Student-centered Development of Learning Analytics at an Higher Education Institution

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ABSTRACT: The emerging role of learning analytics tools for a university setting has been a key point of focus in a wider-scope project for supporting studying and learning at a Finnish Higher Education institution. The project has taken a user-centric co-design approach, and involved a variety of service design methodologies to investigate user needs. This has been followed by developing and piloting solutions in co-operation with multiple stakeholders: students, teachers, and many university services. The goal has been to discover ways to implement learning analytics tools to support students in a higher education setting, which requires considerable independent effort from the students in managing their own study paths. Here we aim to describe some of the key methodologies of co-design and the findings thus far, as well as outlining some of the primary directions and challenges for the future. The key implications highlight the benefits of a user-centric approach to designing effective tools for supporting both individual and organisational level of learning and teaching.

Keywords: service design; learning analytics, learning dashboards; study path; co-design

1   INTRODUCTION AND CONTEXT

In Finnish universities, students typically have rather a lot of freedom in constructing personal study paths compared to universities or programmes that appoint ready-made schedules. This freedom is provided to motivate students to find their own meaningful paths. However, this may also impose additional challenges as a high level of planning and managing of study contents, work load and schedules is required from the students. The aim of this study is to investigate the co-design and the applicability of learning analytics (LA) tools to support studying, and how these tools can aid students in managing and understanding their studies and learning. Given that student success and retention are related to study habits (e.g., Robbins, Lauver, Davis, Langley, & Carlström, 2004) and various aspects of study experience (Lizzio, Wilson, & Simons, 2002), we aimed to find ways to support organised study habits and study-related self-efficacy (Hailikari, Tuononen, & Parpala, 2018). We investigated the users' view of the support they would find beneficial for their studies, for what they would want to utilise analytics, and in what format.

2   METHODOLOGY

A service design approach applying a Double Diamond design model (British Design Council) was used to frame the investigation of user needs, and to develop the concept for LA supported student

dashboards. All relevant stakeholders (students, teachers, services) were involved throughout the process. In the Discovery phase, numerous interviews, questionnaires, meetings and workshops were organised to investigate the stakeholders' views and needs. This resulted in an outline of the elements of the ideal study path and the potential risk points, highlighting the parts where further support is needed. In the Define phase, by using methods such as fictional personas, customer service journey – maps, interviews and workshops, the goal was to formulate the LA student dashboard concept and its features, and to co-design and interact with prototypes. With students, we focused on how different tools could address various problem points, addressed data privacy concerns and other ethical issues, and investigated in what formats students would use the tools. During the Development phase, the prototype of the dashboard was developed based on the findings from the previous phases. In the current Delivery phase, the prototype is being piloted and developed for a production version.

3   RESULTS AND CONCLUSIONS

Stakeholders have been involved at each stage of the service design process, leading to an improving LA concept for supporting students. The iterative development process, in which key stakeholders' needs can be examined and answered at multiple stages, takes us towards a user-focused LA co-design, ensuring that user needs and LA capacities meet. Our findings indicate that the key challenges for students are the formation of an effective study plan that supports well-aligned learning and workload management. Students found calendar planning, LMS activity planning and monitoring, and course suggestion tools, which used LA for mapping study plans, interests, and courses, particularly useful. Comparison of own progress or success to other students' was found unhelpful. The concepts for the tools, their functions, presentation and scope were developed at each stage together with the stakeholders, resulting in a design increasingly well matched to user needs, leading to better approval from the user together with increasing likelihood to be used. It is important to notice that in this paper the focus has been on the co-design between users and main developers of LA. In the background, the development of student dashboard has required a dense collaboration between LA developers and pedagogical, IT, data and juridical expertise. The process of developing LA and the student dashboard proceeds with the current piloting phase. The process described here has demonstrated that with the users in a central focus, LA can be implemented to create added value to the university by including the relevant stakeholders' needs and perspectives and by motivating them to use new tools and practices.

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