Competition as a Model to Increase Student Motivation in Multidisciplinary team Projects

Abstract – For over two years, students of the Mechanical Engineering Department (ME) and Aviation Technology (AT) at Purdue University have been collaborating and competing in several aviation related design-build projects. This paper will describe three projects: The Personal lifting vehicle (PLV), The lighter than air vehicle (Blimp), and the Hovercraft. Collaboration, competition and the actual building process were some of the strategies used to increase student motivation. In the first project students of ME and AT worked together to design and build a Personal Lifting Vehicle (PLV), A prototype was built but the team couldn't find a solution for the control problems of the vehicle. For the second project a design was chosen that could realistically be achieved and instead of collaboration, the ME and AT students competed in a two-team race. The element of competition greatly improved the motivation of the students and both teams successfully built and raced the 12 feet long radio controlled blimps. For the third project one team of ME students and a combined team of AT and ME students competed. The teams were tasked with the design and manufacture of a full-scale one-person hovercraft. Both teams successfully built a hovercraft, but only the hovercraft of the combined AT/ME team was tested. The ME hovercraft didn't get permission for testing due to safety concerns. The projects have created an interest from faculty members from other departments within the University, who expressed their interest to participate in a competitive project. For the future we would like to form teams of Purdue Engineering and Technology students to compete against universities in the US and abroad.