Delivering a Coherent Applied Learning Experience Integrated with Assessment within a 40-credit Core Engineering Module.

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Abstract

To address some of the challenges faced by students studying engineering, particularly those from diverse backgrounds with various prior educational experiences, the implementation of an integrated laboratory-based assessment strategy is a driver that can significantly enhance learner engagement. This approach not only helps bridge the gap between theoretical knowledge and practical application but also accommodates diverse learning styles, creating a more inclusive learning environment.

It is important that engineering students see the connection between theory and practice early in their education (Institution of Mechanical Engineers, 2025; Engineering Council, 2020). This awareness helps them appreciate the importance of understanding fundamental principles and concepts. The integrated laboratory assessment strategy addresses some of these issues by fostering a positive mindset, enhancing awareness of what professional engineering studies involve, and maintaining the motivation of students from the outset as they embark on their academic journey in higher education.

Indirectly, students become aware of the extensive range of laboratory and workshop facilities available at the university at a very early stage of studies which enables them to make use of such facilities in applied project-based learning in later years. Students, teaching staff and technical staff get to know each other, thus facilitating 'engineering community' concept across the school.

A high level of student engagement (>90%) in timetabled laboratory sessions was observed, primarily driven by the integrated and/or real-time assessment strategy. A further benefit is progressive accumulation of marks by combining laboratory work with the coursework portfolio summative assessment, without feeling overwhelmed by traditional assessment pressures.

Keywords

Laboratory-based assessment, learning styles, inclusive learning, professional engineering education, project-based learning

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