

Enhancing Engineering students' creativity skills through online learning modules

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Within the domain of engineering, graduates are faced with the pressing need to develop skills that allow them to drive innovation into the future, whilst being effective lifelong learners. One method to assist with this is online learning, the use of which has drastically increased during the past decade. There is opportunity to provide and engage students with effective learning resources that may build their innovative potential through online means, greatly increasing accessibility and availability. One approach is to transition creativity training activities or short courses, traditionally delivered in a classroom setting, to a fully online environment. However, such transitions may lead to differences in student learning outcomes (in part due to the mode-effect), and it is imperative that the standard of learning is upheld. Therefore, the following research question was proposed: how does completing a creativity training activity using pen-and-paper or computer influence students' creative performance?

An experiment involving four groups of students was designed. Two creativity heuristics were selected for the experiment. A pen-and-paper and equivalent online template were created for each heuristic. Each group used either the pen-and-paper or online template for one of the two heuristics. Students were first shown how to apply the appropriate heuristic via a ten-minute instructional video, presented with a practical engineering problem, and then provided fifteen minutes to independently generate ideas to resolve the problem. Creative performance was then evaluating based on the average number, diversity, and originality of the ideas conceptualised by the group. Results showed for both heuristics, students' performance was similar regardless of the platform that was used. This has implications for educators that providing students with online activities designed to build creativity skills may be an additional viable alternative way for equipping students with the skills needed to help drive innovation into the future.