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Project Title:	Exam Companion: A study and mobile software implementation into how higher education revision can be made more effective.
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Title

Exam Companion: A study and mobile software implementation into how higher education revision can be made more effective.

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Abbreviation

N/A

Abstract

This project aims to analyse the effectiveness of the revision methods employed by students when studying as well as the effectiveness of lesser known revision techniques. The project further aims to produce a software application that implements features which aid students in revising using more effective revision methods. In doing so the project seeks to improve the efficiency of revision by university students and thus help them achieve higher grades in their examinations.

The projects aims are accomplished in three broad steps. The first step is conducting interviews with university students to understand their current methods of revision. The second is using academic studies and articles to analyse the effectiveness of various revision techniques to find out which techniques are most effective for revising. The final step is using the research completed to produce a software application that enables students to revise using the revision techniques proven to be most effective.

The project found that improving the effectiveness of revision requires managing time more effectively (Ruensuk, 2014) and using active studying methods instead of passive (Carl A. Benware, 1984). That is, organising or otherwise doing *something* with information to be learned instead of reviewing or copying it. Time can be more effectively managed using methods such as the Pomodoro technique (Ruensuk, 2014) and '*The spacing Effect'* (Kang, 2016). Studying can be made more active instead of passive by using methods like flash cards and Feynman's technique which focus on organising information in a new form rather than just reviewing it.

//conclusion

Introduction

Background

University students today studying for their Examinations using passive studying methods, such as reading or copying large amounts of text to memorize required knowledge, spend more time studying with a smaller amount of information gained than if they used active revision (Prince, 2004). Passive studying methods cause students to have a lower intrinsic motivation, lower conceptual learning scores and lower engagement in their courses (Carl A. Benware, 1984).

Furthermore, students can manage their time poorly, by studying for long hours with few breaks in hopes of learning as much content as possible. This however has been proven in multiple studies to be less effective than carefully managing how time is spent and allowing for breaks (Weng, et al., 2010). Techniques such as the Pomodoro technique can be used to manage time and complete more overall work in a given time frame (Ruensuk, 2014).

Problem Statement

University students studying for their examinations should use their time with maximum efficiency, learning as much per unit time as possible given their circumstances.

Today, students often use passive revision techniques which are inefficient and ineffective at helping them gain the information they need (Carl A. Benware, 1984). Students also manage studying time poorly, causing poorer academic performance and higher levels of stress (Macan, et al., 1990). This prevents students from achieving their potential grades at university.

The project will research the problem further and develop a software application to improve the studying methods and time management of students in higher education.

Aim

This project aims to aid students in changing their revision techniques from passive to active, as well as introducing students to other researched methods of studying proven to improve study session's in the form of a software application.

In doing so, the project aims to improve the grades achieved by university students.

Objectives

- To understand the studying and time management methods currently employed by university students by conduct interviews.
- To use relevant academic journals and articles, from academic library's and the internet, to discover the most effective revision and time management techniques and methods that can help students to improve their revision sessions.
- To produce a software application that implements features that allow students to revise more effectively through improving studying methods and time management.

Research Questions

- How can revision methods of students be altered so that their learning and understanding of content per unit time is increased?
- How can the Feynman technique be used by students in higher education to understand complex concepts in a small amount of time?
- How can learning be changed from Passive to Active learning, and how would this change the academic performance of a student.
- How can time be managed by students when studying so that they achieve the maximum amount of learning/work for a given amount of time?
- How can the Pomodoro technique be used by students to improve time management within individual revision sessions?
- How can Spaced Repetition be utilised in an educational environment to aid students in memorising required course by managing time over their course leading to exams?
- How can Parkinson's Law be utilised by university students to improve the amount of learning they complete in a given time?

Literature Review

What are the current approaches to improve higher education revision?

How are these approaches working? What is not working?

What are Pomodoro technique, Spaced repetition, Parkinson's Law, Feynman's technique and active learning?

Where have they been used – relevance to education

Applications that support this process

Summary - Why you are doing it and what are you doing to solve the problem?

Student Learning

Approaches

Approach 1

Approach 2

Critical of why it's not working

Revision techniques

What are they?

Main aspects

Where are they used?

Studies that show its good

Challenges

Application

Analysis and Design

Requirements Analysis

Functional

Non-functional

Design

UML

Class Diagrams

ERD

Use cases

Wireframes - Interface

SDLC

Implementation

Rationale for the platform and technologies

What have you implemented and how?

External Libraries

Link to repository (bitbucket)

Results

Screenshot

Validation

Software Testing

Blackbox/Whitebox/Automated Unit Testing

Test Table

Framework

User Testing

Interface Testing

Usable

Fill Questionnaires or collect data from the App

Interface Evaluation benchmarks

Performance Testing

Memory Usage

Evaluation

- Quantitative/Qualitative
  - How good your project was?
  - What was successful?
  - What was not successful?
- Comparison to the gaps - ticking against the objectives/aim
- Threats to validity
- Limitations

Legal, Social, Ethical and Commercial Issues

Conclusions

- Summary
- Future work

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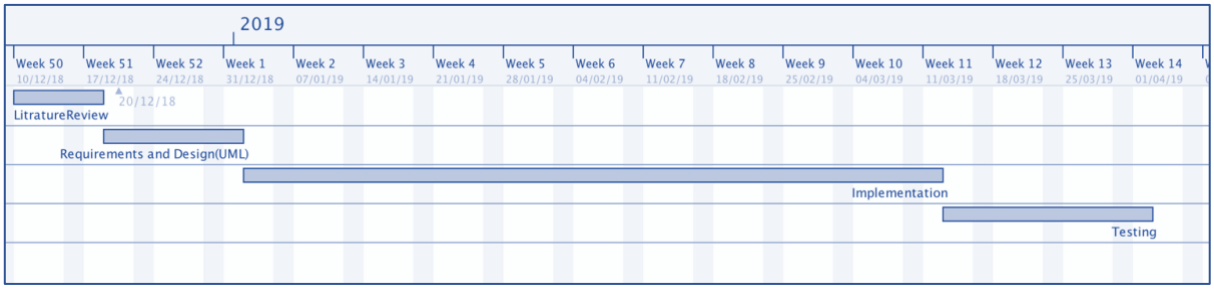
Appendix

Project Plan

Gantt chart



Milestones

Name	Begin date	End date
LitratureReview	10/12/18	18/12/18
Requirements and Design(UML)	19/12/18	01/01/19
Implementation	02/01/19	12/03/19
Testing	13/03/19	02/04/19

Personal Development Plan

Progress review and summary

The time plan made during the project specification was highly inaccurate in that I did not give myself enough time to accomplish the research phase of the project. As such the deadlines set for sections of the project were not met. The Gantt chart in the specification stated that by now I should have reached the application implementation phase. This has not been possible as in that time plan, I gave myself 7 days to find, read, analyse and draw conclusions from multiple articles and studies that would make up the research part of my project. This part took much longer than anticipated as finding and critically analysing multiple research articles is a lengthily process.

The adjusted time plan gives deadlines for the 4 major steps in the project still remaining, using the report structure as a guide. While these deadlines are updated with increased knowledge of how long given tasks take, they will also be reviewed hence forth on a weekly basis to review progress and make any necessary adjustments. A weekly review will also allow me to set short term targets to be met by the next week, which will depend on the exact position the project is in at the time.

The project research has largely been conducted, with interview results taken and analysed, and various academic articles and studies have been read and reviewed. The formal literature review has yet to be formed, as well as searching for possible links across studies and whether academic articles confirm or disagree with data gathered from interviews. I hope to complete the literature review as well as requirements and design during the Christmas break, so that starting in January, I can begin implementation of the application. The should provide enough time for testing and conclusion of the project before submission in mid-April.

Risk Analysis

Description of risk	Description of impact	Likelihood rating	Impact rating	Preventative actions
Illness or accident	Could case project deadlines to be missed and cause delays in completion of project resulting in an unfinished final product.	Low	High	Risk can be reduced by taking greater precautions to ensure personal health and safety. This would include promptly checking up any medical issues with a doctor to prevent a long-term illness that would impact progress on the project, as well as avoiding unnecessary risks such as jogging at night when visibility for cars is low and accidents can happen.
Poor time management	Missing deadlines and managing time poorly could result in an unfinished project, lacking in basic features and poorly analysed and tested with software bugs and errors.	Medium	High	Project progress will be reviewed on a weekly basis and noted down in a log along with any issues that set back the project – so that in the following week those issues can be addressed. Project progress will also be compared to the time plan on a weekly basis, and where the project diverts from the time plan, it will be remodelled to fit in all required work by the deadlines set.
Failure to acquire participants for surveys/interviews	Could cause an inability to conduct important research for the project resulting in a final product that is unfit for its target demographic.	Low	High	The methods used to attract participants for surveys and interviews will be diversified. - Several online websites and social media platforms will be used to advertise surveys to gain a large sample size for research conducted. - Participants for interviews will be gained through advertising to peers at Queen Mary's as well as by contacted students from other institutions through social media to participate in the study. - If the above two methods still do not attract the required number of

				participants for research, financial incentive could be provided though websites such as Google Surveys.
Failure to acquire required information	If suitable research articles and journals do not exist or cannot be accessed, there could be a lack of research available relevant to the project. This could make the final product unable to fulfil the projects objectives.	Low	High	Multiple online sources will be used to search for and find relevant research materials. In addition, research sections of public and academic library's will be used so that a suitable number of relevant studies can be used in the product research.
Inadequate testing	Poor testing methods and analysis could lead to bugs and errors in the final application passing through the testing phase without being fixed.	Medium	Medium – High (depending on bug)	The completed application will be debugged and tested by the developer and other testing participants using black-box and white-box testing methods to ensure thorough testing.