Student Grouping Strategy for Better Classroom Results in a Postgraduate Engineering Module

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Abstract

We develop a new approach that divides students with a three-tier approach - top performers, middle group, and those who need more help - in a postgraduate Green Engineering and Energy Efficiency module. This year 2024/25 with 17 enrolled students (one excluded due to non-submission), with both two individual and two group assessments, with equal weighting. The grouping is done with five students per group, to track progress, especially focusing on students who struggle. Research demonstrates that randomly formed five-member teams achieve optimal results in collaborative learning environments, with students reporting effective communication and knowledge sharing while maintaining manageable group dynamics. This structure maximizes both peer learning and educator-guided discussions, with each member having adequate opportunity to contribute. Our primary aim is to investigate whether academically weaker students benefit more from group work or individual assignments. Through measuring group performance and collecting comparative data, our results show that while academic ability influences group outcomes, the impact of teamwork and group dynamics found to be less significant. Quantitatively, while a few students scoring 78 represent the highest individual marks, most data indicate a mild relationship between individual and group performance. The structured group work approach shows benefits for struggling and less-engaging students, though independent learners can still excel through multiple perspectives and balanced participation. Further research on demographic variables is needed to fully understand these dynamics.

Keywords: group learning; student satisfaction; increased performance;