Education
Special Interest Group
Newsletter

Words from the EdSIG's Newsletter Editorial Team...

In this issue, **Dr Kaska Sypek, Dr Mark Haw and Dr Abdul Wadood Sharif** (University of Strathclyde) share their redesign of MSc projects undertaken by chemical engineering postgraduate students. In light of assessment challenges, their novel approach departs from "dissertation" projects in favour of greater focus on the process and skills developed throughout.

We also share details of forthcoming events that members are encouraged to attend and contribute to including the EdSIG Annual Meeting and ChemEngDayUK 2026.

If you are interested in contributing an article on best practices, EdSIG events, or outreach for our newsletter, please reach out to specialinterestgroups@icheme.org.

From the editors:
Sze Pheng Ong, Pradeep Murthy and Abdul Wadood Sharif

Good Practice Exchange

Process over Products: the case for Masters projects focus on self-reflection & skill review

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A Case and Context for Redesign

This initiative addresses two key challenges with traditional Master's dissertation projects. While these projects allow students to develop essential skills like research, critical thinking, and reflection, assessment often focuses solely on the final report, failing to incentivize broader skill development or adequately recognizing achievements. Additionally, the rise of generative AI creates risks for academic integrity, as reports are increasingly vulnerable to AI-assisted production and currently detection strategies present significant challenges for higher education institutions.

To address these issues, we redesigned the operation and assessment of dissertation projects to prioritise skill development and align with principles of authentic assessment, enhanced feedback practices, and academic integrity. This redesign was implemented for the 60-credit individual project component of the MSc Advanced Chemical Engineering and Sustainable Engineering: Chemical Processing programmes at the University of Strathclyde, Glasgow in academic year 2023/2024.

The redesign emphasized continuous engagement with skill-building and reflective practice, contrasting with the previous system where assessment was dominated by the final report. The new approach encourages both students and supervisors to focus on skill development throughout the project, culminating in a portfolio of evidence for authentic assessment.

Approach to Redesign

Table 1. Comparison of original and redesign assessment elements

Original Assessment	Redesigned Assessment
12,000 word report (80%)	7,000 article submission (40%)
Supervisor Assessment (20%, incl. presentation)	Continuous Performance & Skills (40%)
	Presentation and Q&A (20%)

Table 1 describes the assessment structure and how it was rebalanced to focus equally on three components: (1) skills and performance during the project, (2) a written submission, and (3) a presentation with a Q&A session. Skills and performance were evaluated through reflective logs submitted by students throughout the project, with supervisors providing formative feedback after each submission These logs were structured around assessment criteria, emphasizing technical understanding, problem-solving, planning, communication, and reflection.
The written report, previously a 12,000-word document, was replaced with a 7,000-word journal-style article to reduce dependency on lengthy literature reviews and address vulnerabilities to generative AI.
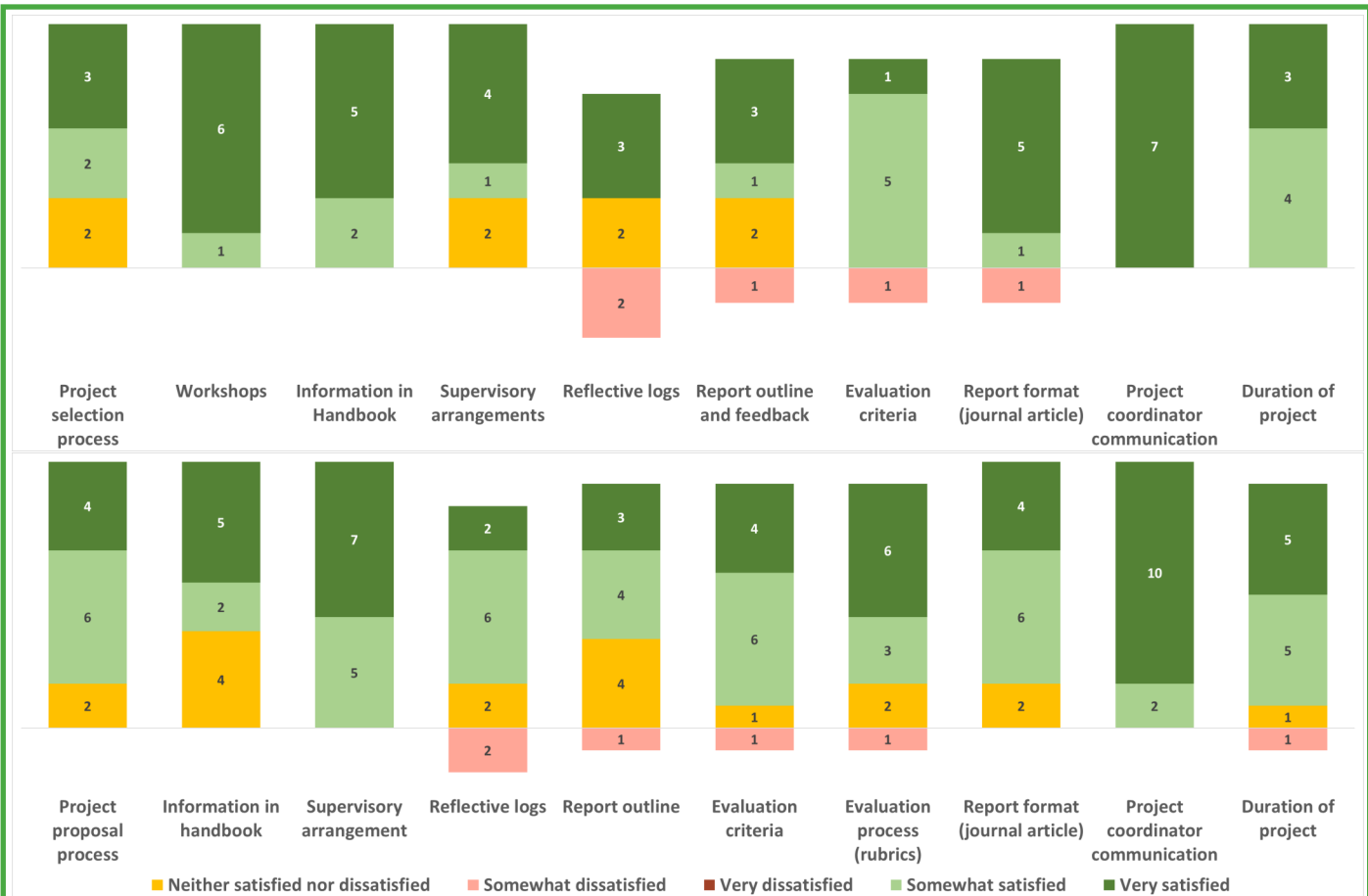
Figure 1. Satisfaction with MSc Project Redesign. *Top* — Students' Satisfaction (n = 7, 28%) and *Bottom* — Staff (n = 12, 46%)

Workload Management & Consistent Feedback

Each project was supervised by a pair of academic staff who collaborated on project proposals, student supervision, and assessment moderation. This pairing system addressed challenges such as managing staff availability during the summer, ensuring continuous supervision, and distributing workload equitably.

To address variability in feedback, detailed assessment criteria and marking rubrics were developed. These rubrics included general and specific feedback guidelines aligned with the university's feedback descriptors. The goal was to provide consistent, constructive feedback while balancing general comments with specific areas for improvement.

Communication and Facilitation of Change

Engagement with all affected parties was central to the redesign process. Academic supervisors were consulted during the planning phase, and their feedback was incorporated into the final design. Students were informed of the changes during project induction, where the rationale was explained. Workshops were conducted for both students and staff, covering topics such as reflective writing, research ethics, generative AI in research, and presentation skills.

Students and Supervisors' Feedback

Students' median grades improved from 61.7% to 66.5%. Results from feedback surveys (Figure 1), though limited in response rate (n=7), indicated high satisfaction with staff support, the journal article format, and the assessment process. Reflective logs received mixed feedback; while many students found them valuable for tracking progress, some noted the frequency led to repetition. Suggestions for improvement included more guidance on topics such as ethics and collaboration.

Figure 1 shows that supervisors also responded positively, with high satisfaction reported for communication, supervisory pairings, and the use of rubrics. Reflective logs were seen as valuable for fostering student ownership, though some supervisors noted that the process felt overly detailed. Pairing arrangements were particularly appreciated for providing flexibility and ensuring continuous supervision.

In future, to address challenges with ethics and collaboration, students will be encouraged to critically reflect on their projects. Assessment terminology will also be revised to emphasize authenticity, with the final submission now referred to as a "research article" rather than a "report." This redesigned approach to skills and performance assessment is adaptable to other projects, including undergraduate and design-based assessments.

This case study highlights how redesigning dissertation projects can enhance skill development, uphold academic integrity, and improve experiences for both students and staff.

Upcoming Events

EdSIG Annual Meeting and Presentation on Public Policy and Chemical Engineering

18th December 2025 online 08:30 — 10:00 GMT.

Free and Exclusive for Members

Duncan Lugton, Head of Policy and Impact at IChemE, will deliver a presentation on public policy and chemical engineering. He will consider why it's important for chemical engineers to be aware of and involved in public policy and how higher education institutions can encourage this.

Following this webinar join the Education Special Interest Group as they reflect on highlights from the last year and look forward to plans for the coming year.

Don't miss out — book now! Register **here**.

ChemEngDayUK&I 2026

16th and 17th April 2026, Teaching and Learning Building, University of Birmingham

Early Bird Rate — £320 (£280 for students), Standard Rate — £360 (£320 for students)

Join us at the University of Birmingham for the next ChemEngDayUK&I on 16th & 17th April 2026! This national event brings together students, researchers, educators, and industry professionals to showcase the latest in chemical engineering education, research, innovation, and technology.

The IChemE Education Special Interest Group (EdSIG), in partnership with organisers at the University of Birmingham, are hosting an Education-specific session to showcase new tools, discuss contemporary issues, and highlight novel chemical engineering education research. We encourage abstract submissions with a focus on sustainability and / or student engagement, but will also consider a wide range of general pedagogic themes.

Abstracts can be submitted via this link by 1st February 2026.