Padlet Based Peer-Assisted Learning (PAL) Toolkit

A Practical Guide for Educators

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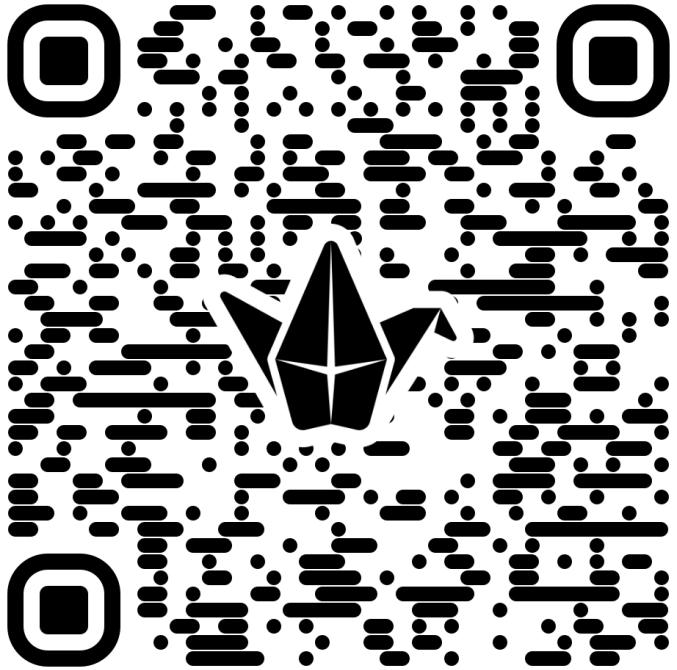
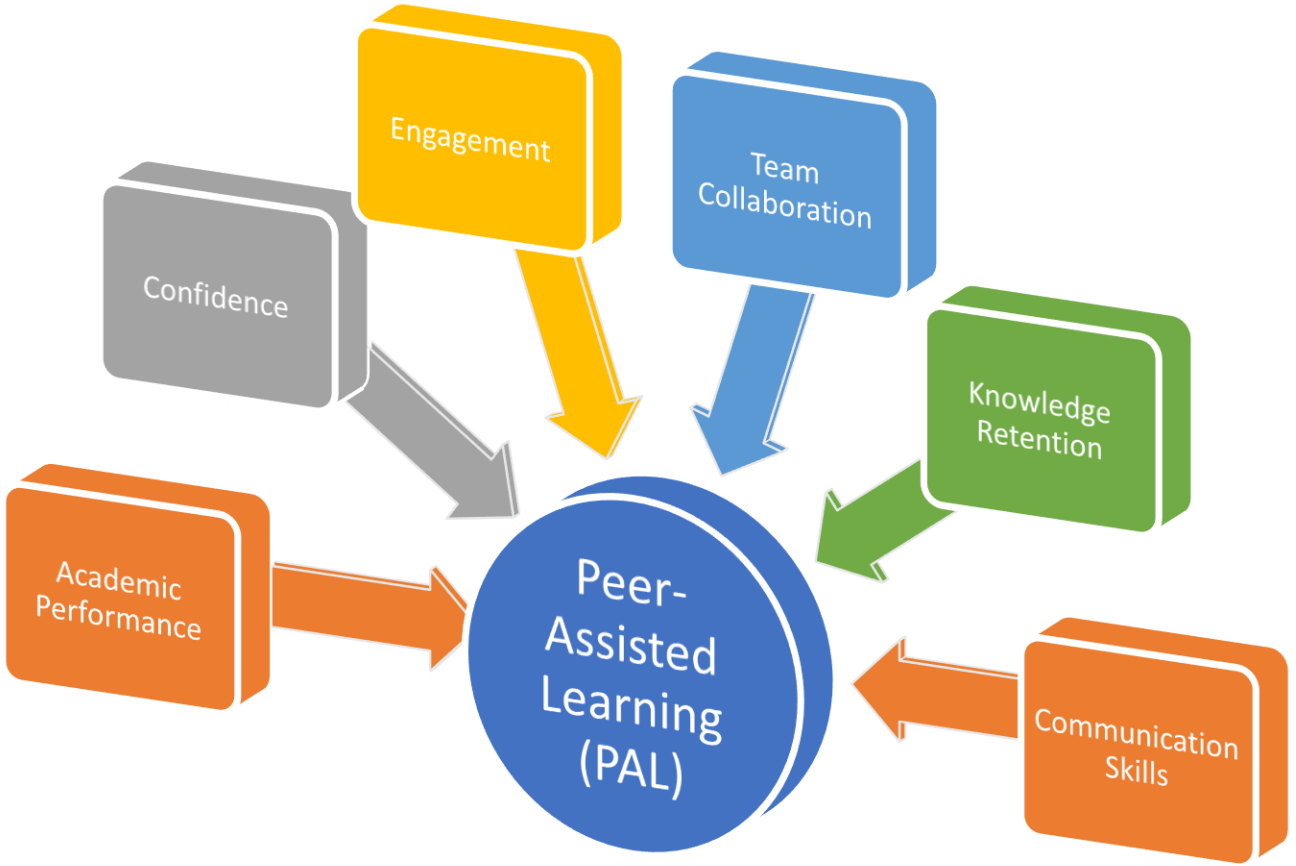
Warm-up Activity



What brings you joy in teaching?

Peer-Assisted Learning (PAL)

Fostering Collaboration, Communication, and Problem-Solving Skills



Purpose of this Toolkit

This toolkit supports educators in **designing and delivering structured Peer-Assisted Learning (PAL) activities** within taught modules.

The toolkit is designed to:

- Enhance student engagement and understanding through peer learning
- Support active and collaborative learning
- Enable simple, quantitative evaluation of impact
- Be adaptable across disciplines and class sizes

What PAL Is (and Is Not)

PAL is:

- Structured peer-to-peer learning activity
- Guided discussion and problem-solving
- Student-led, with facilitator oversight
- Focused on learning *with* and *from* peers

PAL is not:

- Additional assessment
- Replacement for lectures
- Extra marking workload
- Informal group work without structure

Quick Start Guide

Time required:

- Prep: ~10 minutes
- Delivery: 60 minutes

What you need:

- A cohort divided into small groups (4–6 students)
- Access to Padlet or similar collaborative tool (or paper/Slides)
- One PAL activity template (provided in Section 5)

Steps

- Select a PAL activity template
- Upload or share the prompt with students
- Run the session using the 60-minute plan
- Collect engagement data and student feedback

PAL Session Plan (60 Minutes)

Time	Activity
0–5 min	Introduce purpose and expectations
5–10 min	Show example of a good response/comment
10–30 min	Group task and initial posting
30–45 min	Peer commenting and interaction
45–55 min	Whole-class synthesis and discussion
55–60 min	Exit poll or short survey

Key rule: Each group submits **1 post + 2 peer comments** (minimum).

Engagement Rules

To sustain engagement:

- Set expectations from the start
- Use structured prompts
- Require minimum participation

Minimum per group:

1 post

2 peer/groups comments

1 reaction

PAL Activity Template

Each activity includes:

- Learning outcomes
- Clear task prompt
- Expected post format
- Commenting guidance
- Time allocation
- Facilitator notes

(Reusable across modules)

PAL Activity Template (Reusable)

(Copy this template for each activity)

Activity Title

[Insert title]

Learning Outcomes

By the end of this activity, students will be able to:

- [Outcome 1]
- [Outcome 2]

Task Prompt

[Insert problem, question, or scenario]

Student Instructions

- Work in your assigned group
- Post one group response
- Comment on at least two other groups' posts

Expected Post Format

- Key point / answer
- Brief justification or explanation
- Example or application

Commenting Guidance

When commenting, students should:

- Identify one strength
- Suggest one improvement or question

Time Allocation

- Group work: 30 minutes
- Commenting: 15 minutes

Facilitator Notes

- Common misconceptions to watch for
- Prompts to stimulate discussion

Educator/Facilitator Guidance

Before the session

- Set expectations clearly
- Emphasise that participation is valued
- Explain that the activity is non-assessed

During the session

- Monitor participation levels
- Prompt quieter groups if needed
- Highlight good examples of engagement

After the session

- Summarise key learning points
- Thank students for participation

Engagement Expectations (Evidence-Informed)

To sustain engagement:

- Set minimum expectations from the first session
- Use structured prompts for comments
- Encourage peer explanation rather than answers only

Recommended minimum per group:

1 post

2 comments

1 reaction/response

Evaluation: How We Measure Impact

Engagement Metrics (Record Sheet)

- Module name:
- Date of PAL session:
- Number of students enrolled:
- Number participating:
- Number of groups:
- Total posts:
- Total comments:
- Total reactions:

Student Mini-Survey

Students respond on a Likert scale: (Strongly disagree → Strongly agree)

1. The PAL activity improved my understanding of the topic
2. The PAL activity increased my engagement
3. Peer explanations helped clarify difficult concepts
4. The activity supported my learning for assessments
5. The session was well structured
6. I would like similar activities used again

Reporting Template (1 Page)

Module:
Cohort size:
Participation rate (%):

Key findings (bullet points):

-

One improvement for next delivery:

PAL Toolkit Reusable Resources

It provides:

- Ready-to-use teaching session plans
- Guideline to setting up Padlet
- Activity templates
- Facilitation guidance
- Students guide handout
- Evaluation tools

All these can be adopted with minimal preparation time.

Toolkit Summary

- Easy to adopt
- Evidence-informed
- Reusable across modules
- Produces quantitative impact

Screenshot of a completed Padlet PAL task

Group 14

Liquid spoon

The material is polypropylene, which is inexpensive, soft in texture, and commonly used for making takeaway spoons.
However, due to its soft texture, this spoon often bends and cannot scoop up food, hence it is jokingly referred to as a "liquid spoon" by

Group 15

Thermal Runaway in Boeing 787 Lithium-Ion Batteries

Introduction
In 2013, two high-profile thermal incidents involving lithium-ion battery packs in Boeing 787 Dreamliner aircraft led to the temporary grounding of the entire fleet. The events raised significant concerns regarding the material stability and failure tolerance of lithium-based energy storage systems in aerospace environments.
As a materials failure case, this incident highlights critical aspects of electrochemical material

Group 16

Hyatt Regency Walkway Collapse (1981): A Case Study in Design Flaws and Structural Failure

1. Failed Product/Component
The collapse of the suspended walkways in the Hyatt Regency Hotel, Kansas City, Missouri (July 17, 1981).
The accident caused 114 deaths and over 200 injuries, making it one of the most severe non-natural disaster building collapses in U.S. history.
2. Materials Involved

Group 17

Product Name & Material:

- **Product Name**: Standard Rubber Band
- **Material**: Natural Rubber (with sulfur-crosslinked structure)

Failure Cause Description:

1. **Oxidative Aging**:
   Prolonged exposure to air causes molecular chain scission, leading to hardening and brittleness.
2. **Overstretching**:
   Repeated stretching beyond elastic limits results in permanent deformation or breakage.

Group 18

Product and material

Bottle and tritan
Failure cause
Appearance and Structural Damage:

- With prolonged use, the surface may develop scratches and discoloration due to abrasion or impact, affecting the aesthetic of the bottle.
- Excessive impact may lead to cracks or breakage, especially if the bottle is accidentally dropped.

Temperature-Induced Deformation:

- In high-temperature environments (such as hot water or direct sunlight), the Tritan material may soften or deform, affecting the bottle's performance.

Group 19

Ceramic breakage

0/100 (1) Score 0
Add comment

Ceramic Fracture in Thermal Shock Conditions
1. Selected Case: Thermal Shock Failure of Ceramic Coffee Mug
2. Description of the Failure Product/Component:
High-end ceramic coffee mug designed for hot beverages.
Material Involved:

Group 20

Challenger Space Shuttle O-Ring Failure (1986)

Challenger Space Shuttle O-Ring Failure (1986)
Cause of Failure:
Material Behavior Under Low Temperatures: The rubber O-rings lost elasticity in freezing conditions (launch day temperature was 36°F/2°C), failing to seal the rocket booster joints.
Design Flaws: The joint design allowed hot gases to erode the O-rings, exacerbating the failure.
Organizational Factors: Engineers warned about risks, but decision-makers prioritized schedule over safety

Padlet

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Contraception Peer Learning – Group Presentations

Each group will present one contraceptive method. Use this Padlet to post:
key takeaways, questions, clinical scenarios, and group summaries. This activity supports peer assisted learning and contraceptive counselling skills.

Warm Up: What I Know / What Confuses Me

Pinned

As a group, discuss and post one thing you already know about contraception and one thing your group finds confusing. Put your Group Number in front of your post

Confused on the different side effects of each type

Group 1 - Natural family planning

No single method is 100% effective

Based on understanding the female's fertile window and aiming to conceive within that. Also understanding changes in cervical mucus secretions and measuring changes in temperature throughout the cycle and pinpointing when ovulation occurs through an increase in body temperature - combination of all three most effective form of NFP

patients with irregular cycles/non 28 day cycles may find it difficult to track the ovulation period accurately

Group 2 -Combined oral contraceptive

Hormonal v Non hormonal
Combined hormone Vs singular hormone

When is it suitable to give a 12-month supply and when would it not be suitable?

How would you explain mechanism of action in lay terms to a patient

Are there any other conditions that you can use COCP for besides avoiding pregnancy?

Is there any monitoring that is needed?

Group 3 - Emergency contraception

What is the most effective method of emergency contraception?

Copper IUD is the modest effective

Involves both the copper IUD and levonorgestrel

can you give some named examples of medications that are enzyme inducers ?

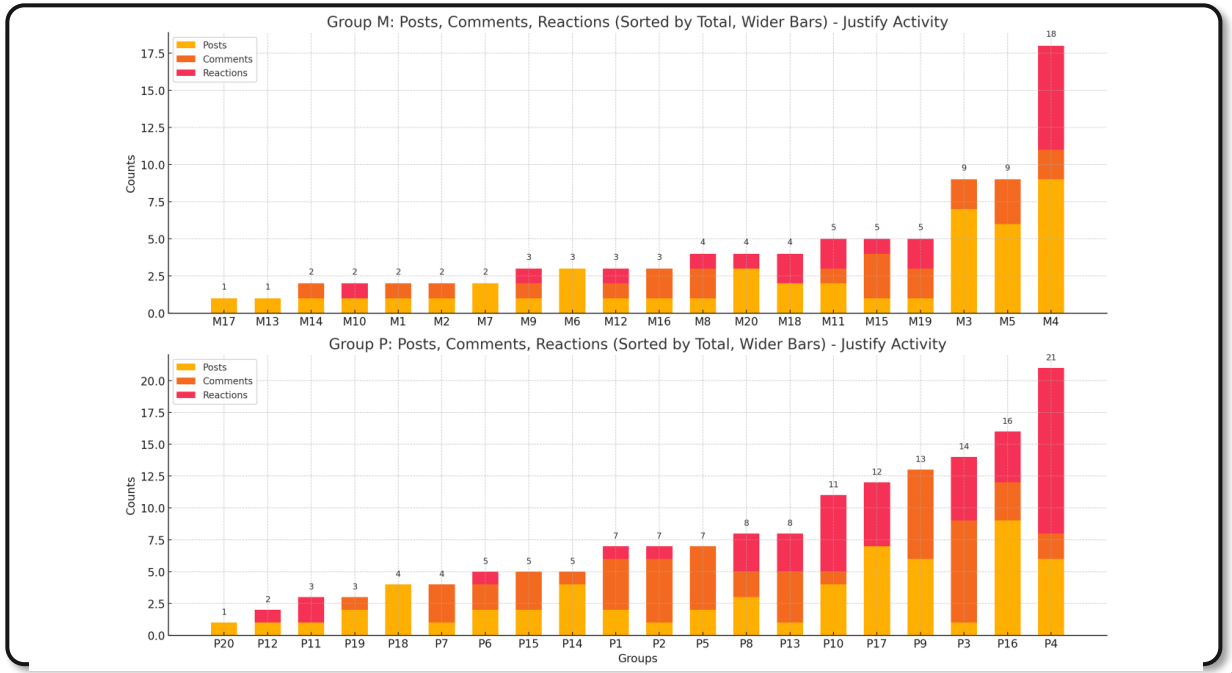
Taking a full history when counselling for emergency contraception— when was the patient's last period & unprotected intercourse.

Enzyme inducing drugs

St John's wort & Mounjaro

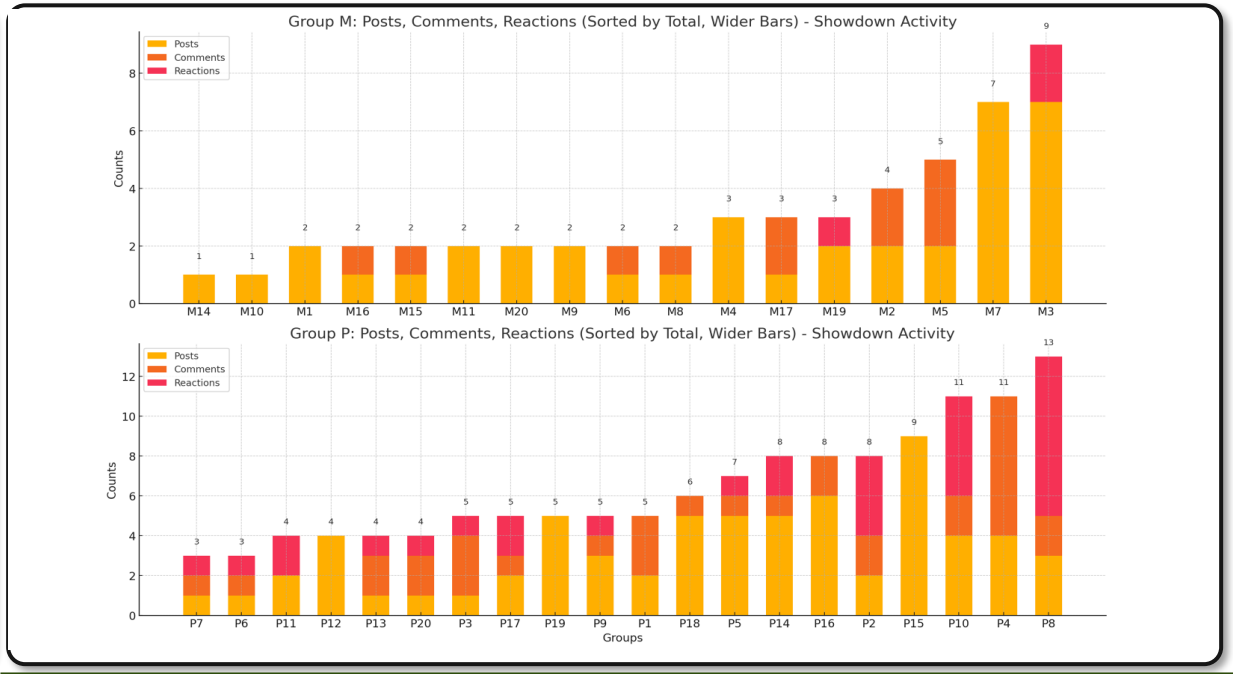
Results: Students engagements and reflections

Posts, Comments, Reactions (Activity 1)



"I have learned how to explain the applications of materials by their properties." "Teamwork, deeper understanding of material applications and properties." "We learned how to choose the most suitable materials for different uses."

Posts, Comments, Reactions (Activity 2)



"We can develop critical thinking, identify biases, and gain a deeper understanding of the topic by analyzing different perspectives. It strengthens research skills, fosters collaborative discussion, and helps synthesize new ideas by evaluating strengths, weaknesses, and patterns across sources. This process also improves decision-making by teaching evidence-based reasoning and contextual awareness."

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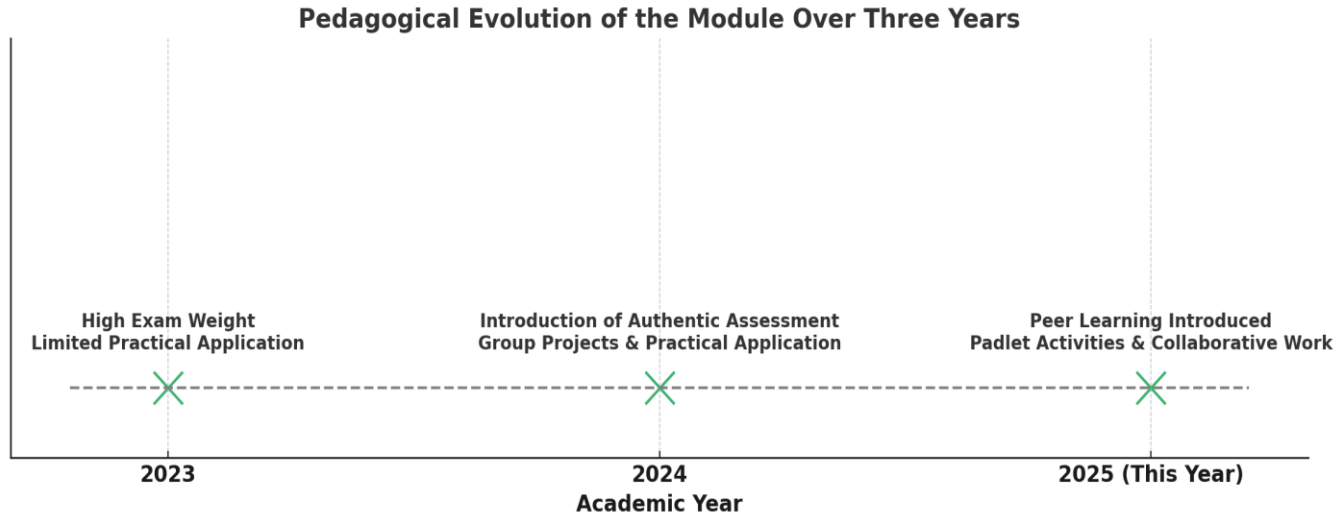
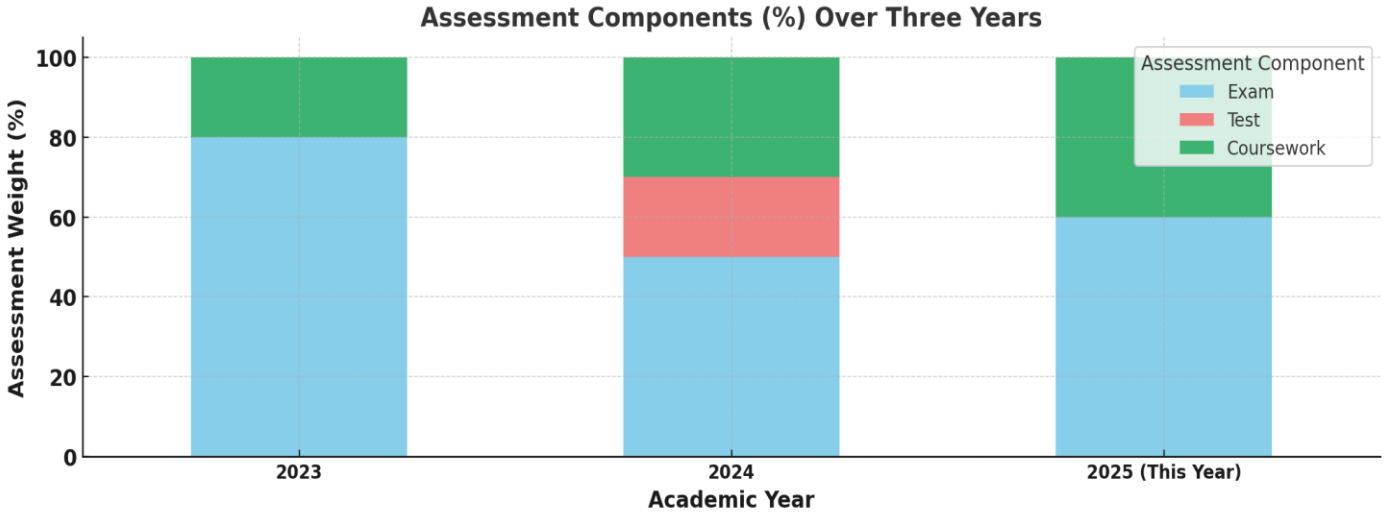
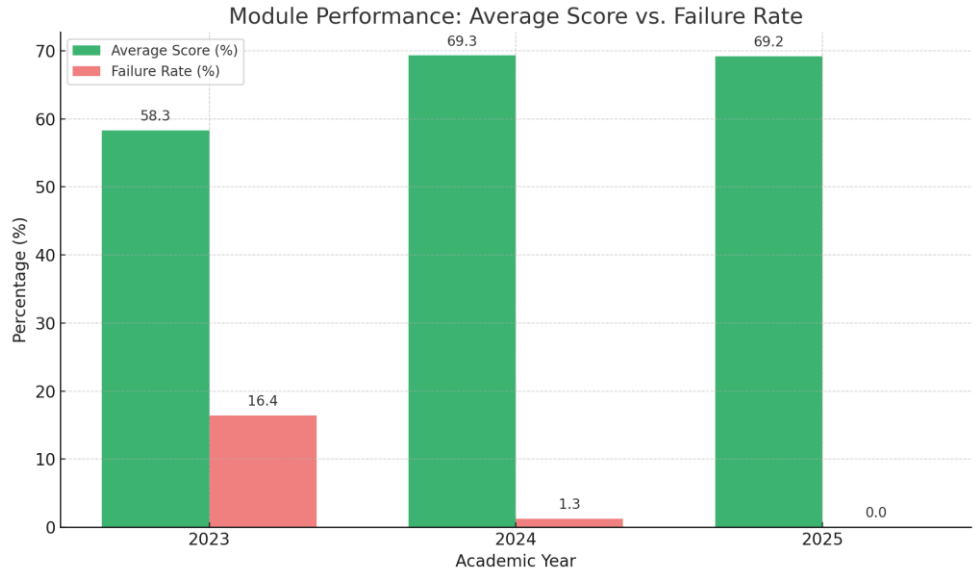
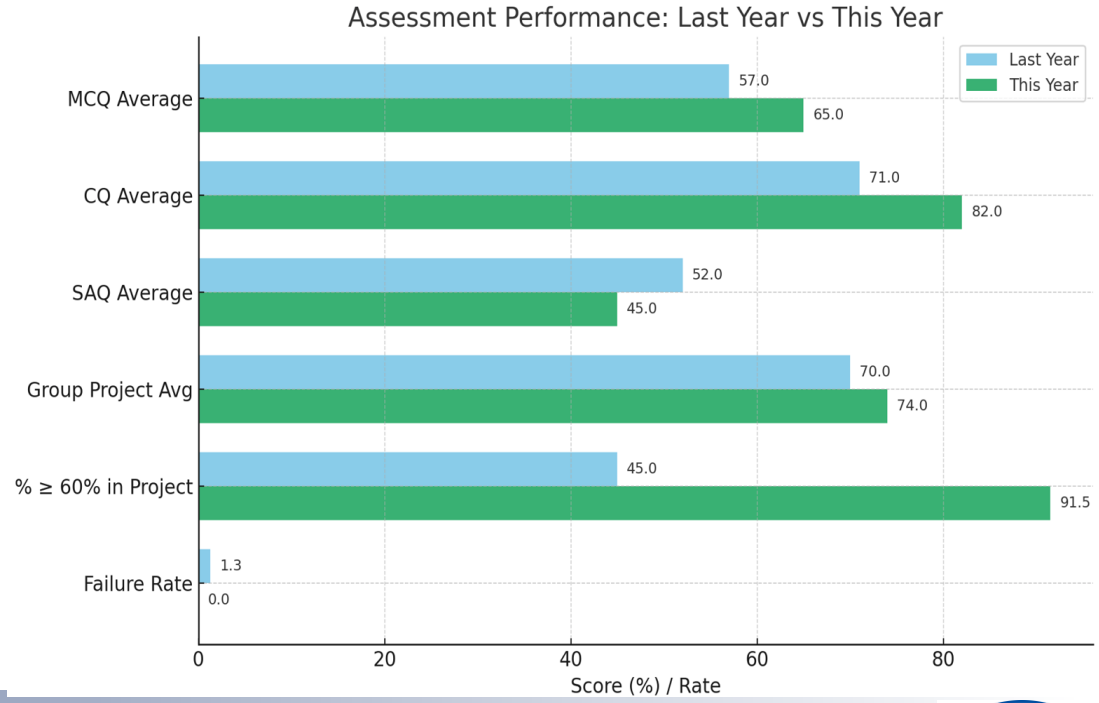
Results: Impact on Assessments









Insights and Impact

- Peer-Assisted Learning (PAL) enhanced:
  - ✓ Student confidence, teamwork, and knowledge retention
  - ✓ Engagement with technical modules in a supportive setting
  - ✓ Peer accountability and mutual support
  - ✓ Reflections - 100% of groups (40/40 groups) submitted reflections, revealed deeper concept understanding
- Assessment Impact
  - ✓ Improved academic performance
  - ✓ Failure rate dropped to zero

References

Malm, J., Bryngfors, L., & Mörner, L. L. (2012). Supplemental instruction for improving first year results in engineering studies. Studies in Higher education, 37(6), 655-666.

Micari, M., & Pazos, P. (2016). Fitting in and feeling good: The relationships among peer alignment, instructor connectedness, and self-efficacy in undergraduate satisfaction with engineering. European Journal of Engineering Education, 41(4), 380-392

Ten Cate, O. & Durning, S. Peer teaching in medical education: twelve reasons to move from theory to practice. Med Teach 29, 591–599 (2007).

Topping, K. J., Buchs, C., Duran, D. & van Keer, H. Effective Peer Learning: from principles to practical implementation. (Routledge, 2017).

Zhang, Y. & Maconochie, M. A meta-analysis of peer-assisted learning on examination performance in clinical knowledge and skills education. BMC Med Educ 22, (2022).

Cheng, X. (2020). The influencing factors and counter measures of the construction of freshman style of study in local agricultural university. Higher Education, 1(6), 136–138.

Jiang, J., Dong, C., & Liu, J. (2023). Toward a model of academic support in transnational education in China: Under the strategic goal of sustainability. Cogent Education, 10(1), 2184926

Topping, K. J. (1996). The effectiveness of peer tutoring in further and higher education: A typology and review of the literature. Higher education, 32(3), 321-345.

Queen Mary Academy Resources, n.d. Peer to Peer Support and Mentoring. [online] Available at: <https://www.qmul.ac.uk/student-advice-and-signposting-hub/advice-wellbeing-and-mental-health/peer-to-peer-support-and-mentoring/> [Accessed 23 May 2025].

Malm, J., Bryngfors, L., & Mörner, L. L. (2012). Supplemental instruction for improving first year results in engineering studies. Studies in Higher education, 37(6), 655-666.

Thank you!