Implementation of Active Learning Pedagogies

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Abstract

At West Virginia University Institute of Technology (WVU Tech), we implemented "*active learning environment"* in multiple undergraduate courses to engage the students for the improvement of their problem solving skills. Last year, we presented about "*demonstration based learning environment*" in "Fluid Mechanics" course which was well-received by the students. Students were engaged in several classroom activities including demonstration and semester projects. Visualization based activities create curiosity and thus motivate students greatly. Similar to "*demonstration based learning environment*", implementation of "*active learning environment*" foster the teaching and learning process "*by doing*" in the class. Two types of activities were mainly implemented. One, students in a teams were provided opportunities to assemble kits and test the theoretical concepts. Students assembled the supplied engineering kits, test and record data, compare model-prototype to relate with real-world applications. These activities created a fun learning environment and also promoted student engagements and curiosities. Students were credited with grade points for participating in such activities which also helped to boost students' presence in the class. Two, students were asked to form a team and work on problem solving in the class every week. Student teams then summarized their work on the board and discussed their work in the classroom. Instructor then debriefed the classwork activity to highlight on the purpose and the summary of that specific teamwork activity.

Both active learning pedagogies created positive learning environment in the class. Students' assessments and end-of-the-semester classroom survey reveal the effectiveness of the active learning pedagogies.

Keywords

Engineering Education; Active Learning; Team Work