Organization of BSc and MSc projects in project families

This work reports organization of student thesis projects in project families, with the benefit to both teaching and learning. The project organization went from student projects broadly distributed on topics related to different research issues and individual supervision to project families with closely related topics, group supervision in lab and weekly group meetings combined with individual supervision. The overall topic of all student projects was “Use of alternative ashes in concrete” and they were experimentally based. A key challenge in this organization of projects is on one hand to offer individual projects with students as project leaders and open problems and on the other hand fit each project into a well-defined frame. This challenge has been overcome and with positive side effects. The findings are based on experiences from families with up to 5 individual projects.

In the first part of the semester, the project family followed the same overall predesigned pattern. The students followed standard procedures and compared their special concrete with standards. The experimental procedures were taught to all students at the same time, releasing significant time for specialized academic supervision and enabling peer-instructions. This first part of the projects ended with a student poster presentation with participation of students from the project family, supervisors and other staff. The second part of the projects was designed by the students on basis of the poster discussions and followed individual approaches. This way of organizing project families follows the basic ideas of CDIO. In the first part of the project technical knowledge and reasoning were major headlines. A knowledge platform was created from where untraditional ideas and enthusiasm grew. In the second part, the students’ personal and professional skills and attributes were developed. They learned time and resource management, used engineering reasoning, took initiatives and were willing to take risks. This can also be met through solely individual projects, but in addition the organization of project families strongly supported development of interpersonal skills, teamwork and communication. The students continuously compared and discussed results and became comfortable in using professional engineering language, a point which was very clear at the final oral defenses.

From the very beginning the students were presented with clear research goals of the Zero Waste Byg team. They were welcomed into the research environment and knew their results were of great interest. They have expressed that this was a highly engaging factor. The project families have been a tremendous source for experimental results and scientific conference papers have been published based solely on results from project families.

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