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A case study

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Co-aligning User-Centered Design and Software Engineering Courses: A Case Study

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ABSTRACT

Introducing students to different perspectives and roles in the development process allows them to engage in the work of cross-disciplinary diverse teams and even can enable them to change roles in designer-developer interactions. Industry work often places recent graduates in preexisting polarized relationship dynamics between different participants in the design and development process. This paper describes a two-stage attempt at co-alignment of software engineering and user-centered design courses: from full alignment with topic intersections and joint project to partial alignment through separate activities. We discuss challenges of both ways including time or technical constraints, increased effort from the program developers and instructors, students' and instructors' frustrations. We finalize by describing benefits of providing students with early experience identifying trade-offs between design requirements and architecture and opportunities for diverse group with different background in computer science.

1 CASE STUDY RESULTS

Problem and Background. In successful development teams, it is crucial for the team members to understand each other's contexts and backgrounds [1]. Moreover, there are many cases when software engineers make design decisions. On the other hand, a designer sometimes needs to quickly test the idea in a high-fidelity prototype without involving an engineer, as a result, programming skills are often desirable for the UX-design students. Unfortunately, these skillsets are usually taught in different disjoint courses, limiting cross-skillset link formation. On the one hand, in SE courses, students typically work on projects on predefined topics and sets of features. Instructors in these assignments rarely ask students to go beyond bare technical implementation and dedicate some time and effort to thinking about user experience.

Context. Our MSc program in Information Systems and Human-Computer Interaction (IS&HCI) is aimed at two quite different

cohorts: 1) students with a computer science background who are interested in acquiring a deeper understanding of UX design principles, as well as 2) social and behavioral science students who have some background in computer science or data analysis.

Case 1: Core Courses Co-alignment. One possible way to overcome compartmentalization is the synchronization of courses with each other, when a project within one discipline is based on the results obtained within another discipline. Our first approach was focused on co-aligning two year-long design and software architecture courses via shared cases and connected tasks where students would use artifacts from one course as a work inputs for the other.

Reflection on Case 1. (1) Strong aligning two wide-ranging courses requires an investment in coordination between courses. (2) Some students had a hard time distinguishing between similar concepts in different parts of the course (e.g., design vs. BDD scenarios, flavors of user stories). (3) Switching roles within student teams and developing based on the designs of others create pain points that require special care and inspire self-reflection.

Case 2: Partial Co-alignment through Additional Activity. As a rapid intervention alternative to course co-alignment, we organized and conducted an idea-generation session on a specific topic as a UCD workshop. Firstly, it aimed to enable students to generate richer ideas for implementation in the further Software Engineering course. Since the students generated ideas on their own, project topics become more engaging for them. Secondly, by demonstration and follow-up discussion, students learned why and how to organize such workshops and practice with real-life user studies.

Reflection on Case 2. The first round of workshops revealed several limitations, including issues with idea development, recruitment and moderation. On the other hand, it should be noted that awareness of limitations and possibilities of workshops led to the fact that students more often considered workshops as a method for user research in their Master's thesis projects compared with previous cohorts, and used generated ideas in the Software Engineering II class.

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