

Tool-Support for Managing Technostress in Hybrid Learning Settings

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Abstract: Increasing use of technology in education can be a major concern for students as this can lead to technostress. To mitigate this, we develop a mobile application aimed at reducing techno-overload and techno-invasion, two stressors causing technostress. To do so, we suggest the features: goal management, rewarding, and reflection.

Keywords: Technostress, App Development, Digital Well-Being

1 Problem, Motivation and Implementation

Students increasingly use digital technology for educational reasons, which can lead to stress, especially in hybrid teaching and learning environments. If stress is caused primarily by technology, it is referred to as technostress [AGP11]. As previous research has shown, technostress can have a detrimental effect on students' learning effectiveness [UV21], such as knowledge acquisition or skills development. Against this backdrop, we develop a mobile app designed to mitigate the elevated levels of technostress caused by two of the dominant types of stressors: techno-overload (e.g., students are forced to do more work because of technology) and techno-invasion (e.g., technology invading students' privacy). We focused on these stressors because they have become more prominent since the COVID-19 pandemic and the subsequent transition to hybrid learning settings, which have intensified students' workload and blurred the conventional borders between learning and privacy even more. We aim to prevent students from experiencing strains, such as decreased motivation and reduced academic performance

Against this backdrop, we develop a mobile app using a design-based research (DBR) approach [KR14], suggesting features such as goal management, reward system, and reflection.

Goal management. *Students should be able to set and track technostress reduction goals.* The app enables students to establish personalized daily goals and monitor their progress towards achieving these goals by breaking down larger goals into manageable tasks, and providing reminders and notifications. The goals can be related to personal learning success or specifically directed towards mitigating techno-overload/-invasion and

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enabling unlearning of harmful behavior. For example, students can create personalized plans to establish daily routines that include physical exercise or meditation to help them manage their stress levels and improve their overall well-being. Overall, goal management should support in reducing cognitive overload, allowing users to focus on achieving their goals in a more structured and manageable way.

Reward system. *Students should be incentivised to achieve their personal goals.* By making use of gamification elements, the app will reward students for fulfilling set tasks. It does so by, e.g., virtual badges or points, personalized feedback and encouragement, and progress tracking, to create a positive and engaging user experience. This can be a way to mitigate technostress in e-learning contexts, e.g., [Fa21]. One specific idea would be to present challenges, e.g., abstaining from mobile phone distractions for a set amount of time and getting points for subsequent fulfilment. Finally, the reward system should support students in sustainably follow plans to reduce technostress in the long term.

Reflection. *Students should be encouraged to reflect on their behavior after experiencing technostress.* The app should provide tools to reflect on their goal achievement, personal behavior in situations of technostress, and its impact, as indicated by [AGP11]. Students can record their thoughts and reflections in a digital journal inside the app. Based on their insights, students can adapt their personal stance and behavior related to technostress. Thus, our app fosters a more mindful and intentional approach to cope with technostress.

To evaluate the utility of our app, we plan to conduct workshops with university students. The abstracted knowledge obtained during app design and workshop evaluation should serve as starting points for the the design of further learning applications. Thereby, we hope to support students in hybrid learning settings by providing guidance for technostress-mitigating design of apps in education.

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