

## Reflection in the EPICS Model of Engineering Service Learning

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### *Abstract*

Service learning is a pedagogy providing a structured environment for students to link service with course learning objectives. Key to the service learning experience is critical reflection. This gives students the opportunity to examine their coursework in the context of the service they provide to their community and, in a broader sense, the impact they can have on the world. Research has shown that students participating in service learning have a higher comprehension of the course material and also develop an awareness of their local community and the issues it faces.

In engineering, there are many examples of service-learning programs ranging from freshman introductory courses to senior capstone courses. Despite their successes, an area that the engineering education community has yet to fully develop is the reflection component of service learning.

This paper addresses the development of reflection activities and materials in the Engineering Projects in Community Service (EPICS) program at Purdue University. EPICS engages students in long-term design projects that provide technical solutions to problems faced by local community service organizations. It is a multidisciplinary (composed of students from 20 majors), vertically integrated (freshman-senior), engineering-based design course. Students design, build, test, and deploy projects meeting the specific needs of their community partners.

Reflection has been integrated in the EPICS program through curricular activities and key milestones of the course. These activities guide students through the reflection process on a variety of topics. Critical reflection on the design process and teaming complement those on more traditional areas of ethics and social context to enhance a student's service-learning experience. This paper presents an overview of the reflection activities that have been developed, interpretations of student reflections from these activities, and plans to evolve the reflection component in EPICS.