	Connectivity: Design-implement experiences benefit from peer review at the Conceive stage, where educators receive support in helping students explore all available options. EDI theming in the review emphasises embedding equity practices into engineering design. --- Tip: In peer review, reflective questions that challenge assumptions and biases in engineering design are highly effective in helping educators integrate EDI themes. --- Example: In groups, students design a campus navigation app. Peer review can focus on how educators have scaffolded the design, including accessibility, language inclusivity, and clarity of iconography.	Connectivity: When observing classrooms through an EDI lens, students can evaluate how well the physical and digital environments support diverse learning needs and ensure equitable access to hands-on engineering experiences. --- Tip: When analysing these spaces, consider both innovative possibilities and practical limitations, such as budget, and discuss the tensions between them. --- Example: Observational activities can assess how physical and digital spaces might hinder learning and identify improvements. For example, students with sensory sensitivities may struggle with bright neon lighting in labs, and educators can discuss possible alternatives.

APPENDIX: PART 1C (OF 5) CURRICULUM DESIGN
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (7-9)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 7: Integrated Learning Experiences	Standard 8: Active Learning	Standard 9: Enhancement of Faculty Competence
Accessibility of and flexibility in programmes of study that allow students to input on their learning pathways and experiences. (1/8)	Connectivity: Integrated learning experiences draw on problem-based learning, which supports student input into their learning pathways and experiences. --- Tip: Ensure pedagogical approaches allow for self-regulated learning. --- Example: Students are supported and encouraged to have input into planning/goal setting, monitoring their progress and self-assessing.	Connectivity: Active learning engages students in constructing their knowledge, allowing input into their learning experience. --- Tip: Ensure active sessions or learning moments welcome interests and identities and support multiple means of engagement. --- Example: Provide flexibility for students to respond, such as using online whiteboards for classroom discussions.	Connectivity: Faculty are expected to be proficient in disciplinary knowledge and a range of skills, including personal, interpersonal, product, process, system, and service-building. This includes evaluating their ability to establish constructive relationships with diverse students and foster their learning. --- Tip: Develop faculty competence in acknowledging their power dynamic with students and encourage them to share that power to promote student agency and improve understanding. --- Example: Staff undergo training that emphasises that they are not the holders of all knowledge and that they can continue learning alongside their students.
Accessibility of learning outcomes and/or competence standards. (2/8)	Connectivity: This standard acknowledges that the learning outcomes can only be realised if disciplinary knowledge, personal/interpersonal skills and product, process, system, and service-building skills are developed simultaneously. It places importance on faculty as role models. --- Tip: Faculty should engage in critically reflecting on what they are modelling. --- Example: A staff member who models always knowing the correct answer might send a message to students that they, too, should always have the answers and if they do not, they might feel they will never reach competency in the profession.	Connectivity: Active learning fosters educational literacy in students and promotes collective and collaborative learning, helping students understand interdependence and see the value in supporting one another. This can improve accessibility to learning outcomes for all. --- Tip: Co-create active learning agreements in class that foster collaboration where students support and rely on each other. --- Example: In the first class, the educator facilitates the agreement and helps students connect and share their perspectives.	Connectivity: This standard recognises the need for faculty to keep up with change, be role models, and produce competent engineers in today's world. This means keeping up with the pace of technological change and social change. --- Tip: Professional development should include understanding social change so that outdated personal and interpersonal skills do not undermine optimal outcomes for diverse student populations. --- Example: EDI training to ensure faculty are comfortable with current understandings of gender identity, sexuality, and the need for social justice for historically oppressed and marginalised groups.
Considerations of EDI in learning outcomes and/or competence standards. (3/8)	Connectivity: Integrating EDI practices into learning outcomes creates an inherently integrated learning experience by merging disciplinary skills, professional skills and diverse perspectives, leading to more authentic and responsible experiences. --- Tip: Embedding EDI principles in program and subject learning outcomes informs integrated learning experiences. --- Example: Learning outcome: "Design inclusive engineering solutions that demonstrate technical competence and social responsibility." Activity: Students redesign a common household appliance to be more inclusive and accessible for consumers with rheumatoid arthritis.	Connectivity: EDI practice in learning outcomes, aligned with active learning tasks, naturally incorporates real-world engineering challenges. --- Tip: Students should understand that inclusive design affects both social awareness and the technical accuracy of their solutions. --- Example: Learning outcome: "Explain diverse physiological variations and their impact on medical device design". Active learning designer: Have students collaboratively develop data collection methods that respectfully gather relevant medical information.	Connectivity: Integrating EDI into learning outcomes creates a positive feedback loop. As faculty build competence in both technical and EDI areas, they foster a more inclusive environment and better prepare students to design inclusive engineering solutions. --- Tip: Emphasising engineering practice and stakeholder benefits upfront may increase buy-in from hesitant staff. --- Example: A faculty development series with learning outcomes that combine engineering practice and EDI principles—for instance, exploring how robotic design impacts diverse user groups or how watershed management can support equitable water access different socioeconomic groups.
Tackling of the impact of own identity beliefs, cultural assumptions and unconscious biases as part of the design process. (4/8)	Connectivity: Personal awareness and reflexivity directly impact the effectiveness and quality of integrated learning experiences. Educators can create more inclusive and comprehensive integrated learning experiences that better serve students and future stakeholders by acknowledging identity, beliefs, cultural assumptions, and unconscious biases. --- Tip: Create a rubric or guiding questions for peer review of teaching sessions designed to unpack unconscious bias. --- Example: What cultural and social assumptions are made when selecting student groups? What is the educator's expectation of students, and how much has been explicitly stated? What prior technical knowledge is assumed within the integrated learning experience, and do all students share it?	Connectivity: When educators understand their own cultural assumptions, they can design more inclusive and equitable active learning experiences that resonate with diverse student populations. --- Tip: Sensing internal resistance to change can be a good indicator of an internal bias. --- Example: An educator may feel resistance when being encouraged to design active learning experiences. Upon reflection, this could be due to their prior education being heavily theoretical, and this bias might disadvantage students from backgrounds where practical, community-based problem-solving is valued.	Connectivity: Educator self-awareness helps to create an inclusive curriculum, as well as helping educators identify potential gaps in their disciplinary knowledge or experience. --- Tip: Employing educators with a diversity of experience will help to showcase these potential biases in the curriculum. --- Example: Through self-reflection, an educator might realise their unconscious bias towards certain technological solutions based on most of their disciplinary experiences being in developed urban areas. This bias might lead them to unconsciously dismiss or undervalue traditional or Indigenous engineering solutions that could be more appropriate in different cultural contexts.
Opportunities for students to co-create their curricula. (5/8)	Connectivity When students shape their learning, they are more likely to connect disciplinary knowledge and skills with real-world applications and personal interests. --- Tip: Reignite waning engagement in online classes by offering students a choice of resources and activities. --- Example: Students could vote on and select non-academic sources to analyse alongside academic ones, fostering connections to the real world and developing integrated disciplinary skills.	Connectivity: When students co-create the curriculum and engage in active learning, they become designers of their own education rather than passive recipients. --- Tip: While learning styles have been repeatedly debunked, offering students a choice in learning activities can increase motivation and engagement (though not necessarily outcomes). --- Example: Co-create with students three activities aligned with the same learning outcome that use different skills, for example, one that focuses on written research, one on discussion and one on visual conceptualisation. Allow students to choose their preferred activity and discuss their experiences as a class.	Connectivity: Faculty competence impacts co-creation heavily in that faculty need support to manage and facilitate the unique range of student learning pathways that could be created. --- Tip: Co-creation of curriculum could expand the disciplinary context, but care needs to be taken so that it does not narrow the required disciplinary coverage. --- Example: Assign disciplinary skills/concept 'champions' within the faculty so educators venturing outside their strengths through co-creation can be supported by colleagues.
Course content that facilitates exploration of themes of equality, diversity, inclusivity and cultural relativity. (6/8)	Connectivity: Contextual learning that goes beyond purely technical knowledge. When we integrate EDI and cultural relativity themes into the experiences, we inherently create integrated learning experiences. --- Tip: Focus on the process and how it impacts individuals to create enhanced integrated learning experiences. --- Example: Have students explore the design of a rice cooker while also exploring different cultural practices in rice production and consumption in different contexts.	Connectivity: Active learning methods are ideal for exploring equity themes as they enable deeper engagement with complex topics through peer interactions. --- Tip: Active learning facilitates integrated learning experiences. --- Example: Students can analyse case studies of human-centred design projects that failed due to cultural blind spots. The activity can be a jigsaw design, where groups discuss different case studies and then swap to share the cultural implications of the project failures with new groups.	Connectivity: Faculty can be trained in equity themes and how these relate to technical and interpersonal skills and sustainable design. This will build their confidence in applying these ideas to inclusive teaching. --- Tip: Shared exploration with students can ease pressure on faculty to be seen as equity champions. It also helps students build confidence and reduces traditional hierarchies. --- Example: A lunchbox learning series can enable faculty to explore universal design principles, consider cultural contexts and product requirements, and integrate sustainability into design decisions, among other equity themes.
Course content that covers multiple perspectives, theoretical standpoints and contributions by people from multiple cultures and backgrounds. (7/8)	Connectivity: A core facet of the integrated learning experience is the representation of diverse stakeholders, perspectives, theoretical standpoints and cultures. --- Tip: Highlight the importance of listening to and enacting the perspectives of people from multiple cultures and backgrounds --- Example: Design an integrated learning experience that asks students to design a renewable energy solution tailored to a rural community. Have the students incorporate the local Indigenous perspectives and state-based energy policies. Integrate environmental and economic perspectives from key stakeholders.	Connectivity: Students can engage more deeply and robustly with the content when actively applying multiple perspectives to the topics they are discussing within their active learning experiences. --- Tip: Active learning should allow individual processing, reflection, and collaborative activities. --- Example: Create a role play for a project where each role is a different stakeholder with a unique perspective and identity. Have students speak from that perspective and collaboratively develop a project plan as a unified group, incorporating each perspective within the plan.	Connectivity: Faculty competence is made more holistic and robust by including diverse perspectives and theoretical standpoints. --- Tip: Multiple perspectives can speak to different cultures, individual identities, and different disciplines within a similar field. --- Example: Faculty can seek to include guest speakers of various disciplinary backgrounds.
Incorporation of the embedding of EDI in the curriculum in classroom observation and peer review activities. (8/8)	Connectivity: A core facet of the integrated learning experience is the representation of diverse stakeholders, perspectives, theoretical standpoints and cultures. --- Tip: Highlight the importance of listening to and enacting people's perspectives from multiple cultures and backgrounds. --- Example: Design an integrated learning experience where students create a renewable energy solution for a rural community, incorporating local Indigenous perspectives, state-based energy policies, and environmental and economic viewpoints from key stakeholders.	Connectivity: When students engage in active and experiential learning through an equity lens, they also learn from the diverse viewpoints and approaches their peers bring to the learning experience. Classroom observations are important to ensure educators get feedback on how culturally safe these are being run. --- Tip/Example: Classroom observers can review the equitable practices present in a peer's product design, considering accessibility and universal design principles.	Connectivity: Incorporating an EDI lens into peer review and observation activities helps engineering faculty identify and address biases in technical content and examples. It also enhances students' understanding of complex engineering concepts across diverse backgrounds.. --- Tip: Younger faculty may be more attuned to equity practices, having been educated under different paradigms than their senior counterparts. --- Example: A peer review program where faculty observe each other's classes and provide feedback on technical content and inclusivity. For instance, a reviewer might notice that all heat engine examples in a thermodynamics class are automotive-based and suggest including examples from other industries, such as power generation in developing countries or cooling systems in varied climates.

APPENDIX: PART 1D (OF 5) CURRICULUM DESIGN
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (10-12)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 10: Enhancement of Faculty Teaching Competence	Standard 11: Learning Assessment	Standard 12: Program Evaluation
Accessibility of and flexibility in programmes of study that allow students to input on their learning pathways and experiences. (1/8)	Connectivity : Faculty are expected to be teaching and assessing in new ways - these innovations can incorporate methods that allow student input into their learning pathways and experiences. --- Tip: Build Faculty competence in teaching as a 'guide on the side' - facilitator/coach/resource provider - to enable student input into their learning experiences. --- Example: Staff training involves learning how to develop learning activities that are student-driven and open-ended, where the educator is not sure where they will end up (i.e. the task/activity end-point is not fixed).	Connectivity: This standard ensures students are assessed using a variety of methods that are accessible to all and flexible when needed. --- Tip: When redesigning assessments, prioritise accessibility and flexibility while considering potential limitations, such as moderation concerns for students using different task modes. --- Example: Create a project bank with various options for students to choose from and allow them to contribute new ones (with educator feedback on suitability)	Connectivity : It is in the program evaluation that "if in an exit interview, a majority of students reported that they were not able to meet some specific learning outcome, a plan could be initiated to identify root causes and implement changes" These investigations should uncover if a lack of accessibility and flexibility contributed. --- Tip: Make sure students know and perceive that their feedback will be accepted in good faith. --- Example: Share with students what and when changes have been made to the program based on their valuable input.
Accessibility of learning outcomes and/or competence standards. (2/8)	Connectivity : Improving faculty teaching competence is directly related to the accessibility of learning outcomes. --- Tip: Ensure staff know how to use the Advance HE EDI or UDL framework. --- Tip: Faculty familiar with the Advance HE EDI or UDL framework use them to determine whether their learning outcomes or competency standards are accessible.	Connectivity : This standard emphasises the importance of aligning assessments with the learning outcomes. --- Tip: Ensure the learning outcomes that inform learning assessments are accessible. --- Example: The learning outcomes have been carefully considered to ensure they are meaningful for all students; there is flexibility in the learning assessment to support and convey this meaningfulness.	Connectivity: The program evaluation seeks to understand if it is reaching its goals. Presumably, these goals continually change 'with the times'. --- Tip: During evaluation, ask: If the program is changing with the times, are the learning outcomes keeping up? Is everything else keeping up? ---
Considerations of EDI in learning outcomes and/or competence standards. (3/8)	Connectivity: Faculty must develop competencies in inclusive pedagogical approaches to effectively implement EDI-focused learning outcomes, as this ensures all students can engage with and demonstrate mastery of course material through varied, culturally responsive learning experiences. --- Tip: Most institutions have an EDI office that can support Faculty in embedding inclusive practices into teaching and learning. --- Example: Faculty can enhance their own EDI competence by attending workshops on culturally responsive teaching methods and consulting with the university's EDI office. Faculty can redesign their teaching approach to be more inclusive of students' lived experiences.	Connectivity: These two standards are inherently connected through constructive alignment. If EDI is considered within the outcomes, the assessment will be aligned to this and have EDI themes embedded within the form and topic of the assessment. --- Tip: Case studies are effective tools to showcase diverse and inclusive solutions. --- Example: Learning outcome: Design energy systems that are efficient and culturally appropriate for diverse global contexts. Assessment :In a case study, students analyse power plants from various countries, including non-Western examples, considering cultural, economic, and environmental factors in their design.	Connectivity Program evaluations should seek to understand if EDI is considered in learning outcomes and/or competency standards. --- Tip: Draw from professional registration standards to incorporate EDI themes and wording to strengthen accreditation evidence. --- Example: Use the Advance HE EDI framework to evaluate how well EDI is considered throughout the learning outcomes and the course more broadly.
Tackling of the impact of own identity beliefs, cultural assumptions and unconscious biases as part of the design process. (4/8)	Connectivity: Reflexivity assists educators in designing an inclusive curriculum. The benefits of this reflexivity are also felt by educators identifying potential gaps in their teaching knowledge or experience. --- Tip: Cross-disciplinary discussions with educators can leverage diversity in experience when it may be lacking within departments. --- Example: Faculty creates a professional development series called "Inclusive Engineering Education" where faculty members engage in structured self-reflection workshops particularly regarding: 1. Their assumptions about which students are 'naturally good' at engineering. 2. Their implicit expectations about student backgrounds and preparation3. Their communication patterns with students from different cultural backgrounds.	Connectivity: Educators' personal biases and cultural assumptions can significantly impact their assessment methods and their interpretation of student achievement. --- Tip: Use a colour-coded spreadsheet to map out different assessment styles and skill sets used. --- Example: Identify overused assessment types and skill sets used in the curriculum (such as written forms of assessment) and create an assessment regime that is varied and leverages a diverse range of skill sets (such as visual and oral communication)	Connectivity: Integrating educators' identities, beliefs, cultural assumptions, and unconscious biases into curriculum design should result in an evaluation system that values stakeholder feedback and is intentionally inclusive and culturally responsive. --- Tip:Involve diverse stakeholders and use a variety of evaluation methods—student assessment data, industry feedback, internal reviews, and equity consultant assessments. --- Example: Review past curriculum evaluation measures and standards for unconscious bias and cultural assumptions.
Opportunities for students to co-create their curricula. (5/8)	Connectivity: Faculty needs a high level of teaching competence to co-create the curriculum. Student preferences and quality pedagogy may be in conflict through co-creation, so teaching skills and knowledge are critical. --- Tip: Terms like 'student satisfaction' are not always helpful in co-creation because students can be unsatisfied with a program that is pedagogically robust and inclusive. --- Example: Have faculty examine and classify student co-creation suggestions to distinguish between those that are pedagogically sound and inclusive and those that are not.	Connectivity: Students can co-create learning assessments that align with the intended learning outcomes, which will increase their motivation and assist in ensuring adequate coverage. --- Tip: Educator oversight is critical here to ensure accreditation/registration standards are met, so educators must heavily guide assessment co-creation. --- Example: Give students an assessment concept and intended learning outcomes and have students design an assessment task based on these.	Connectivity: Co-creation increases student agency, leading to positive program evaluations. --- Tip: Gain feedback from students specifically targeted towards the co-creation aspects of the program. --- Example: Create a mid-semester survey that asks students to identify benefits and issues related to the co-creation of the curriculum
Course content that facilitates exploration of themes of equality, diversity, inclusivity and cultural relativity. (6/8)	Connectivity: Increased pedagogical content knowledge allows faculty to support students in their learning effectively, and the prioritisation of equity themes in the curriculum facilitates this same goal. --- Tip: Work with students to find similarities between inclusive engineering design and good practice educational design. --- Example: As a faculty, introduce Universal Design for Learning principles across the curriculum.	Connectivity: Themes of equality, diversity, inclusivity, and cultural relativity can be key components and criteria for learning assessment. --- Tip: If equity and cultural relativity themes are embedded in the assessment task, then they should also feature within the assessment criteria and rubric. --- Example: Create a case study assessment that contains inherent cultural bias within product design, have students analyse and identify the bias, and then revise the product brief to address cultural relativity.	Connectivity:A curriculum that covers equity theming integrated into the pedagogical design will achieve a more rigorous quality standard in program evaluations. --- Tip: Ensure stakeholders and those evaluating the program are aware of the commitment to equity theming within the curriculum. --- Example: Create a whole program evaluation survey that asks students whether they felt the program was educationally inclusive, in addition to the inclusive theming in the program content.
Course content that covers multiple perspectives, theoretical standpoints and contributions by people from multiple cultures and backgrounds. (7/8)	Connectivity: Faculty teaching competence can be enhanced through the integration of inclusive educational practices as inclusive practices are closely aligned to quality educational practices, of which diverse representation is a key theme. --- Tip: The best way to enhance and integrate diverse perspectives in faculty teaching competence is by recruiting diverse educators. --- Example: Faculty can analyse which perspectives are prioritised in the curriculum and whether there are any inherent biases present. This is best conducted with multiple faculty and institutional professionals who can contribute perspectives from multiple cultures and backgrounds	Connectivity: A broad range of assessment methods naturally accommodates diverse perspectives. --- Tip: Case studies are a clear way to include diverse perspectives, but beyond introductory courses, students should be encouraged to critically identify different, or missing, perspectives themselves.. --- Example: Include a reflective task where students analyse the perspectives and theoretical standpoints within a task or project, noting whether a broad range was represented or if certain views were prioritised.	Connectivity: When curriculum content, activities, and assessments encourage students to engage with diverse perspectives and cultures, this naturally fosters a sense of inclusion within the student cohort. --- Tip: Consult staff responsible for EDI oversight to evaluate your program and advise on integrating diverse perspectives into the curriculum. --- Example: The program is evaluated by students, industry, faculty, and institutional EDI professionals: groups that reflect diverse cultures and individuals.
Incorporation of the embedding of EDI in the curriculum in classroom observation and peer review activities. (8/8)	Connectivity: By incorporating EDI principles into classroom observations and peer review, faculty can become more aware of diverse student needs and perspectives. This awareness can lead to more inclusive teaching practices that support all students. --- Tip: Use peer review to strengthen faculty competence in designing inclusive educational materials. --- Example: faculty development program where educators peer review curricula with a focus on EDI. Sessions evaluate how well diverse perspectives are integrated into teaching. For instance, case studies featuring only male engineers may unintentionally alienate female students.	Connectivity: Embedding EDI practice into peer review and observation of assessment helps educators gain a deeper understanding of diverse perspectives and learning approaches while also developing their ability to assess and provide feedback on learning outcomes. --- Tip/Example: Select reviewers for assessments who combine discipline knowledge and EDI familiarity and perform these reviews in a blinded fashion	Connectivity: The connection lies in their shared goal of continuous improvement and comprehensive assessment of educational programs. --- Tip: Action plans and review cycles are an effective wait to maintain positive change over time. --- Example: A systematic evaluation tool that focuses on inclusive teaching practices and equitable student engagement across the program. A diverse group of peers evaluates the quality of this implementation.

APPENDIX: PART 2A (OF 5) CURRICULUM DELIVERY
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (1-3)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 1: Context	Standard 2: Learning Objectives	Standard 3: Integrated Curriculum
Creation of accessible, safe and collaborative environments of mutual respect and honesty conducive to student learning. (1/8)	Connectivity: The context allows for project-based learning experiences where students collaboratively design, build, and operate sustainable solutions addressing real-world challenges, ensuring accessibility and inclusivity in team dynamics. --- Tip/Example: Faculty can further support this by fostering a culture of respect, safety, and honesty through clear guidelines, constructive feedback, and promoting interdisciplinary teamwork reflective of professional engineering environments.	Connectivity: By aligning with program learning outcomes that emphasise interpersonal skills like collaboration, communication, and respect, the framework fosters a culture where students develop the ability to work together in a safe, inclusive, and supportive environment, cultivating mutual respect and honesty that are essential for their academic and professional growth. --- Tip/Example: Seek inspiration for learning outcomes related to inclusion through the institutional graduate outcomes and student charter.	Connectivity: Designing courses that connect related content and skills fosters a cohesive learning journey. Students are encouraged to collaborate, value diverse perspectives, and apply their knowledge in real-world contexts, creating an environment where respect, honesty, and teamwork are essential. --- Tip/Example: Respect and honesty grow in spaces of psychological safety. Educators can model respectful communication and encourage students to value diverse perspectives during discussions and problem-solving
A range of teaching approaches and learning activities that are accessible and encourage active participation of all students. (2/8)	Connectivity: This incorporates diverse, hands-on learning experiences such as case studies, simulations, and team-based projects where students actively engage in the entire lifecycle of a sustainable engineering solution. --- Tip: Active participation in real-world sustainability projects increases student motivation. --- Example: CDIO, as the context for engineering education, innately embraces learning activities that encourage active participation, and care will need to be taken to ensure accessibility and equitable participation.	Connectivity: Program learning outcomes guide the design of a range of accessible teaching approaches and learning activities that actively engage all students, fostering participation and reinforcing both individual and collaborative skill development in line with program goals and stakeholder needs. --- Tip/Example: Benchmark program learning outcomes against industry competency standards, paying particular attention to teamwork and communication expectations across the industry.	Connectivity: Students experience a cohesive learning journey that emphasises the practical integration of both sets of competencies (personal, interpersonal, and professional skills with technical knowledge), ensuring active participation and, through accessible and inclusive learning activities, deep engagement with all aspects of their education. --- Tip/Example: Implement activities where students collaboratively solve problems under changing conditions such as errors, client pushback, and system breakdown or failure. This approach combines theoretical learning with practical application.
Knowledge of student cohorts and adaptation of curriculum delivery to cohort and individual requirements. (3/8)	Connectivity: By continuously adapting curriculum delivery to address the backgrounds and individual needs of students, instructors ensure that each cohort develops the necessary skills to conceive, design, implement, and operate sustainable engineering solutions effectively. --- Tip: World events can reshape education, highlighting the need to reassess skill levels for each new cohort. --- Example: Develop a skills diagnostic assessment for each new cohort to establish a baseline of their ability to conceive, design, implement, and operate.	Connectivity: Support the adaptation of the curriculum to the unique needs of student cohorts, ensuring that curriculum delivery is tailored to both group and individual requirements, thus enabling students to achieve these targeted learning outcomes effectively. --- Tip: Addressing cohort-specific challenges helps level the playing field, starting with learning outcomes. --- Example: Use diagnostic activity data from Standard 1: Context to assess whether learning outcomes are appropriate for each cohort.	Connectivity: The curriculum is a cohesive structure where each course builds on the others, linking technical knowledge with practical skills like collaboration, communication, and problem-solving, while considering the unique needs of each student cohort. --- Tip: Addressing cohort-specific challenges helps level the playing field and mitigate potential disadvantages. --- Example: If the cohort has a larger than usual number of students for whom English is a second language, you could implement additional communication scaffolding and visual aids and reduce the grammatical complexity of the written information while maintaining disciplinary terminology.
Empowerment of students to take responsibility for their own learning and that of their peers, acting as partners in their learning experience. (4/8)	Connectivity: In a CDIO-based program, students work on real-world projects where they collaborate as partners in every stage of the lifecycle, from conceiving ideas to operating solutions, taking ownership of both their individual and collective learning. This hands-on approach not only develops technical skills but also fosters accountability, as students actively contribute to decision-making, peer feedback, and continuous improvement throughout the engineering process. --- Tip: Empower students to take responsibility for their own learning and that of their peers within the CDIO framework. --- Example: Through the CDIO process, students engage in peer learning and take responsibility for their learning. This can be scaffolded and prioritised through the co-creation of systematic, curriculum-wide expectations.	Connectivity: Establish specific and detailed learning outcomes for both technical and non-technical skills, ensuring collaboration, co-design and peer learning as a critical professional skill development is reflected. --- Tip: Co-design allows students to take responsibility for their learning and increase autonomy and agency. --- Example: Co-design learning outcomes that are aligned to subject learning outcomes so that students can create their own unique learning pathway that is fundamentally also constructively aligned.	Connectivity: Students engage in activities that blend technical learning with personal and interpersonal skill development, such as collaborative projects, teamwork, and leadership roles. These experiences require them to take initiative, solve problems together, and reflect on their own learning, thus fostering a sense of responsibility for both their personal growth and the success of their peers. --- Tip: Consider the digital tools that can be systematically integrated across the curriculum that enhance peer learning. --- Example: Create a mapping document related to peer-based learning skills and how they are integrated across the curriculum.
Opportunities for students to relate course content to their own experiences, encouraging the sharing of diverse perspectives and interpretations. (5/8)	Connectivity: Students work on real-world projects where they apply engineering principles to solve local or global challenges, such as designing sustainable technologies or systems. This approach encourages students to draw on their personal experiences, engage with peers from diverse backgrounds, and collaborate in multidisciplinary teams, fostering an environment where different perspectives shape innovative solutions. --- Tip: Showcase the integration of diverse perspectives within CDIO to industry and the CDIO community. --- Example: Student experiences are prioritised with the content within the implementation of CDIO.	Connectivity: Program learning outcomes can be designed to incorporate interactive, inclusive, real-world engineering challenges. --- Tip: Align program learning outcomes with the institution's graduate attributes for a real commitment to professional skill development. --- Example: Mapping of program learning outcomes can be unpacked into modular, weekly, or topic-based learning outcomes that align with active collaboration in mixed groups that guide students in applying product, process, system, and service-building **skills**.	Connectivity: By mapping skills development to courses and activities, students are encouraged to relate what they learn to personal experiences, fostering diverse perspectives and deeper connections to the material. This creates a holistic learning environment where academic content and practical skills are mutually reinforcing. --- Tip: Implementing reflective practices can help students connect course content to their personal experiences and cultural backgrounds --- Example: Map the professional skill development of the student across the course and integrate the development of these skills into a programmatic ePortfolio.
Opportunities for students to work interactively in diverse and mixed groups. (6/8)	Connectivity: CDIO, as the context for engineering education, requires students to collaborate in teams. By focusing on the diversity within these groups, alignment is easily achieved. --- Tip: Diversity can encompass cultural, disciplinary, gender, and various societal, environmental, and disciplinary perspectives. Ensure multiple aspects are considered. --- Example: Structure multidisciplinary projects where students from different engineering disciplines collaborate throughout the product or system lifecycle, from conception to operation. This mirrors real-world engineering environments, offering opportunities for students to work in diverse teams, integrating their expertise to develop sustainable, interdisciplinary solutions.	Connectivity: While diversity in group formation is not inherently a component of learning outcomes, the program learning outcomes can integrate sharing diverse perspectives through collaboration and team skill learning outcomes. --- Tip: Seek clarity from graduate learning outcomes on how collaboration in diverse groups is defined in the institution. --- Example: Design learning outcomes that not only meet technical and personal skills learning outcomes but also develop critical interpersonal competencies, such as teamwork, communication, and leadership, as part of a holistic educational experience.	Connectivity: By intentionally incorporating programmatic, collaborative activities in diverse, mixed groups, the curriculum develops fundamental teamwork and communication skills, allowing students to practice and refine both their technical expertise and their ability to engage effectively with others in a professional setting. --- Tip: Students will not inherently know how to engage effectively with each other: this is a learned skill that will need scaffolding and support. --- Example: Develop a bank of case studies from industry that explore how businesses have leveraged diversity in collaboration in positive and transformative ways.
Integration of themes of equality, diversity and inclusivity into learning materials and activities. (7/8)	Connectivity: Adopting CDIO in engineering education inherently prioritises EDI themes by integrating environmental, social, and economic sustainability throughout the lifecycle. --- Tip: As a faculty, unpack what environment, social and economic sustainability looks like in the context of the course in relation to EDI themes. --- Example: Through the CDIO process, students could work on projects that address real-world challenges, such as designing sustainable solutions for underserved communities, and ensuring diverse voices are included in problem-solving and decision-making processes.	Connectivity: The contextual elements of program learning outcomes are an ideal place to incorporate EDI themes. --- Tip: Learning outcomes usually have a verb, content and may include context. For example: Design (verb) engineering solutions (content) that accommodate a spectrum of physical abilities and cognitive differences (context). --- Example: Ensure that learning outcomes are representative of a diverse population and varied in their skill focus.	Connectivity: By purposefully mapping learning outcomes and activities, educators can embed equality, diversity, and inclusivity within the curriculum, ensuring these values are reflected in both program content and student interactions in projects. --- Tip: This strategy creates a more inclusive learning environment, integrating these themes throughout the entire educational experience rather than treating them as retroactive add-ons. --- Example: Develop an integrated curriculum that helps students design appropriate technology solutions with respect for local cultural practices that also address technical needs.
Accessible learning materials and resources available to students in advance of curriculum delivery. (8/8)	Connectivity: In CDIO implementation, support from program leaders is crucial to maintaining reform initiatives, particularly in scheduling and workload to provide accessible resources before the curriculum begins. --- Tip: Leaders can prioritise this by stating that all curriculum resources will be finalised in advance of the semester, and faculty will provide adequate workload compensation for this to occur. --- Example: When engaging faculty in CDIO implementation, ensure the project timeline allows ample time for preparation.	Connectivity: Aligning accessible resources with clearly defined learning outcomes ensures that students can actively engage with personal, interpersonal, and technical skills in a structured manner, fostering better preparation and application during their studies. --- Tip: Resources offered in advance can still be aligned to learning outcomes but be reflective of a lower expected skill or knowledge level to better scaffold students. --- Example: Suggest a Khan Academy or Ted Ed lesson as a resource aligned with learning outcomes that can be made available prior to the introduction of more advanced resources.	Connectivity: Allowing students to access materials in advance helps them visualize how each course contributes to the broader learning framework, fostering a stronger understanding of how the program supports their professional development. --- Tip: Colour code primary concepts and disciplines to visually represent the breadth of integration across the curriculum. --- Example: In a course map, list critical resources and information that connect the curriculum. For instance, if a textbook is partially used in one subject, are alternative chapters used in another? This can also help faculty identify content overlap and avoid double teaching.

APPENDIX: PART 2B (OF 5) CURRICULUM DELIVERY MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (4-6)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 4: Introduction to Engineering	Standard 5: Design-Implement Experiences	Standard 6: Engineering Learning Workspaces
Creation of accessible, safe and collaborative environments of mutual respect and honesty conducive to student learning. (1/8)	Connectivity: Accessible learning materials and resources should be provided in advance to support student success, ensuring they are prepared to engage with and build upon essential skills throughout the program. --- Tip/Example: Co-create communication expectations with students focused on respect, openness, and inclusion during the introduction to the engineering program, maintaining these throughout the course. Educators can invite all students to share their expectations and needs to ensure a comfortable and safe learning	Connectivity: Early design-implement experiences are simple and achievable, helping students build confidence and teamwork. Later, more advanced projects challenge students to apply their knowledge and work together on complex problems. This progression helps students develop technical skills and improve communication and collaboration, all in an environment of mutual respect and honesty, reflecting the cooperative culture of engineering. --- Tip/Example: Open discussions and Q&A sessions throughout the design-implement experience encourage students to share ideas without fear of judgment, promoting honesty and mutual respect.	Connectivity: For student success in hands-on and active learning activities, the environment must be safe and accessible, allowing students to share their needs and be vulnerable with educators and peers. --- Tip: When introducing a new workspace, artefact, or teaching modality, invite students to share any challenges or barriers they may face. --- Example: Choose physical or virtual learning environments that are neutral and unfamiliar to all disciplines involved, helping to eliminate unconscious biases and encourage collaboration.
A range of teaching approaches and learning activities that are accessible and encourage active participation of all students. (2/8)	Connectivity: Engineering practice can be made tangible from the start, using engaging, hands-on activities that draw students into real-world problem-solving. It actively involves students through team exercises and encourages the development of both technical and interpersonal skills, ensuring all students participate in and connect with the field of engineering from day one. --- Tip/Example: Offer varied task formats such as oral presentations, written reports, or visual demonstrations. This allows students to showcase their strengths and encourages broader participation.	Connectivity: Engage students in design-implement experiences, progressively building their skills through both basic and advanced projects. These experiences, designed to encourage active participation, offer students opportunities to apply their learning in real-world contexts, fostering deeper understanding, critical thinking, and the ability to address societal needs through accessible and inclusive activities. --- Tip/Example: Roles within the team (Manager, facilitator, designer, tester) are rotated to ensure all students experience different aspects of the project, fostering equity and skill development.	Connectivity: Activities must be accessible to ensure more students can engage. Practical, real-world aligned activities are motivating and encourage active participation. --- Tip/Example: Offer a variety of contexts for activities and address concerns or needs raised by students. For example, when collaboratively analyzing a physical structure, provide options for different modes or formats of analysis (e.g., using a digital tool, whiteboard, or physical model).
Knowledge of student cohorts and adaptation of curriculum delivery to cohort and individual requirements. (3/8)	Connectivity: The introductory engineering course is designed to be engaging and adaptable to the unique needs of diverse student cohorts. By including problem-solving exercises, teamwork, and personal development, it tailors the curriculum to foster early engagement and motivation while addressing the varying learning requirements, setting them up for success in more advanced courses. --- Tip: Adapting curriculum delivery to support one group's specific needs can have a positive flow on effects to all students. --- ExampleIf a cohort has the necessary math prerequisites but limited application skills, redesign the course to progressively introduce mathematical concepts alongside disciplinary ones.	Connectivity: Adapting the complexity of these experiences based on student needs, the curriculum ensures that students progress through increasingly challenging design tasks, reinforcing their learning and aligning with their career aspirations and professional growth. --- Tip: When a student can see a true connection to their future career, they will often be more engaged in the learning. --- Example: Individual requirements could also look at individual student interests and passions within the engineering to tailor new projects in the interest area of the cohort.	Connectivity: Students will enter their subjects with a diversity of knowledge bases and learning needs and this plays out in their hands-on learning. They will need to have a strong foundation to engage in practical tasks and some may need greater depth in some areas or may already be familiar with others --- Tip: Use formative tasks and self-assessment to assess student knowledge and needs, then adjust practical tasks to maximize productivity. --- Example: Students need to produce a 'missing piece' for a miniature structure that will make it stable. They will be 3D printing for the first time in this so the educator asks their familiarity with 3D printing and groups them so that each group has more and less experienced members so they can help each other.
Empowerment of students to take responsibility for their own learning and that of their peers, acting as partners in their learning experience. (4/8)	Connectivity: The course immerses students in real-world engineering tasks early on, where they practice problem-solving and design in teams. By engaging in these activities, students take responsibility for their own learning while supporting each other, fostering a collaborative environment and preparing for future engineering challenges. --- Tip: Discuss with students what taking responsibility for learning means in a Higher Education context and clarify faculty expectations.. --- Example: In the introductory course, acquaint students with co-created group contracts that establish ways of working to improve communication and accountability in project-based learning.	Connectivity: Empower students through scaffolding design-implement experiences that progressively increase in complexity, allowing them to take responsibility for their learning. As they engage in real-world projects, students develop their skills at each level, while collaborating with peers to solve problems, reinforcing both individual and collective responsibility. --- Tip: Use basic and advanced design-implement experiences to develop students' peer feedback, collaboration, and autonomy within a shared workload. --- Example: Use formative peer feedback to scaffold students' skills in the basic design-implement experience, then extend this with summative peer review in the advanced experience.	Connectivity: Students will be most engaged and motivated towards practical, hands-on learning when they feel they have agency over what, how and why they participate in these tasks. --- Tip: Encourage use of self and peer assessment to help students determine their own learning needs and readiness --- Example: Students work on a large group project over the semester and have open access to learning workspaces with a variety of different tools within. They make decisions of when and how to use those spaces to meet their project goals in consideration of a shared need for access by other teams.
Opportunities for students to relate course content to their own experiences, encouraging the sharing of diverse perspectives and interpretations. (5/8)	Connectivity: Immediately applying engineering principles to real-life problems encourages students to relate course content to their own experiences and perspectives, fostering a diverse range of interpretations and enhancing motivation for the field of engineering. --- Tip: Teaching empathetic and user-centred design principles can help students relate course content to diverse human experiences --- Example: In the introductory course, collaborate with non-profit organisations to expose students to real-world challenges faced by diverse populations. Provide an online space for students to reflect on these experiences collaboratively throughout the course.	design-implement experiences, students apply course concepts to tangible projects, linking theoretical knowledge to real-world situations. This process helps them integrate their own experiences and viewpoints, enhancing their understanding of both technical and societal aspects of engineering.engineering. --- Tip: Sharing personal experiences in group work can be confronting, so it's important to collaboratively define respectful communication expectations beforehand. --- Example: In design-implement experiences, encourage students to share their approaches to solving problems and facilitate discussions that explore the cultural or experiential influences on their strategies.	Connectivity: The physical and virtual learning environments can be leveraged to create safe and inclusive spaces for students to be able to connect the course content to their own experiences and also share their perspectives with others. --- Tip: Most online tools may be anonymous to other students, but identities can be accessed by educators in case of any breaches in student conduct. --- Example: Culturally unsafe topics, such as whistleblowing, can be perceived differently by students with different cultural backgrounds. Creating an anonymous space within the digital environment allows honest opinions to be voiced without fear of reprisal.
Opportunities for students to work interactively in diverse and mixed groups. (6/8)	Connectivity: Immerse students in real-world engineering practice from the start with hands-on exercises that require collaboration in diverse teams. --- Tip: By working interactively in mixed groups, students develop not only technical skills but also key interpersonal abilities like communication, teamwork, and problem-solving, which are vital for their future engineering roles. --- Example: In the introductory course, create opportunities for cross-disciplinary project work to showcase the importance of collaborative practice. This also allows faculty to incorporate diversity in perspective into disciplines that may be dominated by specific cultures or genders.	Connectivity: Design-implement projects require collaboration, promoting teamwork among students from diverse backgrounds, which mirrors real-world engineering practice. --- Tip: The success of a project depends on effective interaction and cooperation across disciplines and perspectives. --- Example: Assign specific project roles for students and integrate a comparative peer reflection where they can express the challenges of their role in the project and how they managed them and compare their experience to a peer with a different project role.	Connectivity: Technology in the digital learning workspace can create diverse working groups for interactive activities and collaboration. The physical learning space can be used similarly, with active learning room layouts and intentionally diverse groups based on positionality, experiences, and disciplines. --- Tip: Change groups regularly to encourage full participation and reduce the risk of placing dominant students with softer-spoken ones. Guidelines for equal participation can also help. --- Example: Most Learning Management Systems can randomly generate and re-distribute groups for subsequent activities, which is safer than assuming students' culture or gender based on their names.
Integration of themes of equality, diversity and inclusivity into learning materials and activities. (7/8)	Connectivity: Learning materials and activities in the introductory engineering course are designed to expose students to a range of engineering contexts that reflect diverse global challenges and innovations. --- Tip: Include exercises to help students recognise and address bias, fostering inclusivity and equity in their future engineering practice. --- Example: Use case studies and examples from underrepresented groups in engineering to help students appreciate the contributions of diverse engineers.	Connectivity: Provide opportunities for students to engage in real-world contexts that address diverse societal needs and promote inclusive practices in product, process, system, and service development. --- Tip: Showcasing poor practice within industry can inspire students to become future equity champions in engineering design. --- Example: Collaborate with industry to create case scenarios that expose students to real-world challenges faced by diverse populations. Have students consider alternatives to the existing product, plan, or service that caters more explicitly to a diverse population.	Connectivity: The physical and digital learning infrastructure can be a practical space for identifying different needs and integrating themes of equality, diversity and inclusivity into learning materials and activities. --- Tip: Leverage institutional teaching and learning support services for ideas on integrating EDI themes in both digital and physical spaces. --- Example: Offer a component of activities to explore the outcome of a design if one important fact of the client changed. For example, how would the product design shift if the client were a parent of young children or a carer of a disabled adult child?
Accessible learning materials and resources available to students in advance of curriculum delivery. (8/8)	Connectivity:To ensure students are prepared, accessible learning materials and resources are made available in advance, facilitating engagement with the core concepts and enabling a smooth transition to more advanced coursework. --- Tip: The introductory course can use existing curriculum resources or materials that offer the same information but at a less advanced reading level or level of disciplinary difficulty. --- Example: Introductory courses can offer a pre-subject diagnostic quiz that determines the students' prior knowledge and offers supplementary resources if the student chooses to review or if there is a genuine gap in prior knowledge.	Connectivity: By providing accessible learning materials ahead of time, students can better prepare for design-implement experiences, ensuring they have the foundational knowledge needed to successfully tackle both basic and advanced design challenges. --- Tip: Providing accessible resources in advance of curriculum delivery can be for building foundational knowledge or providing contextual information and background. --- Example: Provide background information for a project prior to the class to leverage the class time to action the design-implement experience.	Connectivity: Anxiety and other stress-based disorders are amplified by the unknown. Something as simple as offering a building layout or classroom map in advance of the class can help alleviate stress in students. --- Tip: Have you ever been to a job interview and stressed about finding the location and the room? This is not dissimilar to how many students feel when trying to find their workspace for the first time. --- Example: Many institutions now have digital wayfinders that offer directions to locations and showcase the full layout of the classrooms. Ensure students are aware of these well before curriculum delivery.

APPENDIX: PART 2C (OF 5) CURRICULUM DELIVERY
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (7-9)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 7: Integrated Learning Experiences	Standard 8: Active Learning	Standard 9: Enhancement of Faculty Competence
Creation of accessible, safe and collaborative environments of mutual respect and honesty conducive to student learning. (1/8)	Connectivity: Learning experiences which integrate different stakeholder perspectives, social issues, themes, etc. will already provide a variety of activities that motivate students to engage. Making those activities accessible will remove additional barriers limiting student ability to integrate and apply their learning --- Tip: To ensure a broad integration, motivation and accessibility, ensure a diversity of voices contribute to the design	Connectivity: As per row 1, standard 6 --- Tip/Example: Sessions can be inclusive by allowing students to work through activities at their own pace providing feedback through self-assessment, peer-assessment, and educator-assessment.	Connectivity: Faculty need to engage in effective collaboration themselves to produce effective engineering artefacts and solutions, and being skilled in this allows them to role-model the practice for students. --- Tip/Example: Consider providing recordings of collaborative conversations between stakeholders in a project that demonstrate accessible, safe and respectful collaboration, which students can learn from.
A range of teaching approaches and learning activities that are accessible and encourage active participation of all students. (2/8)	Connectivity: Learning experiences that integrate different stakeholder perspectives, social issues, themes, etc., will provide a variety of activities that motivate students to engage through interest or relatability. Making these activities accessible will remove additional barriers limiting student ability to integrate and apply their learning. --- Tip/Example: To ensure a broad integration and accessibility, a diversity of voices contribute to the design.	Connectivity: As per row 2, standard 6 --- Tip/Example: Students can research historical perspectives through multiple sources and formats and prepare arguments in flexible formats (written, visual, oral). A structured debate requires critical analysis and application of historical concepts, making complex historical thinking accessible through active engagement.	Connectivity: Faculty competence is not just about subject expertise—it includes the ability to create accessible learning experiences and facilitate active participation through varied pedagogical strategies. --- Tip/Example: Create a community of practice for inclusive teaching practices and how they can be explored in the various disciplines. Showcase the learning through regular faculty presentations.
Knowledge of student cohorts and adaptation of curriculum delivery to cohort and individual requirements. (3/8)	Connectivity: Providing an integrated experience means connecting together a wide variety of knowledges and skills into a cohesive whole. Each cohort and student may differ considerably in their skill and knowledge level. --- Tip: Form groups based around a diversity of abilities to maximise how students learn from one another (their near-peers for Vygotskian social constructivism) --- Example: The educator asks students to self-rate their abilities in the relevant knowledges required for the coming assessment and forms groups where the strengths of one student supports the challenges of another.	Connectivity: Active learning techniques, particularly group-based ones, help students consolidate and expand their skills and knowledge beyond an initial level, stretching them based on their readiness. Group activities also leverage the diverse knowledge within the group for the benefit of all members.. --- Tip: Plan extension opportunities for students or groups who need further challenge, and provide additional scaffolding for those who require more support. --- Example: In class, students who finished early had the option to either tackle a challenge task or guide another group (without doing the task for them) to solve it successfully.	Connectivity: Faculty need to have a strong understanding of the subject matter in order to present it in different ways suitable for different learning cohorts. This is similar to how staff may calibrate their communication of technical concepts for a layperson audience but has multiple levels. --- Tip: Faculty with recent industry experience can better tailor content to different student cohorts' needs. --- Example: Analyse student prior knowledge, cultural backgrounds, learning preferences, and professional aspirations. Map these against staff responses to the same ideas, and use this to inform professional development and identify champions.
Empowerment of students to take responsibility for their own learning and that of their peers, acting as partners in their learning experience. (4/8)	Connectivity: Integrated learning experiences naturally bring in a greater level of motivation and interest for the concepts being learnt. In these cases, students are far more likely to do independent investigation, and where the learning culture encourages this, support one another's learning. --- Tip: Consider choice in assessment and learning experiences in relation to student empowerment and autonomy. --- Example: Situate the experience with a variety of real-world case studies and scenarios that will engage student interest, leave enough complexity that answers are not obvious so students need to stretch themselves.	Connectivity: Active learning practices that leverage social learning naturally involve peer-to-peer support. When students take responsibility for their learning, they are more prepared and able to benefit from active learning activities. --- Tip: Get students to share brief reflections and identify actions for themselves at the close of an activity to maximise the learning-focus therein. --- Example: Students work in groups of 4 to develop a laboratory safety plan for an upcoming experiment. As part of this, they need to do some independent learning to determine suitable storage materials and temperatures	Connectivity: A strong knowledge of the subject matter and skills involved are essential if faculty are to help students be more independent and collaborative in their learning. This is related to the level of technical knowledge required to provide meaningful scaffolding to students. --- Tip: Consider what will provide productive levels of challenge and complexity for students, and think about questions that will spark their curiosity. --- Example: Faculty can partner with local companies to identify common design challenges faced by industry professionals. As part of the CDIO process, students can collaborate with these companies to explore similarities and differences in design challenges
Opportunities for students to relate course content to their own experiences, encouraging the sharing of diverse perspectives and interpretations. (5/8)	Connectivity: These standards are connected through integrated learning experiences that incorporate lived experiences and consider diverse perspectives. --- Tip: Especially in the early years, students may not have a lot of technical experience to offer their experiences. Case studies can be helpful to bridge this gap. --- Example: Have students analyse a product's design from a social perspective. Use a series of questions that allows students to examine the end user, their community, their culture, and how that user's perspective may differ from the students' own views and experiences.	Connectivity: These standards are interconnected as active learning experiences often incorporate lived experiences and diverse ways of being, prompting consideration of multiple perspectives. --- Tip: Sharing diverse perspectives does not have to exclusively focus on the student cohort, it can mean exploring the perspectives of the community that the cohort is connected to. --- Example: Have students design a transport and parking solution for a large institution, considering staff and students who travel from various distances and have different abilities and needs.	Connectivity: Creating space for faculty to be open and honest with their own disciplinary skill gaps allows staff to speak from their own perspectives, and work together in a form of mutual trust and transparency to develop professionally. --- Tip: Publicly identifying skills gaps is a risky space and will require openness, transparency, and leading by example from senior leaders. --- Example: Create an internal reflective support platform that allows faculty to openly reflect on their experiences and skill gaps whilst also connecting them with support.
Opportunities for students to work interactively in diverse and mixed groups. (6/8)	Connectivity: Injecting disciplinary diversity into integrated learning experiences can help students to see the broader implications of their work and how it intersects in other fields of engineering. --- Tip: Design integrated learning experiences that deliberately incorporate teamwork, collaboration and reflection to ensure more productive, diverse learning experiences. --- Example: Incorporate case studies that explore the impact of engineering solutions on different social groups and emphasise the value of inclusivity, the program can foster an environment where all students contribute to creating solutions	Connectivity: Collaborative, multidisciplinary active learning experiences, at their core, are interactive. Care and consideration for ensuring a broad range of perspectives are offered and included is essential for creating diverse teams that address complex, real-world problems. --- Tip: Have an awareness of cultural tensions and current events when forming groups and have a co-designed plan for managing conflict if it arises. --- Example: If diverse perspectives are not obvious or inherent in the student base, case studies or role plays can be useful in familiarising students with diverse perspectives when there is a lack of diversity in the cohort.	Connectivity: Faculty must be able to work in diverse and mixed groups to serve as role models as contemporary engineers. --- Tip: Lead by example and demonstrate comfort and flexibility with a difference. --- Example: Hold interdisciplinary learning days for faculty to showcase new trends and research in their fields and require presenters to design discussions around connecting the research to different disciplines within engineering.
Integration of themes of equality, diversity and inclusivity into learning materials and activities. (7/8)	Connectivity: These can be connected by viewing learning as a multidimensional process that recognises that true skill development is inherently intertwined in social context and human diversity. --- Tip: Students will be able to better identify the meaningful change they can bring to the field by integrating technical skills with social awareness. --- Example: Design an activity that analyses the progression of inclusive engineering designs alongside the human rights advocate and catalysts for change.	Connectivity: Students can critically examine themes of equality, diversity and inclusivity within any active learning task, so long as they are directed to do so through the task instructions. --- Tip: Consider socially anxious and/or introverted students when conducting active learning. Active learning is not about constantly speaking but about constantly applying. --- Example: Create a think-pair-share activity that prioritises the 'think' aspect, encouraging students to openly reflect on their own critical biases in the formation of their opinion before launching into the 'share' stage of the activity.	Connectivity: Through these principles, faculty are encouraged to broaden their understanding and teaching of the engineering discipline and how it intersects with diverse perspectives and inclusive practices. --- Tip: Leverage AI technologies in a way that questions faculty's existing practice. --- Example: Develop an internal chatbot that questions faculty on historical disciplinary practice, asking faculty to articulate their continued validity or to challenge the inclusivity or positionality of existing practice.
Accessible learning materials and resources available to students in advance of curriculum delivery. (8/8)	Connectivity: Advanced access to resources in integrated learning experiences enhances students' self-directed learning, prioritisation, and time management—key skills for engineering disciplines. --- Tip: Instead of requiring students to review resources before the integrated learning experience (e.g. flipped classroom), emphasise preparation and reward well-prepared students with feedback on the depth and consideration of their responses. --- Example: Create a project-based activity focused on one business case study. Provide pre-learning resources on the company profile, historical gains, and losses. While not essential for the project, these resources will add depth to the discussion, and students who engage with them will produce higher-quality outcomes.	Connectivity: Advanced access to resources in an active learning context means that students are able to mentally and cognitively prepare for activities and learning concepts in advance, increasing autonomy and alleviating the anxiety that presents itself in unknown situations that require social interaction and engagement. --- Tip: Educators do not need to offer all resources prior to engagement, they can give students an idea of the topics that will be covered and the types of activities that will be present in the active learning experience. --- Example: If the active learning experience involves a role-play, release the role-play cards prior to the class so that students with anxiety can come to class with an understanding of what types of interactions they will be expected to participate in.	Connectivity:Faculty need to have sufficiently strong disciplinary knowledge and professional skills to be able to produce accessible learning materials in a variety of ways. --- Tip: Interdisciplinary sharing circles can be a collaborative way of sharing new disciplinary research and ideas. --- Example: An interdisciplinary sharing circle produces artefacts that can be shared among Faculty that enhances the accessibility of learning materials.

APPENDIX: PART 2D (OF 5) CURRICULUM DELIVERY
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (10-12)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 10: Enhancement of Faculty Teaching Competence	Standard 11: Learning Assessment	Standard 12: Program Evaluation
Creation of accessible, safe and collaborative environments of mutual respect and honesty conducive to student learning. (1/8)	Connectivity: The ability to create safe, collaborative learning environments is essential for students to work in groups and learn from each other. --- Tip/Example: Provide opportunities to highlight faculty who are effective in these practices and space for educators to observe and learn from each other's teaching practice. Create opportunities for faculty to shadow colleagues who excel at participatory teaching methods	Connectivity: Assessment must reflect true student ability, so students should be able to safely share any barriers they face to avoid being disadvantaged compared to their peers. --- Tip: When introducing a new assessment task, invite students to share any challenges or barriers that may arise for the student cohort. --- Example: Towards the start of the teaching period, students are invited to anonymously share their needs and barriers around assessment. With the release of each assessment and later individual results, students are invited to share how those barriers relate to the tasks and how any mitigation approaches are helping.	Connectivity: In order to genuinely engage in using student voice to evaluate a program, those students need to feel safe to share their experiences without consequence. --- Tip/Example: Provide opportunities to be anonymous and/or to share with staff who have or will not be involved in their future assessment.
A range of teaching approaches and learning activities that are accessible and encourage active participation of all students. (2/8)	Connectivity: An understanding of how to provide a variety of teaching approaches and mechanisms to ensure active participation is key to effective teaching in general --- Tip/Example: Provide tipsheets, guidelines and examples for teaching staff about the design of learning activities with opportunities for peer review of colleagues.	Connectivity: For assessment to accurately measure student ability, students must engage in learning activities that offer varied learning methods and multiple assessment points. Task equivalence requires oversight and moderation. --- Tip: Regularly measure student progress informally and use this information to determine further learning needs required to support their success in formal assessment. --- Example: Educators use a simple rubric to rate student performance against key session outcomes. After class, the subject coordinator reviews common mistakes to suggest further learning nee	Connectivity: Inclusive teaching approaches can provide important data for program evaluation systems. Defining what active participation looks like and how to collect this data accurately and appropriately is integral to the evaluation. --- Tip/Example: Where possible and known, respectfully collect and analyse participation rates across demographic groups for different learning activities.
Knowledge of student cohorts and adaptation of curriculum delivery to cohort and individual requirements. (3/8)	Connectivity: Calibrating curriculum delivery to the appropriate level for students is essential for maximizing learning. This connection focuses on understanding student needs and ensuring faculty can effectively meet them. --- Tip: Create a continuous improvement loop where knowledge of students informs teaching approach, and teaching competence enables better adaptation to student needs. --- Example: Use a variety of low-stakes formative tasks to assess student learning needs and showcase past faculty adaptations, creating a bank of successful adjustments.	Connectivity: There is a minimum useful standard of knowledge required for students to meet subject requirements and there are levels of performance beyond this. Assessing students effectively against these means identifying over multiple episodes of assessment where each student is tracking. --- Tip: While all students can complete the same core project, assessment options could include specialised components tailored to students' backgrounds and career goals.. --- Example: Use developmental rubrics to distinguish between the minimum acceptable knowledge and more advanced levels, ensuring assessments capture student success and offer improvement recommendations.	Connectivity: Evaluating the program necessarily means whether it was able to successfully get students to the required levels in the knowledge base. More effective evaluations will consider the starting point for each student and how (in aggregate) their learning needs were catered for to allow them to succeed (and if not how the program should change) --- Tip: Track student knowledge development in aggregate over and within subjects to determine necessary learning interventions
Empowerment of students to take responsibility for their own learning and that of their peers, acting as partners in their learning experience. (4/8)	Connectivity: Students who are more self-directed and engaged in peer learning tend to be more successful, a key principle in many teaching philosophies. However, fostering this requires explicit training and guidance to establish the right culture and provide necessary scaffolding. --- Tip: Create tip sheets for faculty on reflective prompts that encourage student collaboration --- Example: Offer professional development to help faculty develop skills in relinquishing control over power, choice, content, and instruction. Support them in guiding students and encourage exploring the discomfort of facilitating projects without complete expertise in the discipline.	Connectivity:Any assessment which is providing a meaningful evaluation of student achievement will not simply ask them to reproduce the exact work that has been solved for them. It will need to stretch them and thus with the right learning culture should push them towards self-direction. In cases of team assessment the peer support aspect applies as well. --- Tip: Tie assessment tasks to motivating contexts for students and include enough complexity that students will need to weigh up different options to meet the assessment outcomes. --- Example: Integrate peer and self assessment opportunities and scaffold the development of collaborative skills and feedback literacy.	Connectivity: Student empowerment, choice, and peer learning should feature as a quality indicator on program evaluation to indicate the extent to which students feel supported and able to take ownership of their learning. --- Tip: When implementing appropriately scaffolded peer learning and self regulation, compare the evaluation data with past evaluations to identify positive impact. --- Example: Students could lead evaluation focus groups and co-design parts of the curriculum, or even co-teach sessions.
Opportunities for students to relate course content to their own experiences, encouraging the sharing of diverse perspectives and interpretations. (5/8)	Connectivity: Creating space for faculty to be open and honest with their own teaching skill gaps allows staff to speak from their own perspectives, and work together in a form of mutual trust and transparency to develop professionally. --- Tip: It may be safer to share perspectives within a smaller group, such as a school or department. --- Example: Use an ePortfolio and encourage staff to showcase their own skill gap identification and development, and use this faculty ePortfolio to showcase growth.	Connectivity: Relating the assessment topic to a student's own experience or goals for future practice is commonly incorporated into, and integral for, many assessment tasks. --- Tip: Students may not know innately how to articulate their experiences, and this is best elicited through a deeply considered questioning framework. --- Example: ePortfolios, case study reflections, critical reflections and work integrated learning workbooks all require students to draw on their own lived experiences in relation to the course content.	Connectivity: These standards are inherently connected as it is through the articulation of the students' lived experience of the program that the program should be evaluated. --- Tip: Feedback from a single student that differs from the group's majority opinion may represent a marginalized group and should not be dismissed due to its lack of numerical representation. --- Example: Organise focus groups of students that represent diversity in their experience to unpack their experiences on a deeper level than survey evaluation allows, and acknowledge that a student voice is inherently representative.
Opportunities for students to work interactively in diverse and mixed groups. (6/8)	Connectivity: Faculty teaching competency is essential, particularly in understanding the nuances of different cultures, genders, ages, religions and ethnicities and how to facilitate opportunities for diverse students to work interactively. --- Tip: A fundamental aspect of considering diversity is developing a self-awareness of faculty's own perspectives, biases, and prejudices. --- Example: Consultation with diversity experts within is critical in this space. Leverage internal professional development opportunities that speak to cultural humility, reflecting on internal biases and fostering empathy.	Connectivity: Group project-based assessments foster collaboration, inter- and intra-personal skills, and, if appropriately scaffolded, promote diverse thinking while mirroring real-world engineering practice. --- Tip: Scaffold group assessments with a co-created group contract outlining expectations, ways of working, and conflict management strategies. --- Example: Create a group assessment task where student groups are formed based on their interest in a topic. This can help transition students into diverse working groups by leveraging a shared interest or experience.	Connectivity: The diversity of student groups depends largely on recruitment processes. Evaluation is a critical time to identify where marginalised groups could be more inclusively recruited from secondary education. --- Tip: Lead by example in this pace by ensuring there is diversity in the faculty. --- Example: During the evaluation, use student demographic data safely in line with inclusive practices and data protection policies to inform student recruitment decisions.
Integration of themes of equality, diversity and inclusivity into learning materials and activities. (7/8)	Connectivity: EDI principles and good practice in educational design intersect significantly, so by embedding EDI themes into the curriculum, faculty can leverage the efficiency of this overlap when considering professional development. --- Tip: Embedding EDI practice in the learning materials and activities will also help faculty to be aware of any marginalisation their own colleagues experience. --- Example: Partner with EDI industry organisations (for example, Diversity Council Australia (https://www.dca.org.au/)) for development opportunities, particularly in smaller institutions where central teams have reduced capacity.	Connectivity: Students can be exposed to EDI themes through learning assessment and its modality, as well as the support and preparation resources aligned with the assessment. --- Example/Tip: When providing choice in assessment, integrate a rationale component that asks the student whether their choice is related to the existing knowledge base or their aligned interests. Have students reflect on whether their choice is related to improving their diversity of thought.	Connectivity: Program evaluation is a critical time to evaluate the inclusion of EDI theme integration and whether these are appropriately and adequately integrated across the curriculum. --- Tip: In creating evaluative surveys, be clear in how you define EDI themes. This will enhance EDI literacy as the stakeholder may not hold the same knowledge and there may be miscommunication if there is a lack of specificity. --- Example: During program evaluation, EDI-specific questions and checklists can be designed to seek feedback from key stakeholders.
Accessible learning materials and resources available to students in advance of curriculum delivery. (8/8)	Connectivity: Faculty workload demands are systematically high, so to enable them to provide accessible resources before curriculum delivery, there must be flexibility in deadlines, a focus on working one semester ahead, and a reduction in administrative tasks that hinder faculty capacity. --- Tip: Capacity, capability and competence are tightly connected. Without capacity, educators cannot develop capability or competence. --- Example: Training and development programs on creating accessible resources should be conducted a minimum of 12 months in advance of curriculum delivery to allow faculty to implement the practice well in advance of curriculum delivery.	Connectivity: Learning assessment is commonly provided well in advance of curriculum delivery as a result of the regulatory requirements of most institutions. However, this may often be presented as a form and concept that shows constructive alignment, not a fully fleshed-out assessment task. --- Tip: Keep all assessment information in one location on the learning management system, including documents, forums and recordings. --- Example: Ensure the assessment task type and critical assessment information are available in the handbooks, and release all assessment information that is not time-sensitive at the beginning of the semester.	Connectivity: Feedback on student perspectives of accessible resources given in advance of the curriculum can provide evidence for the positive impact that can be showcased across the faculty. --- Tip: Consult with your EDI experts to construct safe questions around ideas like stress and anxiety. --- Example: Add questions to student evaluation that elicit perspectives on the early release of accessible resources. Questions like "How did receiving the resources early affect your preparation for the course and the assessment? What impact did this have on your stress and anxiety levels?

APPENDIX: PART 3A (OF 5) ASSESSMENT & FEEDBACK MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (1-3)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 1: Context	Standard 2: Learning Objectives	Standard 3: Integrated Curriculum
A range of assessment approaches that are accessible, non-discriminatory and timely. (1/8)	Connectivity: The variety of tasks in each stage of the CDIO program can be assessed in ways that allow students to leverage their strengths while collaborating in a team. Tip: Promote inclusive teamwork by helping students recognise each team member's strengths and provide opportunities for timely, respectful feedback. Example: In a team setting, students can select from a range of projects that accommodate different assessment approaches.	Connectivity: Program learning outcomes are aligned with institutional vision and mission, with proficiency levels set for each outcome. --- Tip: Assessment approaches must reflect the values of inclusivity, fairness, and effectiveness. --- Example: A variety of accessible and non-discriminatory assessments allows students to demonstrate proficiency at the levels set for each program learning outcome while supporting the institution's broader goals.	Connectivity: An integrated curriculum inherently facilitates diverse assessment options, increasing accessibility by enabling more students to play to their strengths. --- Tip: Educators can gather comprehensive evidence of students' skills development across multiple dimensions through various assessment types. Furthermore, timely feedback from these assessments is crucial for enhancing learning and refining personal and professional skills. --- Example: Include practical projects, collaborative tasks, reflective journals, and peer evaluations
A range of feedback approaches that are accessible, interactive, ongoing and timely. (2/8)	Connectivity: A variety of feedback approaches supports students' ongoing improvement through the CDIO process. --- Tip: Feedback should be captured right away, as it can easily be forgotten. Use tools like speech-to-text apps on your phone to capture the ideas instantly. --- Example: In the Design phase, incorporate verbal peer feedback to diversify the types of feedback students can access, alongside written educator feedback for consistency.	Connectivity: Achievement of program learning outcomes is defined in assessment, and the student's ability to achieve the learning outcomes can be supported through multiple feedback approaches. --- Tip: Reduce the feedback burden on educators through student self-assessment of the learning outcomes. --- Example: Support process-based achievement of learning outcomes through plan/draft/final assessment submissions, incorporating ongoing approaches throughout the process, and offer summative criteria that assess the students' ability to apply feedback through the process	Connectivity: Students may struggle to identify their own skill gaps. Ongoing feedback throughout the curriculum provides clear evidence of improvement over time and offers timely intervention when skills are lacking. --- Tip: Refer students to the academic skills centre when a skill weakness is identified. --- Example: Universities can seem disconnected from industry if not explicitly aligned. Align feedback recommendations with career-focused skills, such as those in Young Engineers CPD Series. https://yea.engineersaustralia.org.au/YEACPDseries
Incorporation of student choice in assessment practices. (3/8)	Connectivity: Student choice in assessment practices is innately supported throughout the entire CDIO process and context. --- Tip: Make clear the situations where students have full autonomy over their choices. --- Example: Assessment tasks based on the CDIO process provide students with extensive choice, even when the overall topic or concept is fixed..	Connectivity: While learning outcomes are fixed for accreditation purposes, students will have opportunities to choose how to achieve the learning outcomes through assessment practices. --- Tip: Learning outcome verbs such as 'select', 'choose', or those within the 'create' level of thinking inherently provide choice. --- Example: Create assessment tasks that require students to select and use appropriate programming to solve engineering problems.	Connectivity: While students benefit from autonomy, this should be guided by choices available to them in industry, as informed by internal and external stakeholders --- Tip: Offer case studies that showcase the choices generally available within the industry. --- Example: If an assessment task requires students to address an industry standard issue, allow students to select the most relevant standard for their future careers (e.g., state, national, or home country standards).of their home country).
Opportunities to critically engage with equality, diversity and inclusivity themes in assessments that relate to real life scenarios. (4/8)	Connectivity: Integrating EDI themes into the CDIO process and aligned assessments ensures solutions are developed with a critical, comprehensive understanding of diverse stakeholder needs, perspectives, and potential impacts. --- Tip: Emphasise that inclusive design fosters innovation and efficacy --- Example: Create assessment methods that evaluate students' ability to integrate EDI principles within the CDIO process.	Connectivity: Educators can explicitly develop personal and interpersonal skills aligned with real-world applications by integrating EDI themes into learning outcomes and assessments. Simultaneously, this develops critical thinking and professional competencies. --- Tip: Integrating EDI themes into learning outcomes ensures that EDI is an integral component of skill development and professional competence, not a separate or peripheral topic. --- Example: Learning outcomes that include: analysing organisational structures, evaluating inclusion strategies, developing recommendations for systemic improvements, and reflecting on their own leadership approach.	Connectivity: The connection lies in transforming traditionally siloed academic leaning into a comprehensive, socially conscious educational experience that goes beyond traditional disciplinary boundaries. --- Tip: Students learn to critically analyse systems, services, and processes through an EDI lens. --- Example: Real-life case studies can be used to develop not just theoretical understanding but practical skills in addressing complex social challenges.
Preparation, engagement and support of students throughout the assessment process that develops their assessment literacy. (5/8)	Connectivity: The CDIO program is systematically scaffolded, inherently enhancing student assessment literacy. --- Tip / Example: Feedback in all stages of the CDIO process is key to developing capable engineers.	Connectivity: Learning outcomes are central to developing assessment literacy, as students build this literacy by understanding and working towards achieving them. --- Tip / Example: Ensure learning outcomes are grammatically simple, use clear verbs, and include only what is directly and explicitly assessed.	Connectivity: Program mapping and explicit teaching of personal and professional skills prepare, engage, and support student assessment literacy. --- Tip / Example: Map personal and professional skills throughout the program, aligning each skill with the assessment regime.
Opportunities for students to act as partners in the assessment and feedback process. (6/8)	Connectivity: Enacting feedback from student partners encourages a diversity of voices in assessment and feedback processes, supporting ongoing curriculum improvement through the CDIO framework. --- Tip: Ensure two-way feedback is embedded at all stages through the CDIO cycle to promote continuous curriculum improvement. --- Example: During the Conceive phase, elicit student feedback on the clarity of information provided and the assessment task design. Act on this feedback to improve the quality of assessment and improve student outcomes	Connectivity: Incorporating feedback from student partners about their achievement of the program learning outcomes ensures the assessment is a quality constructively aligned design. --- Tip: When redesigning or improving program learning outcomes, capture the student voice through formal surveys or by in situ feedback. --- Example: Students can be surveyed each semester on their perceptions of their own progress towards achievement of the program learning outcomes, revealing overall progression and identifying gaps.	Connectivity: Assessments evaluate students' skills but not their confidence or perceived value of the skillset. Feedback from student partners can reveal gaps in supporting skill development. --- Tip: Institutions define their own graduate skills/attributes, which can be used with student partners to identify gaps. --- Example: Organise a student focus group at the end of each year. Provide the group with the target skills and levels for that year (1st, 2nd, 3rd), and gather feedback on their confidence in those skills and their preparedness.
A programme-level approach to the design, development, understanding and coordination of assessment and feedback practices. (7/8)	**Connectivity:** CDIO is a program-level approach, and the design, development, understanding and coordination of feedback practices are unpacked in detail across the twelve standards.		
Routine monitoring, review and sharing of assessment practices that embed equality, diversity and inclusivity. (8/8)	**Connectivity:** **Will mirror rows 4 and 6.** Concepts such as monitoring, reviewing and sharing equity, diversity and inclusion in assessment practice are encapsulated in seeking feedback for evaluation and integrating EDI themes into assessment design.		

APPENDIX: PART 3B (OF 5) ASSESSMENT & FEEDBACK MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (4-6)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 4: Introduction to Engineering	Standard 5: Design-Implement Experiences	Standard 6: Engineering Learning Workspaces
A range of assessment approaches that are accessible, non-discriminatory and timely. (1/8)	Connectivity: The introductory engineering course can integrate assessments that support diverse learning needs and ensure fairness. This approach aligns with the course's focus on building technical skills, personal development, and sustainability in engineering practice. --- Tip / Example: Seek reviews from stakeholders, including students, that the assessments are accessible, non-discriminatory, and timely.	Connectivity: A curriculum with basic and advanced design-implement experiences supports progressive learning, with assessments tailored to different skill levels. --- Tip / Example: Assessments should offer flexible formats, clear rubrics, and timely feedback to ensure accessibility, fairness, and equitable opportunities for all students to succeed and improve.	Connectivity: Engineering learning workspaces support all aspects of digital, hands-on, knowledge, and skills learning. --- Tip / Example: Integrating physical and digital learning environments enhances the learning experience and ensures assessments are accessible, varied, and timely, catering to diverse student needs. This supports non-discriminatory assessment practices by offering flexibility in how students engage with the material and demonstrate their learning.
A range of feedback approaches that are accessible, interactive, ongoing and timely. (2/8)	Connectivity: Students enter the introductory course predominantly from schooling where feedback is frequent, and progress is scaffolded throughout the student journey. While the same level of feedback is not possible in a University context, similar approaches can be implemented in a less time-intensive way. --- Tip: Provide varied feedback approaches in the early years to ease the transition into the introductory course, while also scaffolding self-assessment skills for later years. --- Example: Offer a pre-semester fundamental skills course that gives students safe formative feedback and a scaffolded start to their course.	Connectivity: A range of feedback approaches supports students' iterative design-implement experiences and promotes early success. --- Tip: Incorporate a criterion in the assessment task on enacting feedback to increase feedback literacy. --- Example: Provide early verbal feedback during the concept stages to address major issues before the students' full-scale design.	Connectivity: Workspaces can be leveraged to allow for different feedback modalities. --- Tip: Enhance peer feedback literacy through a simple rubric and regular active learning feedback check-ins. --- Example: Text-based formal feedback can be provided on the online learning platform, peer feedback through active learning physical spaces, and direct individual verbal feedback is most valuable in hands-on practical workspaces and laboratory environments.
Incorporation of student choice in assessment practices. (3/8)	Connectivity: Assessment choice is possible at all course levels, even in the introductory course. --- Tip: Begin with simple assessment choices where outcomes are limited to a few parameters to avoid overwhelming students in the introductory course. --- Example: Design assessment tasks that require students to select and apply programming techniques within a predefined range to scaffold their learning.	Connectivity: Student choice in assessment practices is innately supported through design-implement experiences. --- Tip: Offer common outcomes from past design-implement experiences so students are better placed to make informed choices. --- Example: Assessment tasks based on the design-implement experiences offer extensive student choice opportunities through innate design choices.	Connectivity: Students should be able to select the appropriate engineering workspaces for their assessments. --- Tip: If students are not able to access specialist laboratories outside tutorial hours, consider allocating in-class time for assessments to offer workspace choices. --- Example: Biomedical engineering labs require specific inductions and controlled use. Incorporating assessments during class time in these spaces allows students more supported choices of workspace.
Opportunities to critically engage with equality, diversity and inclusivity themes in assessments that relate to real life scenarios. (4/8)	Connectivity: Embedding EDI themes into the introductory course framework allows students to develop foundational technical skills while cultivating a socially aware, inclusive professional mindset from the start of their academic journey. --- Tip: Scaffold EDI knowledge by providing an annotated model assessment task that unpacks the themes' context and broader impact. --- Example: Task students with developing a water filtration system that requires researching water access challenges in diverse global communities, considering cultural and economic constraints, and evaluating how proposed solutions might affect different population groups.	Connectivity: Integrating EDI themes into design-implement experiences produces students who are technically proficient and socially responsible. --- Tip: This approach transforms engineering education from a purely technical discipline to a socially responsive practice that values diversity, equity, and inclusive innovation. --- Example: Students design a public transportation system that analyses accessibility for those with disabilities, considers the needs of different equity groups, evaluates the system's impact on various community demographics, and proposes inclusive design solutions that address potential barriers.	Connectivity: The physical and digital learning infrastructure can be a practical space for exploring EDI principles. The design of spaces can reflect a commitment to EDI, serving as both a functional and implicit assessment of diversity and inclusion. --- Tip: Configure assessments in laboratories, classrooms, and digital spaces to support diverse learning abilities, accessibility needs, and collaborative approaches reflective of real-world practice. --- Example: Design assessments where students analyse the laboratory and classroom layouts that accommodate various learning abilities.
Preparation, engagement and support of students throughout the assessment process that develops their assessment literacy. (5/8)	Connectivity: The CDIO program is systematically scaffolded, inherently enhancing student assessment literacy. --- Tip / Example: Feedback in all stages of the CDIO process is key to developing capable engineers.	Connectivity: The design-implement experience is scaffolded through a progression from simple to complex tasks throughout the program. --- Tip/Example: Clearly outline the elements of the design-implement experience that progress from simple to complex to provide clarity for students.	Connectivity: Using real-world workspaces, laboratories, and engineering tools provides a solid platform for students to build foundational engineering skills required for their assessment. --- Tip/Example: Use both physical and virtual spaces to foster two-way communication and collaboration among students, enhancing assessment literacy.
Opportunities for students to act as partners in the assessment and feedback process. (6/8)	Connectivity: The introductory course builds a foundation of skills and knowledge that prepares, engages and supports student assessment literacy. --- Tip / Example: The introductory course should introduce and explicitly teach the assessment formats and design elements used throughout the program.	Connectivity: The design-implement experiences are regularly evaluated and revised based on feedback from students. --- Tip: Use early semester feedback mechanisms so that students feel more agency when their feedback improves the course's current iteration. --- Example: Assist students identify skill and knowledge gaps during the design-implement process, allowing these gaps to shape the course's early stages.	Connectivity: Students offer direct experiences and perceptions of engineering workspaces and laboratories. --- Tip: When entering a new space at the beginning of the course, run a brief induction to help students feel comfortable and understand the expectations of the space (physical or virtual). --- Example: Involve student partners in the workspace evaluation group to share their experiences and offer recommendations.
A programme-level approach to the design, development, understanding and coordination of assessment and feedback practices. (7/8)	**Connectivity:** CDIO is a program-level approach, and the design, development, understanding and coordination of feedback practices are unpacked in detail across the twelve standards.		
Routine monitoring, review and sharing of assessment practices that embed equality, diversity and inclusivity. (8/8)	**Connectivity:** **Will mirror rows 4 and 6.** Concepts such as monitoring, reviewing and sharing equity, diversity and inclusion in assessment practice are encapsulated in seeking feedback for evaluation and integrating EDI themes into assessment design.		

APPENDIX: PART 3C (OF 5) ASSESSMENT & FEEDBACK MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (7-9)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 7: Integrated Learning Experiences	Standard 8: Active Learning	Standard 9: Enhancement of Faculty Competence
A range of assessment approaches that are accessible, non-discriminatory and timely. (1/8)	Connectivity: Evidence shows the impact of implementing integrated learning experiences based on the curriculum plan. --- Tip / Example: Using diverse assessment methods (e.g., projects, presentations, peer reviews) ensures students are evaluated on both disciplinary knowledge and practical skills. Timely, accessible, and non-discriminatory assessments offer continuous feedback, supporting development and ensuring equitable opportunities for success.	Connectivity: There is documented evidence that the CDIO principle is the context of the engineering program and is fully implemented. --- Tip / Example: The documented implementation of the CDIO framework in the engineering program forms a strong foundation for inclusive, accessible, and timely assessment practices. By aligning assessment with the CDIO cycle, students are evaluated on both their theoretical understanding and practical application in diverse and non-discriminatory ways, ensuring equitable opportunities to demonstrate their learning and skills.	Connectivity: Faculty competence in disciplinary knowledge and personal, interpersonal, product, process, system, and service building skills are regularly evaluated and enhanced where appropriate. --- Tip / Example: Regular faculty evaluation, ensuring both disciplinary knowledge and broader skills are continuously developed. These assessments, such as peer reviews, feedback, and professional development programs, are designed to be inclusive, offering clear and fair criteria. They provide actionable, timely feedback that supports faculty growth in areas like teaching, interpersonal skills, and service building, fostering continuous improvement across all competencies.
A range of feedback approaches that are accessible, interactive, ongoing and timely. (2/8)	Connectivity: Integrating and scaffolding student skill development within specific learning activities and assessment tasks creates space for skill development through a range of feedback mechanisms. --- Tip: Consider the fundamental skill competency level when giving feedback from integrated learning experiences. --- Example: Allow debriefing and reflection after skill-based activities: debriefing provides feedback, while reflection encourages self-assessment.	Connectivity: Active learning involves student problem-solving, investigation, and discussion, with a strong focus on educational debriefs to provide feedback, correct misconceptions, and consolidate knowledge. --- Tip: In an activity debrief, verbally indicate, “This is feedback for the whole group”, as students with low feedback literacy will not know something is feedback unless explicitly stated. --- Example: Provide a model answer with feedback annotations to specific problems to indicate an appropriate industry standard.	Connectivity: Faculty members should offer quality disciplinary feedback through various approaches, fundamental support, and a baseline of competency expectations in relation to feedback quality to be determined. --- Tip: Investigate industry-based improvement and professional development programs to identify a baseline of disciplinary feedback approaches. --- Example: Connect with industry partners and employ guest lecturers to showcase an industry standard for feedback approaches.
Incorporation of student choice in assessment practices. (3/8)	Connectivity: Students can be offered assessment choices by choosing the skills to focus on in the integrated learning experience. --- Tip: Students may benefit from selecting the skill set for the final product in areas where they struggle to meet learning outcomes. --- Example: Offer choice in the final product format for the assessment. An oral presentation can showcase communicative skills, while a written report can demonstrate argumentation and paragraph flow.	Connectivity: Active learning inherently allows students choice. For assessment practice, active learning is often represented through group or pair assessment tasks, so student choice can be made possible by selecting groups and assessment topics. --- Tip: Existing ‘norms’ may influence group or topic selection. Scaffolding students through the group formation process can help students better establish a common norm. --- Example: Offer students a choice of topic for the assessment task and allow them to select their own groups.	Connectivity: Faculty competence strongly impacts student assessment choices, as they require support to manage and facilitate the wide range of options available to students. --- Tip: Faculty need to be comfortable with students choosing assessments outside the educator’s discipline, moving into more interdisciplinary spaces. --- Example: Allocate time within interdisciplinary meetings for faculty to discuss challenges they have encountered with supporting student choice.
Opportunities to critically engage with equality, diversity and inclusivity themes in assessments that relate to real life scenarios. (4/8)	Connectivity: Feedback from student partners can identify where integrated learning experiences are having less impact than envisaged. --- Tip: Increase the students' feelings of empowerment by eliciting feedback after key integrated learning experiences, making suitable adjustments, and informing them of the adjustments that have been made. --- Example: Offer student cohorts choice in relation to the integrated learning experiences and capture their feedback from those experiences to implement in the next experience cycle.	Connectivity: By using active learning methods, like group assessment, debate and discussion tasks, the student can critically examine EDI themes as they relate to their personal and group realities. This moves beyond theoretical discussions to concrete, lived experiences in the moment. --- Tip: Develop empathy through perspective-taking exercises and reflective post-assessment debriefs. --- Example: Create a group assessment task with an individual reflective component that encourages personal reflection on social identities and power dynamics.	Connectivity: Embedding EDI themes into assessments encourages faculty to expand their understanding and teaching of engineering and how it intersects with diverse perspectives and inclusive practices. --- Tip: Integrate EDI themes as an aspect of the hidden curriculum and align them with graduate attributes to emphasise their foundational role in fostering a more inclusive engineering curriculum. --- Example: Map EDI-themed assessments across the course and identify gaps to target educators who need additional support.
Preparation, engagement and support of students throughout the assessment process that develops their assessment literacy. (5/8)	Connectivity: Teaching personal and professional skills through hands-on learning experiences prepares, engages, and supports student assessment literacy. --- Tip/Example: During integrated learning experiences, provide a debrief with an expert response to help students identify knowledge and skill gaps and plan to address them before formal assessment submission.	Connectivity: The hands-on, interactive social learning provided through active learning prepares students for individual and team assessment and develops assessment literacy. --- Tip/Example: Allocate class time for activities that align with assessment task outcomes.	Connectivity: Faculty competence refers to supporting students in understanding the relevant disciplinary fundamentals better. This deeper learning in a formative environment better supports students' progress towards summative assessment literacy. --- Tip/Example: Offer examples of faculty skill development over time and lessons learnt through experience, as this can break down faulty-student barriers and support student engagement with the assessment.
Opportunities for students to act as partners in the assessment and feedback process. (6/8)	Connectivity: The link between these concepts is a pedagogical strategy that views learning as a multidimensional process, recognising that skill development is inseparable from understanding social contexts and human diversity. --- Tip: By integrating technical skills with social awareness, students are prepared to create more comprehensive solutions and understand the broader impact of their work. --- Example: Create an assessment task that gets students to analyse systemic barriers within their discipline.	Connectivity: Active learning puts students at the centre of the experience, engaging in the experience rather than being the recipient of knowledge transfer. The teaching dynamic becomes one of partnership rather than the keeper of knowledge. --- Tip: Give students quiet individual time to process ideas before being exposed to the ideas and opinions of their peers and educators. Active learning does not mean always talking. --- Example: Offer a series of problems for groups to solve, but also allow students to choose to investigate alternatives.	Connectivity: Gaps in faculty disciplinary competency may be revealed through activities aligned with students as partners. --- Tip: Near peers in the early years are effective for identifying faculty gaps in disciplinary competence, often through indications of skill and knowledge gaps or significant jumps in expectations between units or semesters. --- Example: For contextualised student feedback, run a student focus group that elicits feedback broadly to highlight potential faculty disciplinary gaps, rather than individual educator gaps.
A programme-level approach to the design, development, understanding and coordination of assessment and feedback practices. (7/8)	**Connectivity:** CDIO is a program-level approach, and the design, development, understanding and coordination of feedback practices are unpacked in detail across the twelve standards.		
Routine monitoring, review and sharing of assessment practices that embed equality, diversity and inclusivity. (8/8)	**Connectivity:** **Will mirror rows 4 and 6.** Concepts such as monitoring, reviewing and sharing equity, diversity and inclusion in assessment practice are encapsulated in seeking feedback for evaluation and integrating EDI themes into assessment design.		

APPENDIX: PART 3D (OF 5) ASSESSMENT & FEEDBACK MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (10-12)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 10: Enhancement of Faculty Teaching Competence	Standard 11: Learning Assessment	Standard 12: Program Evaluation
A range of assessment approaches that are accessible, non-discriminatory and timely. (1/8)	Connectivity: Faculty teaching competence is regularly evaluated and updated as needed. --- Tip / Example: Faculty experienced in designing integrated, active, and experiential learning experiences are likely to create assessments that reflect this diversity. These can include collaborative projects and hands-on tasks, allowing students to demonstrate knowledge in various ways. Using diverse assessment methods ensures all students, regardless of learning preferences, have opportunities to succeed. Furthermore, embedding timely feedback and using multiple assessment points throughout the learning process supports continuous improvement.	Connectivity: Quality learning assessment standards prioritise real-world, authentic and varied assessment approaches that can inherently and systematically align with the range of assessment approaches. --- Tip / Example: Do this in a way that works for all your students. Otherwise, it is only a measure of some, not all, students' abilities. You could have student groups regularly review the quality and availability of methods of feedback gained through assessments.	Connectivity: Reviewingthe range and accessibility of assessment is vital to understanding how/why students have/have not met learning outcomes, and what may need to change. --- Tip / Example: Colour-code the assessment approaches to highlight the variety (or lack of) approaches to assessment.
A range of feedback approaches that are accessible, interactive, ongoing and timely. (2/8)	Connectivity: Faculty members should offer quality educational feedback through diverse approaches, fundamental support, and clearly defined competency expectations. --- Tip: Most institutions have faculty-based Educational/Learning Designers that are experienced and qualified to provide feedback and can be leveraged for support. --- Example: Ensure the faculty/institution has a clear and informative professional development program on feedback.	Connectivity: Student groups regularly review the quality and availability methods of feedback gained through assessments. --- Tip: Assessment-based feedback is usually the most accessed and easily understood by students, so student feedback literacy is usually higher in this space. --- Example: Set a maximum volume of feedback per assessment: Students will often want large volumes of feedback, but this is usually counterproductive. The more feedback given, the less likely the student is to enact the feedback.	Connectivity: Student progress based on feedback provides evidence for continuous course improvement. --- Tip: Ensure you seek permission from specific students when capturing and documenting their progress for use in course review or accreditation. --- Example: Documented samples of student development based on feedback can support continuous improvement across year levels.
Incorporation of student choice in assessment practices. (3/8)	Connectivity: Faculty teaching competence heavily impacts student choice of assessment. There may be a reliance on traditional forms of assessment that allow educators to control all aspects of the assessment and a reluctance to let go of this control. ---------- Tip: Faculty need to be made comfortable with the idea that they are also not required to be educational experts in every possible outcome and will need to be seen as a guide on the side. --- Example: Promote and showcase educators who lean into the unknown, developing additional knowledge and skill sets as a result of the student's assessment choices.	Connectivity: Both summative and formative learning assessment methods can integrate student choice in assessment, improving self-efficacy and enhancing critical thinking. --- Tip: Scaffold student choice in summative assessment by introducing student choice in formative assessment. --- Example: Allow students to formatively self-assess based on learning outcomes and set goals for improvement.	Connectivity: Student choice in assessment improves student agency, leading to positive program evaluations. --- Tip: Gather feedback to explore whether assessment options contributed to students feeling under-supported, and how. --- Example: Capture student feedback when assessment design relies heavily on student choice.
Opportunities to critically engage with equality, diversity and inclusivity themes in assessments that relate to real life scenarios. (4/8)	Connectivity: Embedding EDI themes into assessments helps faculty recognise how inclusive engineering design principles align with inclusive education. --- Tip: Collaborate with faculty to develop assessment strategies that align with both inclusive practices and industry-relevant skills --- Example: Provide training on designing inclusive assessments that incorporate real-world scenarios related to equality, diversity, and inclusivity	Connectivity: Effective assessment uses a variety of methods aligned with learning outcomes that address disciplinary knowledge and skills. This alignment directly impacts students' progress and engagement through the assessment. --- Tip / Example: Increase incentive for engagement tasks by describing how the learning tasks explicitly align to the assessment tasks.	Connectivity: Stakeholder input and evaluation provide a multi-perspective approach to understandin g and implementing the CDIO process and EDI principles. --- Tip: Incorporate EDI-specific assessment standards across the program and seek feedback from key stakeholders. --- Example: Create an evaluation of the assessment tasks that asks students whether their diverse perspectives were represented in the task.
Preparation, engagement and support of students throughout the assessment process that develops their assessment literacy. (5/8)	Connectivity: Faculty teaching competence influences student preparation by explicitly teaching skills and knowledge, which scaffolds students' assessment literacy development. --- Tip / Example: the institutional student skills/academic skills development team is a wealth of information for scaffolding assessment literacy.	Connectivity: Effective assessment uses a variety of methods aligned with learning outcomes that address disciplinary knowledge and skills. This alignment directly impacts students' progress and engagement through the assessment. --- Tip / Example: Increase incentive for engagement tasks by describing how the learning tasks explicitly align to the assessment tasks.	Connectivity: Assessment outcomes are a key feedback measure for program evaluation. Where failure is present, an analysis must be conducted to determine whether this is linked to a lack of scaffolding and preparation or by some other factor. --- Tip / Example: Elicit feedback from students outside of the institutional evaluation process to address assessment scaffolding issues that may be present.
Opportunities for students to act as partners in the assessment and feedback process. (6/8)	Connectivity: Gaps in faculty teaching competency may be identified through activities aligned with students as partners. --- Tip: While gaps in faculty competency can be indicated by students, its advisable to be careful about the information elicited through institution-wide student satisfaction surveys. --- Example: For contextualised student feedback, run a student focus group that elicits feedback broadly to indicate potential faculty education gaps rather than individual educator gaps.	Connectivity: Student partners regularly review the use of learning assessment methods and make recommendations for continuous improvement. --- Tip: Students may express what they want in assessment, but educators will always be the driving force of what students need in assessment. --- Example: Co-create assessment tasks and rubrics to increase student agency. Provide students with a basic concept of the task, then develop the details together. Educators will guide the criteria, but co-creating rubrics helps students understand their design and purpose.	Connectivity: Evidence is captured from student focus groups and students as partner initiatives, with documented changes that have been implemented as a result of the students' voice. --- Tip: Student agency comes from enacting student feedback, not just listening to it. --- Example: During a course review and accreditation cycle, submit documentation that captures the changes made as a result of student-led initiatives.
A programme-level approach to the design, development, understanding and coordination of assessment and feedback practices. (7/8)	**Connectivity:** CDIO is a program-level approach, and the design, development, understanding and coordination of feedback practices are unpacked in detail across the twelve standards.		
Routine monitoring, review and sharing of assessment practices that embed equality, diversity and inclusivity. (8/8)	**Connectivity:** **Will mirror rows 4 and 6.** Concepts such as monitoring, reviewing and sharing equity, diversity and inclusion in assessment practice are encapsulated in seeking feedback for evaluation and integrating EDI themes into assessment design.		

APPENDIX: PART 4A (OF 5) LEARNING ENVIRONMENT MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (1-3)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 1: Context	Standard 2: Learning Objectives	Standard 3: Integrated Curriculum
Assurance that all physical and virtual learning spaces are accessible, flexible and, where appropriate, reflective of student diversity. (1/7)	Connectivity: Understanding the implications of technology on social factors/society requires students to hear voices different from their own. Diversity among peers is therefore essential, and the learning environment must enable participation from a diverse student body. --- Tip: Create non-verbal communication channels (e.g., post-its, chat functions) to allow more students to participate. This supports Universal Design for Learning by offering multiple means of communication. --- Example: Students work in groups with a client brief and discuss the product's social implications through verbal and text-based discussions. One student ensures inclusive participation by checking in with quieter members and reading out their input.	Connectivity: All interpersonal learning outcomes (for example cross-cultural competency) depend on a diversity of peers, as students will encounter that diversity as they enter the workforce. --- Tip: Consider the general diversity of the country and what skills and knowledge students would need to effectively collaborate and communicate within that context. --- Example: Learning outcomes are clear, short, grammatically simple and reflect real-world diversity.	Connectivity: Connected because the context (standard 1) and learning outcomes (standard 2) are connected --- Tip: When mapping learning outcomes to activities, consider whether the activity design will actually be accessible to ensure a diversity of student experiences will be present. --- Example: Curriculum-wide LMS accessibility compliance is systematically applied to all subjects.
Utilisation of physical learning spaces to facilitate student access to and engagement with the curriculum. (2/7) Utilisation of virtual learning spaces to facilitate student access to and engagement with the curriculum. (3/7)	Connectivity: At a contextual level, the physicality or virtuality of a learning space is relevant in that participating in the CDIO process can occur through both, and the artefacts generated can apply to both virtual and physical settings --- Example: Learning in both physical and virtual spaces allows students to consider and experience design needs for both formats.	Connectivity: The skills students need to develop may require working with peers, key technologies and systems, etc. and practising these skills authentically may require a mix of learning spaces. This may have a role in Standard 2 (learning outcomes) developing learning outcomes but is certainly required in Standard 3 (Integrated curriculum) planning how to integrate them through a sequence of activities. --- Tip: Consider which skills and knowledges are best cultivated through physical, virtual or a mix of both spaces. --- Example: A need can be identified for expertise with practices and tools like 3D printing, AutoCAD, etc. Developing competency with 3D printing is likely best physically; however, AutoCAD may be easier to do virtually if working in groups.	Connectivity: The skills students need to develop may require working with peers, key technologies and systems, etc. and practising these skills authentically may require a mix of learning spaces. This may have a role in Standard 2 (learning outcomes) developing learning outcomes but is certainly required in Standard 3 (Integrated curriculum) planning how to integrate them through a sequence of activities. --- Tip: Consider which skills and knowledges are best cultivated through physical, virtual or a mix of both spaces. --- Example: A need can be identified for expertise with practices and tools like 3D printing, AutoCAD, etc. Developing competency with 3D printing is likely best physically; however, AutoCAD may be easier to do virtually if working in groups
Utilisation of accessible learning resources and technologies to enable student access to and engagement with the curriculum. (4/7)	Connectivity: Full engagement in the curriculum for all students will allow participation in the CDIO processes, contributing to the development of modern engineering solutions. To adopt this as the context consistently, it needs to be accessible for all students to engage with that context, not just some.	Connectivity: These two standards do not have to intersect, but they may. Accessibility of the materials level can be designed regardless of the learning outcomes developed. --- Tip: Ensure the language and grammar used within the learning outcomes are plain and unambiguous to improve comprehension and accessibility for all students. --- Example: Get feedback on learning outcomes from educational designers, language support groups and discipline leads.	Connectivity: Without accessible learning resources and technologies, some students might only partially access certain aspects of the curriculum, limiting their ability to develop the complete skill set needed for their future careers. --- Example: A near-peer program across the year levels assists students in connecting with the curriculum in a student-centred and supportive way.
Provision of additional/ alternative learning resources and technologies where required to support access to and engagement with the curriculum. (5/7))	Connectivity: Will mirror row 4. The difference between 4 and 5 in Advance HE EDI learning environments is between the universal level of support and specialised student support. Both are essential for curriculum accessibility.		
Liaison with internal learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (6/7)	Connectivity: Reviewing the accessibility of space, resources, and delivery is essential to implementing the practices well, and the rows above explain why these are linked with the relevant CDIO standards		
Liaison with external learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (7/7)	Connectivity: Will mirror row 6. The difference between 6 and 7 in Advance HE EDI learning environments is the partner participating in the process, and this requires internal and external partners to incorporate both institutional knowledge and a layer of separation around any perception of bias or conflict of interest.		

APPENDIX: PART 4B (OF 5) LEARNING ENVIRONMENT
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (4-6)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 4: Introduction to Engineering	Standard 5: Design-Implement Experiences	Standard 6: Engineering Learning Workspaces
Assurance that all physical and virtual learning spaces are accessible, flexible and, where appropriate, reflective of student diversity. (1/7)	Connectivity: The requirement of developing initial interpersonal skills and attitudes is particularly important early as some students may enter their course from quite homogenous schooling experiences and may be underprepared for the diversity and richness of human experience and how to communicate and collaborate effectively and respectfully around this. --- Tip: For introductory subjects, more scaffolding and guidance will be required in how to communicate and collaborate across diverse cohorts, and students will have less developed self-management skills (especially emotional regulation), which will need extra support. --- Example: Students are taught early about the variety of social conventions both across and within cultures, neurotypes, etc., to prepare them for effective cross-cultural group work.	Connectivity: Sustainable and fit-for-purpose development requires that products and processes meet the true needs and can be maintained over time; this requires insights into the diversity of possible users and implementers, which is only possible with a diversity of peers and/or inviting external people who can contribute lived experience. --- Tip: Ensure students have access to experiences of real end users, whether within the class cohort or as externals invited into the space. --- Example: Students are developing a software tool for coordinating in-home care, as such, they need to know how disability support workers, disabled folks, and their families would experience such a system.	Connectivity: Hands-on learning may assume certain levels of mobility and physical dexterity, which may differ over a population. Alternatives must be provided to ensure all students can participate. --- Tip: A proactive design (for example Universal Design for Learning) will always be better than making adjustments later, as many students may be hesitant to disclose their needs. Occupational therapists can be consulted to assist in identifying alternatives and supports for a variety of individual needs. --- Example: Students are expected to use a 3D printer for their wing designs to assess aerodynamicity. The 3D printer requires reaching from an average standing height, meaning (for instance) wheel-chair users are unable to participate.
Utilisation of physical learning spaces to facilitate student access to and engagement with the curriculum. (2/7) Utilisation of virtual learning spaces to facilitate student access to and engagement with the curriculum. (3/7)	Connectivity: In order to build and strengthen student motivation and develop the early skills required to succeed over their course, the barriers posed by different learning spaces need to be considered. Otherwise, students may get discouraged and give up thinking Engineering as a field is not for them. --- Tip: Provide multiple modalities for participating; where this is not possible, make it clear why the selected mode is essential to the skills and knowledge involved. --- Example: A student with depression may find it considerably harder to join physical classes and may not be comfortable being seen during a depressive episode but may still be able to participate in online classes.	Connectivity: As with (2) and (3), the skills and knowledges being developed will apply in both physical and virtual settings, so students need opportunities to work in both formats. Equally, students for whom one modality is inaccessible will not be able to participate in design-implement activities offered in one mode only. --- Example: An ADHDer / student with ADHD may find the physical presence of peers around them essential to keep them engaged in the practice, especially for parts that are less aligned to their personal motivations.	Connectivity: Standard (6) is explicitly about the opportunities to engage in both physical and digital learning environments, which reflect these two rows directly.
Utilisation of accessible learning resources and technologies to enable student access to and engagement with the curriculum. (4/7)	Connectivity: The goal is to maximise engagement and set students up for success. Inaccessible learning does the opposite and excludes already marginalised students from engineering fields. --- Tip: Ensure this information is given to them right from the beginning of the introductory course. --- Example: A fundamental aspect of accessibility is ensuring students are aware of the accessible learning resources and technologies they have available to them right from the introductory course.	Connectivity:The relationship between these standards is particularly important because it creates a feedback loop: accessible education leads to engineers who understand accessibility needs, who then create more accessible products and systems for society. --- Tip: Ensure the accessibility of learning resources and technologies can manifest in different ways within design-implement experiences. --- Example: Ensure all digital content is compatible with access readers for visually impaired students, and another is the use of speech-to-text software to assist students with writing difficulties in documenting their design process.	Connectivity: Effective hands-on learning in both physical and digital spaces requires accessibility in the curriculum so they can be prepared. --- Tip: Ensuring the accessibility of learning resources and technologies can manifest in different ways within the learning space. --- Example: In physical spaces, this may mean desks and chairs that are adjustable and can be arranged to provide ample space for movement to help students with physical disabilities engage comfortably. In digital workspaces, this could mean ensuring closed captioning is available and accurate on all learning resources.
Provision of additional/ alternative learning resources and technologies where required to support access to and engagement with the curriculum. (5/7))	Connectivity: Will mirror row 4. The difference between 4 and 5 in Advance HE EDI learning environments is between the universal level of support and specialised student support. Both are essential for curriculum accessibility.		
Liaison with internal learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (6/7)	Connectivity: Reviewing the accessibility of space, resources, and delivery is essential to implementing the practices well, and the rows above explain why these are linked with the relevant CDIO standards		
Liaison with external learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (7/7)	Connectivity: Will mirror row 6. The difference between 6 and 7 in Advance HE EDI learning environments is the partner participating in the process, and this requires internal and external partners to incorporate both institutional knowledge and a layer of separation around any perception of bias or conflict of interest.		

APPENDIX: PART 4C (OF 5) LEARNING ENVIRONMENT MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (7-9)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 7: Integrated Learning Experiences	Standard 8: Active Learning	Standard 9: Enhancement of Faculty Competence
Assurance that all physical and virtual learning spaces are accessible, flexible and, where appropriate, reflective of student diversity. (1/7)	Connectivity: Much like standard 1, having access to other voices is essential to understand these implications. A truly diverse representation of voices requires accessible teaching and learning spaces. --- Tip: Engage with Universal Design for Learning to build proactively accessible experiences. --- Example: Indigenous Australians face persistent structural barriers and have often experienced the theft of Cultural Knowledge. Ensuring staff have completed Cultural Safety training and engage in practices like Acknowledgements of Country are a way of ensuring the environment is accessible for First Nations Peoples (some of whom will be students, some external stakeholders, etc.) regardless of whether the project itself has an explicit Indigenous lens.	Connectivity: The examples given in the CDIO standard align considerably with social constructivist, inquiry-based and experiential learning. As with standards 1-4 and 6, accessibility is essential to allow all students (and any external visitors) to participate. --- Tip: Educators should create diverse learning environments without expecting students to share their personal experiences. Educators can foster diversity by incorporating a variety of perspectives into active learning experiences. --- Example: Students are to debate a topic and to ensure psychological safety. A social contract is established to ensure debating is kept to the concepts without targeting individuals, as well as considering how they will enable contributions considerate of social anxiety	Connectivity: Supporting faculty competency in this space aligns well with any practices to train staff in how to make their learning spaces accessible and culturally safe, as they can then role model the skills students will need to engage across diversity. In addition, recruitment and promotion processes are reviewed to ensure there are no additional barriers in place for a diversity of staff at different levels so students can see themselves represented through their educators. --- Tip: Prioritise training of current staff first to ensure sufficient critical mass behind changes to faculty processes and structures. --- Example: Faculty competence can be enhanced through training, recruitment, and promotion, as well as role-modelling senior leaders' examples that model inclusive and accessible practices.
Utilisation of physical learning spaces to facilitate student access to and engagement with the curriculum. (2/7) Utilisation of virtual learning spaces to facilitate student access to and engagement with the curriculum. (3/7)	Connectivity: The use of physical and virtual learning spaces is relevant in the same way as (1/7). There are limits to how accessible a solely physical or solely virtual space can be.	Connectivity: As per the above. Many of these techniques are highly dependent on the space in which they are run and cannot be designed without consideration of where and when they would occur. --- Tip: Physical movement around a classroom can be productive in encouraging active thinking and exposure to a variety of views. This can be replicated in virtual spaces with careful designs. --- Example: Students are designing a structure from dry noodles to hold a certain weight. One student per team visits other teams to observe their approaches and report back to incorporate new ideas.	Connectivity: Similar to the above. Upskilling staff to ensure they can make the learning environment accessible means considering the use of both physical and virtual learning spaces. This will be directly relevant to their expertise in the discipline skills and practices within those spaces.
Utilisation of accessible learning resources and technologies to enable student access to and engagement with the curriculum. (4/7)	Connectivity: Accessible learning technologies, when thoughtfully integrated, create more opportunities for active and experiential learning by removing barriers to participation and enabling all students to fully engage in hands-on, problem-solving activities. --- Example: Learning resources within the integrated learning experiences can be developed in multiple formats of content delivery to support students according to their learning needs. For example, video demonstrations, written instructions, and interactive 3D models.	Connectivity: Accessibility is often thought of with respect to technology and resources but also applied to the ways in which students engage with these. In particular, creating flexible learning environments that accommodate individual learning differences. --- Example: When offering printed resources in active learning experiences, also give access to a digital version so that students may fully engage with that resource using whatever technology they need to support them.	Connectivity: Designing accessible learning materials requires explicit skills and training to support this. These skills are essentially about good teaching practice. These skills, however, are also dependent on the context of the learning itself, requiring a good discipline-specific skill set as well. --- Tip: Within the institution, there may be a centrally located team that has information and resources on how to provide accessible learning technology and resources for students. This team may be within a disability support centre or an equity, diversity, and inclusion team.
Provision of additional/ alternative learning resources and technologies where required to support access to and engagement with the curriculum. (5/7))	Connectivity: Will mirror row 4. The difference between 4 and 5 in Advance HE EDI learning environments is between the universal level of support and specialised student support. Both are essential for curriculum accessibility.		
Liaison with internal learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (6/7)	Connectivity: Reviewing the accessibility of space, resources, and delivery is essential to implementing the practices well, and the rows above explain why these are linked with the relevant CDIO standards		
Liaison with external learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (7/7)	Connectivity: Will mirror row 6. The difference between 6 and 7 in Advance HE EDI learning environments is the partner participating in the process, and this requires internal and external partners to incorporate both institutional knowledge and a layer of separation around any perception of bias or conflict of interest.		

APPENDIX: PART 4D (OF 5) LEARNING ENVIRONMENT MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (10-12)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 10: Enhancement of Faculty Teaching Competence	Standard 11: Learning Assessment	Standard 12: Program Evaluation
Assurance that all physical and virtual learning spaces are accessible, flexible and, where appropriate, reflective of student diversity. (1/7)	Connectivity: This standard is connected to standards 5, 7, 8, and 11, and staff need sufficient support and expertise to implement these.	Connectivity: Ensuring the spaces students learn within are accessible is essential to ensure that students can get sufficient practice, scaffolding and support to successfully complete their assessment tasks. Without access to these, students will underperform in ways that mirror existing societal barriers, stigma, and bias, and thus, assessments will become less meaningful evaluations of what students can genuinely achieve. --- Tip: Consider what students would need to fully participate in the assessment task regardless of any disadvantage they may face. --- Example: Offer flexible assessment options, such as a core concept/task and a flexible format submission that accommodates different learning abilities.	Connectivity: Some program evaluations would be performed with current students and alumni in order to ensure suitability. Depending on how a learning environment is defined, it could be argued that this standard is also aligned. --- Tips/example: Students engage in a focus group discussion within one of their subjects to evaluate the program. In this case, the focus group is occurring within a learning context, and thus accessibility and diversity within that space is essential to ensure all can participate and the evaluation of the program is complete.
Utilisation of physical learning spaces to facilitate student access to and engagement with the curriculum. (2/7)	Connectivity: This standard is connected to standards 5, 7, 8, and 11, and staff need sufficient support and expertise to implement these.	Connectivity: Assessment of learning can occur both during class time and asynchronously. In-class assessment needs to consider the use of physical and virtual space in its facilitation. --- Tip: Consider using class environments to assess the process of learning, such as through regular check-ins and observation of how students tackle a given problem.	Connectivity: Some program evaluations would be performed with current students and alumni in order to ensure suitability. Depending on how a learning environment is defined, it could be argued that this standard is also aligned. --- Tips/example: Students engage in a focus group discussion within one of their subjects to evaluate the program. In this case, the focus group is occurring within a learning context, and thus accessibility and diversity within that space is essential to ensure all can participate and the evaluation of the program is complete.
Utilisation of virtual learning spaces to facilitate student access to and engagement with the curriculum. (3/7)			
Utilisation of accessible learning resources and technologies to enable student access to and engagement with the curriculum. (4/7)	Connectivity: Designing accessible learning materials requires explicit skills and training to support this. These skills are essentially about good teaching practice. These skills, however, are also dependent on the context of the learning itself, requiring a good discipline-specific skill set as well. --- Tip: Within the institution, there may be a centrally located team that has information and resources on how to provide accessible learning technology and resources for students. This team may be within a disability support centre or an equity, diversity, and inclusion team.	Connectivity: If the curriculum is not accessible, affected students cannot be accurately assessed as it will no longer represent what they could be capable of with appropriate support. --- Tip/Example: Incorporate a mix of formative and summative assessments, such as quizzes, peer reviews, and self-assessments, that are accessible and can be made flexible to provide multiple opportunities for students to demonstrate	Connectivity: Evaluation of programs should include student voice, and if the materials are inaccessible, there will be some students who cannot evaluate the substance of the curriculum. --- Tip/Example: Ensure the course evaluation platform is compatible with screen readers and other assistive technologies so that students of all abilities can give feedback in the student evaluation of teaching surveys.
Provision of additional/ alternative learning resources and technologies where required to support access to and engagement with the curriculum. (5/7))	Connectivity: Will mirror row 4. The difference between 4 and 5 in Advance HE EDI learning environments is between the universal level of support and specialised student support. Both are essential for curriculum accessibility.		
Liaison with internal learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (6/7)	Connectivity: Reviewing the accessibility of space, resources, and delivery is essential to implementing the practices well, and the rows above explain why these are linked with the relevant CDIO standards		Connectivity: In addition to being relevant for the same reason as standards 1 through 11, standard 12 is particularly relevant given that it is around program evaluation in the first place
Liaison with external learning partners to ensure learning spaces, resources, delivery and support reflect the programme's approach to EDI in the curriculum. (7/7)	Connectivity: Will mirror row 6. The difference between 6 and 7 in Advance HE EDI learning environments is the partner participating in the process, and this requires internal and external partners to incorporate both institutional knowledge and a layer of separation around any perception of bias or conflict of interest.		

APPENDIX: PART 5A (OF 5) STAFF ENGAGEMENT
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) STAFF ENGAGEMENT TO CDIO STANDARDS (1-3)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 1: Context	Standard 2: Learning Objectives	Standard 3: Integrated Curriculum
Engagement in and utilisation of continuing professional development in the embedding of EDI in the curriculum to enhance practice. (1/8)	Connectivity: Evaluation groups recognise that CDIO is the context of the engineering program and use this principle as a guide for continuous improvement. --- Tip/Example: Facilitate CPD initiatives that enable faculty members to collaborate on the best ways to address EDI in both theory and practice. This could include interdisciplinary initiatives that unite staff from engineering and social sciences to develop an inclusive approach to teaching sustainable engineering practices	Connectivity: Internal and external groups regularly review and revise program learning outcomes and/or program goals based on changes in stakeholder needs --- Tip: As part of CPD, staff can learn how to better incorporate feedback from a wide range of stakeholders—students, industry professionals, and community members—into curriculum design. This ensures that learning outcomes are reflective of a diverse range of perspectives and needs, which will ultimately enhance the student experience by preparing them for the global and diverse contexts in which they will operate as engineers. --- Example: Expand network to include disability advocacy, women/LGTBIQ in engineering, or culturally diverse engineering firms	Connectivity: Internal and external stakeholders evaluate the evidence that the students have achieved the intended learning outcomes concerning personal, interpersonal, product, process, system, and service building skills. --- Tip/Example: Track student success and experience: CPD can help staff develop the skills to analyse and utilise student feedback to improve the inclusivity of courses. They can learn to assess how well students from diverse backgrounds are performing and adjust teaching strategies accordingly to ensure equity in learning outcomes.
Utilisation of relevant internal and external data for the embedding of EDI in the curriculum. (2/8)	Connectivity: Access to student data and reports from learning systems --- Tip/Example: Introduce department/faculty wide requirements for staff to demonstrate the analysis of internal data such as student demographics, academic performance, and engagement data to identify patterns and gaps in student experience related to EDI. This information could help tailor curriculum content and pedagogical approaches to better meet the diverse needs of students. For example, data may show that underrepresented groups are less engaged in certain areas, prompting staff to adapt teaching strategies or integrate more EDI-focused content.	Connectivity: Internal and external groups regularly review and revise program learning outcomes and/or program goals based on changes in stakeholder needs --- Tip: As part of CPD, staff can learn how to better incorporate feedback from a wide range of stakeholders—students, industry professionals, and community members—into curriculum design. This ensures that learning outcomes are reflective of a diverse range of perspectives and needs, which will ultimately enhance the student experience by preparing them for the global and diverse contexts in which they will operate as engineers. --- Example: Expand network to include disability advocacy, women/LGTBIQ in engineering, or culturally diverse engineering firms	Connectivity: When internal and external stakeholders review the integrated curriculum, they can make use of internal and external data to make adjustments as needed. --- Tip: The internal data may show patterns and gaps in student experience of the integrated curriculum, related to EDI. --- Example: Students with lower levels of interpersonal skills may be less able to make 'dual use of time'. There may be a need to offer additional support to those students, such as ensuring access to extracurricular clubs.
Incorporation of relevant research, scholarship and information for the development of the embedding of EDI in the curriculum. (3/8)	Connectivity : Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about the use of research and scholarship as the basis for doing this embedded process. Certainly evidence based practice should be adopted for all aspects of teaching and learning wherever possible as this allows for better outcomes and implementation. This evidence base applies across each standard in how EDI can be integrated across the stages of CDIO, assessment, enhancement of competency, etc. as a means of maximising the success within each standard. Tips/Examples: Draw from scholarly research and frameworks such as: Critical Pedagogy (Paulo Freire), Universal Design for Learning, Trauma-informed teaching This guide (based on both the Advance HE and CDIO frameworks) Providing tip sheets and guidance for program staff, staff training, and incorporating recommendations into implementation plans, etc.		
Support for programme staff to trial and share outcomes of practices that embed EDI in the curriculum. (4/8)	Connectivity: Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about supporting staff to trial and evaluate that embedding process. It is highly unlikely that a first iteration for any considerable change to a program will meet all the objectives to the desired standard. Instead, adopting an iterative approach to integration allows for some parts to be done as pilots, in lower stakes contexts, etc., for those moments to be learnt from and changes made in successive iterations until the work can be considered a success. Staff will need appropriate support to achieve this especially to ensure appropriate skill in running trials and evaluating their outcomes as well as having leadership support backing the process to inoculate staff operating in a complex space from bad actors who may seek to destabilise important work. Tip: Encourage staff to work collaboratively especially with others engaged in trial conduct. Examples: provide suitable training and leadership backup document resistance to change and how that can/has been effectively managed provide guidelines for trials and scaffold the kinds of evaluative data that can and should be collected connect these staff with learning design support.		
A member of the programme team is made responsible for oversight, promotion, facilitation and advice on EDI in the curriculum. (5/8)	Connectivity: The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. A member of the program team made responsible for oversight, promotion, facilitation and advice on EDI would benefit the review and development of all standards 1-8. Tip: The team member needs to have an effective and communicative relationship with all stakeholders and be able to back up their recommendations with evidence. Example: The team member responsible for EDI oversight may be an Educational Designer* that has qualifications and/or experience in implementation of EDI principles. They are then able to assist with elements of program design such as learning outcome development, active learning activity design, assessment design, staff training, etc. *In the context of Australian higher education, Educational Designers play a key role in facilitating this change. These professionals design, develop, and evaluate learning experiences, ensuring that curricula are inclusive, accessible, and aligned with both institutional goals and the diverse needs of students.		
Promotion of staff responsibility for EDI in the curriculum within recruitment and induction processes. (6/8)	Connectivity: Connection with the Advance HE EDI standards occurs across the entire CDIO process. This can occur through the development of selection criteria, recruitment processes, and recruitment standards that prioritise evidence of the integration of EDI within the curriculum. Induction procedures can leverage the CDIO processes to highlight the integration of EDI and inclusive theming across the whole curriculum. This is key within the educational leadership literature that demonstrates the importance of EDI practice to the organisation through organisational values, recognition, time allocation, promotion applications, etc. This encourages a greater variety of staff to participate and engage meaningfully. Tip/Example: Include contributions to EDI within teaching and learning as part of promotion applications for teaching staff.For example, consider asking "How has your teaching practice amplified the success and sense of belonging and connection of students across a broad set of identities and needs?".		
Recognition of staff contributions to EDI in the curriculum through reward, recognition and progression procedures. (7/8)	Connectivity: The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. Recognition of staff contributions to EDI can be evidenced across the entire CDIO process and all practice standards. Evidence may be sourced from staff co-creation of EDI-integrated learning outcomes, aligned assessments and integrated learning experiences. Reward, recognition and progression should prioritise evidence from the actualisation of EDI inclusive personal and interpersonal skills development, and product, process, system, and service building skill development across the cohort. This will help motivate and energise staff to remain engaged in the process Tip: Offer tangible rewards, such as celebration of individual/team efforts, increase importance in furthering career advancement and development opportunities, encourage staff to present on their work in valued spaces Example: The department organises an event for staff to present on their EDI contributions within the program, one individual/team receives an award selected by the Dean together with a people's choice award decided at the close of the event by participant votes.		
Monitoring and review of individual staff and overall programme team performance and impact in relation to EDI in the curriculum. (8/8)	Connectivity: Monitoring and review of individual staff and overall program team performance and impact in relation to EDI in the curriculum should cover all standards of the CDIO framework. Monitoring and review should be based on evidence of impact: student feedback, satisfaction, performance, and other outcomes, (for example employment, etc.) Tip: Use governance and feedforward approaches to program monitoring and review that encourages continuous improvement with respect to embedding EDI in the curriculum. Example: Instead of listing deficiencies in performance, utilise the CDIO framework (mapped to the Advance HE EDI framework) to focus on practical improvements that can be made.		

APPENDIX: PART 5B (OF 5) STAFF ENGAGEMENT
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (4-6)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 4: Introduction to Engineering	Standard 5: Design-Implement Experiences	Standard 6: Engineering Learning Workspaces
Engagement in and utilisation of continuing professional development in the embedding of EDI in the curriculum to enhance practice. (1/8)	Connectivity: The introductory unit is regularly evaluated and revised, based on feedback from students, instructors, and other stakeholders. Rich qualitative feedback likely provided in unstructured free form flow. ---------- Tip/Example: Consider thematic analysis of information provided to organise into key components of pedagogical practices: content, educational technologies and tools, assessment, etc	Connectivity: The design-implement experiences are regularly evaluated and revised, based on feedback from students, instructors, and other stakeholders. ---------- Tip/Example: CPD can assist staff in designing engineering projects that require students to consider EDI factors. For example, creating products or systems that address challenges faced by underrepresented groups or considering diverse perspectives in product design.	Connectivity: Evaluation groups regularly review the impact and effectiveness of workspaces on learning and provide recommendations for improving them.. ---------- Tip/Example: Build staff fluency in UDL: multiple ways of representation, engagement and assessment
Utilisation of relevant internal and external data for the embedding of EDI in the curriculum. (2/8)	Connectivity: The introductory course is currently evaluated and revised based on feedback from students, instructors, and other stakeholders. Utilisation of data may also be useful for the embedding of EDI. ---------- Tip: A multi-pronged approach that combines feedback with data could reveal important information for the starting point of the introduction to engineering course. ---------- Example: Understanding the proportion of students who have completed Units 3 and 4 Maths Methods (VCE) to inform the study design.	Connectivity: Design-implement experiences allow students to make connections between the technical content and their professional/career interests. It could be helpful to have data on what career interests students have. ---------- Tip: Survey students to find out what their career interests are. This data may be helpful for designing D-I experiences that support EDI. ---------- Example: Students with fewer engineering role models or first in family university students may struggle to identify their career or professional interests. Knowing this could help support them in discovering their interests through DI experiences.	Connectivity: Data is valuable in ensuring the flexibility and effectiveness of workspace for student learning. ---------- Tip: Accessibility Support Services have data on the needs of students - make sure you know how to find it and make use of it, and ensure students do not need to follow up. ---------- Example: Accessibility Support Services data reveal students with hearing issues which reminds educators to use microphones in live sessions (validated closed captions for videos).
Incorporation of relevant research, scholarship and information for the development of the embedding of EDI in the curriculum. (3/8)	Connectivity : Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about the use of research and scholarship as the basis for doing this embedded process. Certainly evidence based practice should be adopted for all aspects of teaching and learning wherever possible as this allows for better outcomes and implementation. This evidence base applies across each standard in how EDI can be integrated across the stages of CDIO, assessment, enhancement of competency, etc. as a means of maximising the success within each standard. Tips/Examples: Draw from scholarly research and frameworks such as: Critical Pedagogy (Paulo Freire), Universal Design for Learning, Trauma-informed teaching This guide (based on both the Advance HE and CDIO frameworks) Providing tip sheets and guidance for program staff, staff training, and incorporating recommendations into implementation plans, etc.		
Support for programme staff to trial and share outcomes of practices that embed EDI in the curriculum. (4/8)	Connectivity: Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about supporting staff to trial and evaluate that embedding process. It is highly unlikely that a first iteration for any considerable change to a program will meet all the objectives to the desired standard. Instead, adopting an iterative approach to integration allows for some parts to be done as pilots, in lower stakes contexts, etc., for those moments to be learnt from and changes made in successive iterations until the work can be considered a success. Staff will need appropriate support to achieve this especially to ensure appropriate skill in running trials and evaluating their outcomes as well as having leadership support backing the process to inoculate staff operating in a complex space from bad actors who may seek to destabilise important work. Tip: Encourage staff to work collaboratively especially with others engaged in trial conduct. Examples: provide suitable training and leadership backup document resistance to change and how that can/has been effectively managed provide guidelines for trials and scaffold the kinds of evaluative data that can and should be collected connect these staff with learning design support.		
A member of the programme team is made responsible for oversight, promotion, facilitation and advice on EDI in the curriculum. (5/8)	Connectivity: The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. A member of the program team made responsible for oversight, promotion, facilitation and advice on EDI would benefit the review and development of all standards 1-8. Tip: The team member needs to have an effective and communicative relationship with all stakeholders and be able to back up their recommendations with evidence. Example: The team member responsible for EDI oversight may be an Educational Designer* that has qualifications and/or experience in implementation of EDI principles. They are then able to assist with elements of program design such as learning outcome development, active learning activity design, assessment design, staff training, etc. *In the context of Australian higher education, Educational Designers play a key role in facilitating this change. These professionals design, develop, and evaluate learning experiences, ensuring that curricula are inclusive, accessible, and aligned with both institutional goals and the diverse needs of students.		
Promotion of staff responsibility for EDI in the curriculum within recruitment and induction processes. (6/8)	Connectivity: Connection with the Advance HE EDI standards occurs across the entire CDIO process. This can occur through the development of selection criteria, recruitment processes, and recruitment standards that prioritise evidence of the integration of EDI within the curriculum. Induction procedures can leverage the CDIO processes to highlight the integration of EDI and inclusive theming across the whole curriculum. This is key within the educational leadership literature that demonstrates the importance of EDI practice to the organisation through organisational values, recognition, time allocation, promotion applications, etc. This encourages a greater variety of staff to participate and engage meaningfully. Tip/Example: Include contributions to EDI within teaching and learning as part of promotion applications for teaching staff.For example, consider asking "How has your teaching practice amplified the success and sense of belonging and connection of students across a broad set of identities and needs?".		
Recognition of staff contributions to EDI in the curriculum through reward, recognition and progression procedures. (7/8)	Connectivity: The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. Recognition of staff contributions to EDI can be evidenced across the entire CDIO process and all practice standards. Evidence may be sourced from staff co-creation of EDI-integrated learning outcomes, aligned assessments and integrated learning experiences. Reward, recognition and progression should prioritise evidence from the actualisation of EDI inclusive personal and interpersonal skills development, and product, process, system, and service building skill development across the cohort. This will help motivate and energise staff to remain engaged in the process Tip: Offer tangible rewards, such as celebration of individual/team efforts, increase importance in furthering career advancement and development opportunities, encourage staff to present on their work in valued spaces Example: The department organises an event for staff to present on their EDI contributions within the program, one individual/team receives an award selected by the Dean together with a people's choice award decided at the close of the event by participant votes.		
Monitoring and review of individual staff and overall programme team performance and impact in relation to EDI in the curriculum. (8/8)	Connectivity: Monitoring and review of individual staff and overall program team performance and impact in relation to EDI in the curriculum should cover all standards of the CDIO framework. Monitoring and review should be based on evidence of impact: student feedback, satisfaction, performance, and other outcomes, (for example employment, etc.) Tip: Use governance and feedforward approaches to program monitoring and review that encourages continuous improvement with respect to embedding EDI in the curriculum. Example: Instead of listing deficiencies in performance, utilise the CDIO framework (mapped to the Advance HE EDI framework) to focus on practical improvements that can be made.		

APPENDIX: PART 5C (OF 5) STAFF ENGAGEMENT
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (7-9)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 7: Integrated Learning Experiences	Standard 8: Active Learning	Standard 9: Enhancement of Faculty Competence
Engagement in and utilisation of continuing professional development in the embedding of EDI in the curriculum to enhance practice. (1/8)	Connectivity: Units are regularly evaluated and revised regarding their integration of learning experiences and the impact of these experiences. --- Tip/Example: Build staff fluency in UDL: multiple ways of representation, engagement and assessment. Expand network to include disability advocacy, women/LGTBIQ in engineering, or culturally diverse engineering firms	Connectivity: Internal and/or external groups regularly review active learning activities on outcome-based learning across the curricula and make recommendations for continuous improvement. --- Tip/Example: Training on universal design for learning (UDL), differentiation, and culturally responsive teaching can enhance engagement for all students, ensuring active participation from a wide range of backgrounds.	Connectivity: Faculty competence in disciplinary knowledge and personal, interpersonal, product, process, system, and service building skills are regularly evaluated and enhanced where appropriate. --- Tip/Example: Faculty can enhance their own teaching competence by actively engaging in reflective practices related to EDI. This might include participating in peer review processes, conducting student surveys on inclusivity, and attending CPD on reflective practice. Through this, they can assess and refine their teaching methods, ensuring that they are actively supporting diverse student populations.
Utilisation of relevant internal and external data for the embedding of EDI in the curriculum. (2/8)	Connectivity: The effectiveness of pedagogical approaches for meeting the needs of diverse students may be revealed in relevant data. --- Tip: Include questions in student satisfaction surveys that tap into diverse student experience of pedagogical approaches. --- Example: Feedforward surveys ask if students feel they can bring their authentic selves to their learning, developing their personal and interpersonal skills while developing their disciplinary knowledge.	Connectivity: Active learning activities are a means of generating such data formatively (educators can listen in on student discussions) but also the design of those activities depends heavily on what students are ready for and what will be psychologically safe as well as effective for covering these concepts Tip: Collect plenty of informal data as the subject/course progresses to always ensure activity design is matched to student readiness Example: A formative task before class revealed students had not grasped the importance of accessible building design practices. As such an activity is designed for the coming class asking students to brainstorm collectively the least accessible design possible and then to flip this into what should be done instead	Connectivity: Embedding EDI concepts in curriculum can sometimes be challenging for educators especially in handling fears of pushback from a vocal minority of students. Educators need to be trained in not only respectfully embedding such content but also how to engage in respectful debate around them and sharing data on effective practices in the space is a crucial step in training up staff to perform this task. This covers both the knowledge of EDI concepts as well as the teaching practices of how to meaningfully embed them. Tip: Pair up teaching staff with those knowledgeable about the EDI space and practices in handling arising conflict, use the productive experiences from this as evidence and guidance for future work Example: The school/ discipline group runs a workshop for all teaching staff where they share findings from both productive and unproductive experiences embedding EDI concepts within the curriculum to allow all staff to learn and improve how they approach this within their own teaching
Incorporation of relevant research, scholarship and information for the development of the embedding of EDI in the curriculum. (3/8)	Connectivity : Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about the use of research and scholarship as the basis for doing this embedded process. Certainly evidence based practice should be adopted for all aspects of teaching and learning wherever possible as this allows for better outcomes and implementation. This evidence base applies across each standard in how EDI can be integrated across the stages of CDIO, assessment, enhancement of competency, etc. as a means of maximising the success within each standard. Tips/Examples: Draw from scholarly research and frameworks such as: Critical Pedagogy (Paulo Freire), Universal Design for Learning, Trauma-informed teaching This guide (based on both the Advance HE and CDIO frameworks) Providing tip sheets and guidance for program staff, staff training, and incorporating recommendations into implementation plans, etc.		
Support for programme staff to trial and share outcomes of practices that embed EDI in the curriculum. (4/8)	Connectivity: Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about supporting staff to trial and evaluate that embedding process. It is highly unlikely that a first iteration for any considerable change to a program will meet all the objectives to the desired standard. Instead, adopting an iterative approach to integration allows for some parts to be done as pilots, in lower stakes contexts, etc., for those moments to be learnt from and changes made in successive iterations until the work can be considered a success. Staff will need appropriate support to achieve this especially to ensure appropriate skill in running trials and evaluating their outcomes as well as having leadership support backing the process to inoculate staff operating in a complex space from bad actors who may seek to destabilise important work. Tip: Encourage staff to work collaboratively especially with others engaged in trial conduct. Examples: provide suitable training and leadership backup document resistance to change and how that can/has been effectively managed provide guidelines for trials and scaffold the kinds of evaluative data that can and should be collected connect these staff with learning design support.		
A member of the programme team is made responsible for oversight, promotion, facilitation and advice on EDI in the curriculum. (5/8)	Connectivity: The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. A member of the program team made responsible for oversight, promotion, facilitation and advice on EDI would benefit the review and development of all standards 1-8. Tip: The team member needs to have an effective and communicative relationship with all stakeholders and be able to back up their recommendations with evidence. Example: The team member responsible for EDI oversight may be an Educational Designer* that has qualifications and/or experience in implementation of EDI principles. They are then able to assist with elements of program design such as learning outcome development, active learning activity design, assessment design, staff training, etc. *In the context of Australian higher education, Educational Designers play a key role in facilitating this change. These professionals design, develop, and evaluate learning experiences, ensuring that curricula are inclusive, accessible, and aligned with both institutional goals and the diverse needs of students.		Connectivity: The member responsible for EDI ensures that faculty development training incorporates and demonstrates inclusive practices, thus making it more likely to be successful for all participant staff. Tip/Example: This staff member revises development training to ensure accessibility (e.g. multiple modes of engagement as per UDL) simultaneously increasing participant success and role modelling inclusive learning firsthand, so that individuals develop an awareness that helps them recognise when inclusivity is missing in other settings.
Promotion of staff responsibility for EDI in the curriculum within recruitment and induction processes. (6/8)	Connectivity: Connection with the Advance HE EDI standards occurs across the entire CDIO process. This can occur through the development of selection criteria, recruitment processes, and recruitment standards that prioritise evidence of the integration of EDI within the curriculum. Induction procedures can leverage the CDIO processes to highlight the integration of EDI and inclusive theming across the whole curriculum. This is key within the educational leadership literature that demonstrates the importance of EDI practice to the organisation through organisational values, recognition, time allocation, promotion applications, etc. This encourages a greater variety of staff to participate and engage meaningfully. Tip/Example: Include contributions to EDI within teaching and learning as part of promotion applications for teaching staff.For example, consider asking "How has your teaching practice amplified the success and sense of belonging and connection of students across a broad set of identities and needs?".		
Recognition of staff contributions to EDI in the curriculum through reward, recognition and progression procedures. (7/8)	Connectivity: The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. Recognition of staff contributions to EDI can be evidenced across the entire CDIO process and all practice standards. Evidence may be sourced from staff co-creation of EDI-integrated learning outcomes, aligned assessments and integrated learning experiences. Reward, recognition and progression should prioritise evidence from the actualisation of EDI inclusive personal and interpersonal skills development, and product, process, system, and service building skill development across the cohort. This will help motivate and energise staff to remain engaged in the process Tip: Offer tangible rewards, such as celebration of individual/team efforts, increase importance in furthering career advancement and development opportunities, encourage staff to present on their work in valued spaces Example: The department organises an event for staff to present on their EDI contributions within the program, one individual/team receives an award selected by the Dean together with a people's choice award decided at the close of the event by participant votes.		
Monitoring and review of individual staff and overall programme team performance and impact in relation to EDI in the curriculum. (8/8)	Connectivity: Monitoring and review of individual staff and overall program team performance and impact in relation to EDI in the curriculum should cover all standards of the CDIO framework. Monitoring and review should be based on evidence of impact: student feedback, satisfaction, performance, and other outcomes, (for example employment, etc.) Tip: Use governance and feedforward approaches to program monitoring and review that encourages continuous improvement with respect to embedding EDI in the curriculum. Example: Instead of listing deficiencies in performance, utilise the CDIO framework (mapped to the Advance HE EDI framework) to focus on practical improvements that can be made.		

APPENDIX: PART 5D (OF 5) STAFF ENGAGEMENT
MAPPING ADVANCE HE EDI FRAMEWORK (HANESWORTH, 2019) TO CDIO STANDARDS (10-12)

Columns from CDIO framework Rows from Advance HE EDI (Hanesworth, 2019)	Standard 10: Enhancement of Faculty Teaching Competence	Standard 11: Learning Assessment	Standard 12: Program Evaluation
Engagement in and utilisation of continuing professional development in the embedding of EDI in the curriculum to enhance practice. (1/8)	Connectivity: Guidance on incorporating diverse perspectives in technical subjects. Similar to below. Faculty teaching competence is regularly evaluated for evidence that the collective faculty has the teaching competence needed for effectively creating, delivering and improving courses in the curriculum and updated where appropriate. ---------- Tip/Example: Institutions should create formal evaluation mechanisms that assess faculty teaching competence in embedding EDI. This can include peer reviews, student evaluations, and self-assessment against EDI competencies, with results feeding into targeted professional development.	Connectivity: Internal and external groups regularly review the use of learning assessment methods and make recommendations for continuous improvement ---------- Tip/Example: EDI initiatives impact student learning outcomes. For instance, through CPD, faculty can learn how to analyse assessment data disaggregated by demographics to identify potential gaps or inequalities in student performance, ensuring that assessments are equitable. Staff guidance on the development of clear and transparent assessment rubrics that minimise bias and promote fairness. Regularly revising these criteria to ensure they are inclusive of diverse student experiences and identities can improve students' engagement with the assessment process.	Connectivity:. There is documented evidence that systematic and continuous improvement is based on continuous program evaluation results. ---------- Tip/Example: Communicate findings from program evaluations related to EDI efforts to all stakeholders, including students, faculty, and staff, and use the feedback to refine practices.
Utilisation of relevant internal and external data for the embedding of EDI in the curriculum. (2/8)	Connectivity: Embedding EDI concepts in curriculum can sometimes be challenging for educators especially in handling fears of pushback from a vocal minority of students. Educators need to be trained in not only respectfully embedding such content but also how to engage in respectful debate around them and sharing data on effective practices in the space is a crucial step in training up staff to perform this task. This covers both the knowledge of EDI concepts as well as the teaching practices of how to meaningfully embed them. Tip: Pair up teaching staff with those knowledgeable about the EDI space and practices in handling arising conflict, use the productive experiences from this as evidence and guidance for future work Example: The school/ discipline group runs a workshop for all teaching staff where they share findings from both productive and unproductive experiences embedding EDI concepts within the curriculum to allow all staff to learn and improve how they approach this within their own teaching	Connectivity: Assessment is a tool to generate data about students' knowledge, skills and attitudes. Ergo assessment would generate some of this data. Drawing from earlier data sources (including earlier assessments) is also necessary in the design of assessed tasks to ensure they are pitched based on student readiness and this applies for EDI concepts within assessment as well Tip: Perform diagnostic assessments and collect data from class activities around EDI concept prior to assessment thereof to maximise student success and identify necessary supports Example: Software engineering students are exposed to concepts around Indigenous data sovereignty, surveying is done prior to it arising in a coming assessment to ensure students are prepared to integrate those concepts and ensure ethical data collection and retention for the applications they build	Connectivity:In evaluating the program it is necessary to review the effectiveness of activities, curriculum/content/etc., EDI concepts within the curriculum thus also need to be evaluated and data is necessary in order to do this effectively and support ongoing improvement Tip: Often EDI concepts are about more than just content knowledge, they are about attitude change. Aim to collect data about students changing attitudes including asking student representatives Example: Pre and post surveys run with students fitting around key EDI elements in the curriculum to see how if at all their perspectives have changed by exposure to those ideas
Incorporation of relevant research, scholarship and information for the development of the embedding of EDI in the curriculum. (3/8)	Connectivity : Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about the use of research and scholarship as the basis for doing this embedded process. Certainly evidence based practice should be adopted for all aspects of teaching and learning wherever possible as this allows for better outcomes and implementation. This evidence base applies across each standard in how EDI can be integrated across the stages of CDIO, assessment, enhancement of competency, etc. as a means of maximising the success within each standard. Tips/Examples: Draw from scholarly research and frameworks such as: Critical Pedagogy (Paulo Freire), Universal Design for Learning, Trauma-informed teaching This guide (based on both the Advance HE and CDIO frameworks) Providing tip sheets and guidance for program staff, staff training, and incorporating recommendations into implementation plans, etc.		
Support for programme staff to trial and share outcomes of practices that embed EDI in the curriculum. (4/8)	Connectivity: Connection here occurs across the entire set of standards. The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. The novel part here is about supporting staff to trial and evaluate that embedding process. It is highly unlikely that a first iteration for any considerable change to a program will meet all the objectives to the desired standard. Instead, adopting an iterative approach to integration allows for some parts to be done as pilots, in lower stakes contexts, etc., for those moments to be learnt from and changes made in successive iterations until the work can be considered a success. Staff will need appropriate support to achieve this especially to ensure appropriate skill in running trials and evaluating their outcomes as well as having leadership support backing the process to inoculate staff operating in a complex space from bad actors who may seek to destabilise important work. Tip: Encourage staff to work collaboratively especially with others engaged in trial conduct. Examples: provide suitable training and leadership backup document resistance to change and how that can/has been effectively managed provide guidelines for trials and scaffold the kinds of evaluative data that can and should be collected connect these staff with learning design support.		
A member of the programme team is made responsible for oversight, promotion, facilitation and advice on EDI in the curriculum. (5/8)	Connectivity: Actions in this standard include ensuring teaching competence is included in hiring and performance reviews. By ensuring EDI is included in these processes, the potential for bias is minimised Tip: Include this member in recruitment and promotion of faculty members. Example: They might help with everything from reviewing position descriptions to questions asked in interviews, and reviewing promotion applications.	Connectivity: Internal and external groups regularly review the use of learning assessment methods and make recommendations for continuous improvement---------- Tip: include EDI champions in the review of learning assessment methods. ---------- Example: Invite external EDI champions as well as diverse student groups to participate in reviews of learning assessment methods	Connectivity: A dedicated staff member in an oversight position is essential to program evaluation being meaningful with respect to EDI. Tip/ Example: Such a staff member may be involved in reviewing evaluation data with a focus on equity outcomes. Collaborating on improvement plans to address gaps identified, ensuring EDI is not treated as an "add-on" but a core dimension of educational quality. All of which increase the reliability of the evaluation process and how informative it is
Promotion of staff responsibility for EDI in the curriculum within recruitment and induction processes. (6/8)	Connectivity: Connection with the Advance HE EDI standards occurs across the entire CDIO process. This can occur through the development of selection criteria, recruitment processes, and recruitment standards that prioritise evidence of the integration of EDI within the curriculum. Induction procedures can leverage the CDIO processes to highlight the integration of EDI and inclusive theming across the whole curriculum. This is key within the educational leadership literature that demonstrates the importance of EDI practice to the organisation through organisational values, recognition, time allocation, promotion applications, etc. This encourages a greater variety of staff to participate and engage meaningfully. Tip/Example: Include contributions to EDI within teaching and learning as part of promotion applications for teaching staff.For example, consider asking "How has your teaching practice amplified the success and sense of belonging and connection of students across a broad set of identities and needs?".		
Recognition of staff contributions to EDI in the curriculum through reward, recognition and progression procedures. (7/8)	Connectivity: The mapping of Advance HE EDI Curriculum Design standards verified the mapping of these concepts themselves into the curriculum. Recognition of staff contributions to EDI can be evidenced across the entire CDIO process and all practice standards. Evidence may be sourced from staff co-creation of EDI-integrated learning outcomes, aligned assessments and integrated learning experiences. Reward, recognition and progression should prioritise evidence from the actualisation of EDI inclusive personal and interpersonal skills development, and product, process, system, and service building skill development across the cohort. This will help motivate and energise staff to remain engaged in the process Tip: Offer tangible rewards, such as celebration of individual/team efforts, increase importance in furthering career advancement and development opportunities, encourage staff to present on their work in valued spaces Example: The department organises an event for staff to present on their EDI contributions within the program, one individual/team receives an award selected by the Dean together with a people's choice award decided at the close of the event by participant votes.		
Monitoring and review of individual staff and overall programme team performance and impact in relation to EDI in the curriculum. (8/8)	Connectivity: Monitoring and review of individual staff and overall program team performance and impact in relation to EDI in the curriculum should cover all standards of the CDIO framework. Monitoring and review should be based on evidence of impact: student feedback, satisfaction, performance, and other outcomes, (for example employment, etc.) Tip: Use governance and feedforward approaches to program monitoring and review that encourages continuous improvement with respect to embedding EDI in the curriculum. Example: Instead of listing deficiencies in performance, utilise the CDIO framework (mapped to the Advance HE EDI framework) to focus on practical improvements that can be made.		