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Retention and progression of engineering students with diverse mathematical backgrounds.

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Summary: There are increasing concerns about the mathematics ability of students entering higher education. This situation appears to be as a result of the perceived lowering standards of A Levels, a reduction in entry requirements on some courses with a strong mathematical component and the wide-ranging educational backgrounds of many of the students. With Additional Student Numbers (ASN) funding, a pre-sessional course has been introduced at Loughborough University as a collaboration between the Engineering Centre for Excellence in Teaching and Learning (engCETL) and the Mathematics Education Centre (MEC), also a designated Centre for Excellence. The 4 day, residential, pre-sessional course targets engineering students with diverse mathematical backgrounds just before the start of the first year of their degree course. Due to possible gaps in their mathematical knowledge, students with non-traditional mathematics backgrounds are at risk of struggling in traditional lectures where a certain level of knowledge is assumed. The pre-sessional course, called Flying Start, aims both to reinforce the need for mathematical competency and to raise awareness of and to encourage students to engage with the support facilities available to them once they start at University. The main constituents of the Flying Start course are mathematics and engineering key skills workshops. Flying Start was introduced in 2003, growing from a pilot of 11 Electrical Engineering students to 24 students from Electrical, Manufacturing and Materials Engineering in 2005. Following each course, the performance of the Electrical Engineering students is monitored throughout the first year. This article examines the Flying Start students' academic performance in light of their mathematical background and their uptake of the additional support on offer. Student feedback suggests that the pre-sessional course offers the additional benefit of aiding the students in their transition into higher education. The implications of the feedback and the student performance data are also discussed.

Classification: D35 C75

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