

Enhancing Student Engagement through Formative Assessment and Feedback Loops in Aeroacoustics

A Case Study in AE 710: Aeroacoustics, IIT Bombay

COURSE OVERVIEW



AE 710: Aeroacoustics -
A specialized course offered within the Aerospace Engineering department at IIT Bombay.



Instructor & Class Profile -
Led by Prof. Aniruddha Sinha for a combined group of 20 Undergraduate and Postgraduate students.



Institutional Strategy -
This experiment is part of the IITB Strategy Plan 2026-2030, aimed at documenting effective teaching practices.

CORE STRATEGIES



Muddy Points (Minute Papers)

The final 3-5 minutes of every class were dedicated to Moodle submissions regarding what was clear and what remained 'muddy'.



Video Feedback Loop
Lectures were recorded in the CDEEP studio and made available to students within one week for review.

IMPLEMENTATION & INCENTIVES



The Assessment "Promise"

To ensure buy-in, two-thirds of the final exam (which is 40% of the total grade) was raised from previous formative assessments.

Attendance Tie-In

Submission of 'Muddy Points' on Moodle served as the official record for attendance, with the 'DX' grade policy in force.



Rapid Clarification

All anonymous 'muddy point' submissions were collated and addressed by the instructor at the start of the very next class.

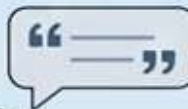
IMPLEMENTATION CHALLENGES



Significant Time Investment - Providing detailed feedback on multiple ungraded formative assignments is highly time-consuming for faculty.



Scalability Limits - Current high-touch feedback loops are difficult to scale to larger class sizes without additional resources.



Skepticism Toward AI Grading

The instructor notes that AI agents should likely not be used to solve the feedback time-crunch, despite suggestions in academic fora.

OUTCOMES & IMPACT



High Student Engagement

Addressing 'muddy points' immediately in the following class was identified as a key driver for keeping students engaged throughout the semester.



Positive Feedback Reports

Student feedback reports explicitly praised the availability of class videos and the use of ungraded formative assessments.



Seamless Technical

Implementation of Moodle-based 'muddy points' and CDEEP studio recordings was reported as straightforward and successful.