

Chapter 39

Supporting Students' Mental Health and Academic Success Through Mobile App and IoT

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ABSTRACT

Smartphones have become devices of choice for running studies on health and well-being, especially among young people. When entering college, students often face many challenges, such as adaptation to new situations, establish new interpersonal relationships, heavier workload and shorter deadlines, teamwork assignments and others. In this paper, the results of four studies examining students' well-being and mental health as well as student's perception of challenges and obstacles they face during their academic journey are presented. In addition, a mobile application that acts as a complement to a successful tutoring project implemented at the authors' University is proposed. The application allows students to keep their schedules and deadlines in one place while incorporating virtual tutor features. By using both, the events from the student's calendar and his or her mood indicators, the application sends notifications accordingly. These notifications encompass motivational phrases, time management guidelines, as well as relaxation tips.

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1. INTRODUCTION

Research points out that happy people produce more and have better results at work (Yano, Lyubomirsky, & Chancellor, 2012). Based on this premise, one may assume that happy students will also perform better along their academic path. Higher education students often face many challenges such as, adaptation to new situations, establishing of new interpersonal relationships, managing heavy workloads and short deadlines and working successfully in teams. Tutoring (or mentoring) projects have shown to be a good way of helping students to be successful in their academic life. An example of this is the tutoring program implemented at the University of Madeira since 2012/13 (Faria, Oliveira, Lucas, Vasconcelos, & Soares, 2014). It aims to facilitate the integration of freshmen into the university and to promote their personal and interpersonal development through the creation of a peer support network. This project also provides tools to help students succeed in achieving their personal and academic goals, thus promoting motivation and self-determination as well as developing study skills and strategies to manage anxiety and stress.

Smartphones and other mobile and wearable devices are becoming ubiquitous in our daily lives and Internet of Things (IoT) deployments are also increasingly populating our cities, offices and homes. One of the important application areas of the IoT is healthcare. Mobile and wearable devices for health monitoring are becoming main stream and mobile applications for fitness tracking are flourishing.

In this paper, we will focus on mental health and look into the ways that technology in general, and particularly a smartphone can contribute to student's mental health and well-being. This research question has been addressed in research papers from both, computer science (Wilde, Zaluska, & Davis, 2013) and psychology areas (Luxton, McCann, Bush, Mishkind, & Reger, 2011). One of the main goals of the studies described in this paper is to develop mechanisms for virtual tutoring and fostering well-being and personal development among college students. Based on others evidence, our own experience as students, faculty and psychological counseling service members, and supported by the surveys we conducted at our University, we know that students' levels of stress increase when deadlines and exam periods are approaching. Also, most students own a smartphone equipped with considerable amount of memory and processing power and a quite interesting set of sensors. We want to find out how to leverage this fact in order to help students cope with the moments of higher stress and workload. What kind of feedback should an application provide to become a potential stress-relieve tool and to help students maintain their focus on what they are doing?

Mobile applications based on the Moofwd platform (MooFwd, n.d.) grant access on the move to several university services and are provided at some universities in Portugal (e.g., Porto and Coimbra). Although we agree that such an application is useful and beneficial, it does not respond to student's needs in terms of mental health, habit forming and well-being. As such, we propose, in the scope of our project, a mobile application that acts as a virtual tutor and is aware of the user's activities, appointments and mood levels. Additionally, we are planning to implement an IoT deployment for a smart study room with a network of intelligent objects (e.g., single board computers with attached sensors and actuators) and to provide feedback mechanisms that may contribute to improving students' well-being, developing good studying habits and reducing stress levels in the most critical periods.

The remaining of the paper includes an updated literature review, section 3 describes four field studies and their results, section 4 discusses the main findings and finally, section 5 concludes the paper and gives a final outlook.

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