EXAM COMPANION

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A MOBILE APPLICATION TO SUPPORT THE REVISION OF STUDENTS IN HIGHER EDUCATION.

Problem

Students revising for their examinations should spend their time in a way that maximises productivity to improve their academic performance and, in turn, their future prospects. Instead students in higher education often rely on ineffective revision techniques which undermine their achievements or do little to improve them.

Aim

This project aims to improve students' academic performance via the development of a software application that will enable students to be more productive with their revision techniques.

Research findings:

- Practice testing is the most effective revision technique for exams, followed by spaced repetition (Dunlosky, et al., 2013).
- The Pomodoro technique improves the productivity of focused work sessions by reducing the number of distractions (Ruensuk, 2014).
- Flash cards are an efficient method for exam revision which encourages the use of spaced repetition, practice testing and active learning (Wissman, Rawson, & Pyc, 2012).
- Gamification in education can enhance student motivation, retention and conceptual understanding (Butler & Ahmed, 2016). There are not currently any implementations of gamification in an exam revision context.

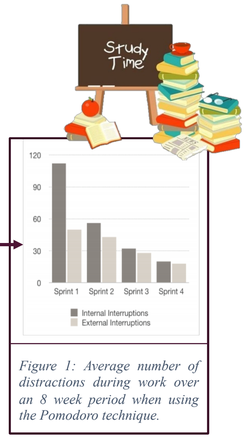


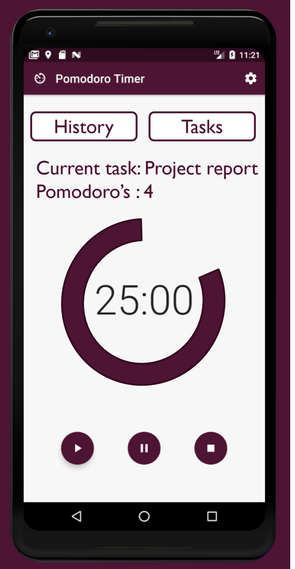
Figure 1: Average number of distractions during work over an 8 week period when using the Pomodoro technique.

Exam Companion Application

Exam Companion is an application built on four key pillars; Pomodoro, Flash Cards, Schedule and Gamification.
All data in the application is stored in a cloud database and linked to each users account.

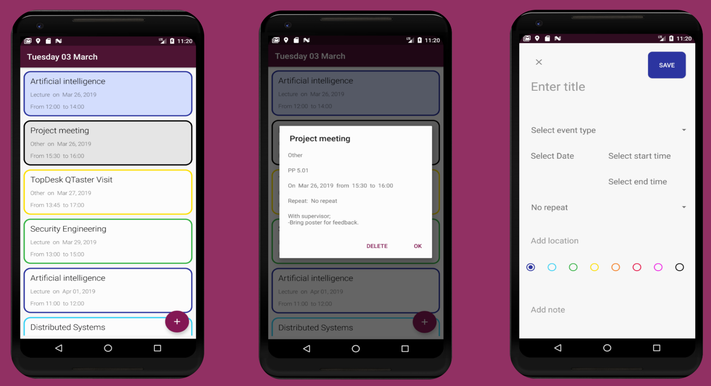
Pomodoro:

- The Pomodoro page includes a timer that times a work session of 25 minutes followed by a short 5 minutes break (as recommended by Francesco Cirillo, creator of the technique). The time intervals can be modified to suit the user.
- Users can view how many Pomodoro's have been completed for each subject/task added allowing revision to be easily quantified.
- Users can enter summary of work completed at the end of each Pomodoro and view their revision history at any time.



Schedule:

- The schedule page shows a list of upcoming events, with events occurring 'today' highlighted.
- Clicking any event displays further details about the event and new events can be easily created.
- Events can be set to repeat every week or 2 weeks, for a duration of 14 weeks (1 semester).
- Events are stored in the cloud; notifications alert the user to attend scheduled events.
- Revision events prompt the user to use the Pomodoro page to time their revision.



Flash Cards:

- The flash cards page allows users to create digital flash cards and review previously created flash cards.
- Flash cards are arranged in stacks, with a stack for each module or topic.
- Reviewing flash cards uses the Leitner System - an ordering method that balances revising old material with learning new information.

Gamification:

- The application uses gamified elements to motivate the user to revise.
- A point is rewarded for every 5 minutes of a Pomodoro session completed (a standard 25-minute session = 5 points).
- Further points are awarded for each flash card created.
- Points help quantify the amount of revision completed and can induce competition via the leaderboard on the Points page.

Future work:

- Exam Companion will be trialled at QMUL in the academic year 2019/20 with a few select modules to investigate the effect of using the application on student's exam performance compared to the previous year.

Learn more about Exam Companion on the official website.

References:

- Dunlosky, J. et al., 2013. Improving Students' Learning With Effective Leaning Techniques: Promising Directions From Cognitive and Educational Psychology. *Psychological science in the public interest*, 14(1), pp. 4-58.
- Ruensuk, M., 2014. *An Implementation to Reduce Internal/External Interruptions in Agile Software Development Using Pomodoro Technique*, Bangkok: Stamford International University.
- Wissman, K., Rawson, K. & Pyc, M., 2012. How and when do students use flashcards?. *Memory (Hove, England)*, Volume 20, pp. 568-579.
- Butler, S. & Ahmed, D.T., 2016. *Gamification to Engage and Motivate Students to Achieve Computer Science Learning Goals*. Charlotte, North Carolina, Conference Publishing Services: 2016 International Conference on Computer Science and Computational Intelligence.