Effective Teaching and Learning
Real-World Case Study in Prestressed Concrete

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Overview

Prestressed Concrete Design is an advanced course offered as the elective in the civil engineering program for junior and senior. Several students are interested in taking this class because prestressed concrete is widely used in construction nowadays. Prestressed concrete design is quite complicated and difficult for students to understand. Only lecture cannot facilitate their learning. Learning by seeing and solving the real world problems is a way to stimulate their learning. Students work in groups to perform a real-world design using Excel spreadsheet just like professional engineers do their jobs.

Aims and Objectives

1. To stimulate students' learning and engagement
2. To encourage students to work as a team to solve real problems
3. To improve an Excel skill

Impacts

Students are interested to further study in advanced prestressed concrete course (They ask me to offer an advanced course). Seeing and learning from real-world scenarios make them more curios.

Activities

1. Provide lectures and exercises to reinforced the concepts of prestressed concrete
2. Factory tour to see how prestressed concrete products are made
3. Site visit to see how prestressed concrete bridges are constructed
4. Site visit to the Walailak academic building construction to identify a problem
5. Taking a problem to the class and groups of students discuss the solution
6. Do group work to design prestressed concrete slabs using Excel spreadsheet.
7. Present the design to the class / Answer questions

Future Development of Project

- More various case studies will be very useful
- Teach computer programs (apart from Excel) that professional engineers use to design prestressed concrete
- Invite professional engineers to be guest speakers to share practical experience

Outcome

- Students have got satisfactory scores in tests
- Students more actively participate in class discussion
- Excel skill is better
- Students ask more questions after site visits

References

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