

Project Title: Heatmap mobile application for
managing coursework activities

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Academic Year 2018-2019

Section 1

Executive Summary

The overall focus of this research was to design a heatmap mobile application (a visual representation and indication of course activities and state of completion) towards ameliorating the challenge of effectively managing coursework activities. To achieve this objective, we undertook a primary research to understand students' sentiments in handling this challenge as well as validating our proposed idea and confirming if it would meet the needs of students. After undertaking the primary research, we designed a Proof of Concept to clearly demonstrate and conceptualise our research idea. The end product was simulated using a prototyping tool and a user testing was carried out to validate our conceptual design. Results gathered from the primary research and user testing reveals that students have the challenge of effectively managing their course task and would prefer a visually driven approach to managing their tasks. Furthermore, feedback from our user test reveals that students sees the proposed heat map application as a strategic step towards solving this problem, compared to their daily to-do-list and reminders because of the proposed integration with their expected courseworks on Blackboard and the ability to monitor and manage coursework demands and deadlines.

Section 2

Background

The need for this research is premised on the existing challenges students face in effectively managing their coursework activities, which is significantly related to their academic performance and overall mental wellbeing. From our primary research, as each semester unfolds, and course work activities continues to scale, the torrent of course work information from different course module demanding students' attention with respect to assignments, seminars, tutorials and group study begins to escalate and when not effectively managed could be overwhelming and lead to poor management of their coursework and ultimately affect academic performance. Thus, the need to find a personalised and visually driven approach to help manage the clutter of independent information and tasks in ways that makes it easier to track their current status and progress.

Aims

- i. To examine existing methods and tools that students utilize to manage their course work activities, tasks and schedules and identify their limitations.
- ii. To develop an interactive heat map mobile application, which gives a visual representation of students expected task and activities, as well as monitor the rate of completion of those tasks and activities in the various course modules.
- iii. To develop a reliable and valid measurement scale for evaluating the impact of the interactive heat map mobile application and test for the level of significance on completion of course work activities and tasks.

Objectives

To achieve the identified aims of the project, we strategically took the following steps:

1. We conducted a primary research and via the use of a survey research tool, we were able to identify existing tools that students use in the management of their coursework tasks and schedule as well as the limitation of these tools in the effective management of coursework activities.
2. We proposed and designed a proof of concept using heatmaps to provide pictorial representation of student's coursework activities, with the utility to manage their tasks and reflect the current state of their progression at keeping up with course activities in a visually driven way.
3. We conducted a Prototype test with our focused respondents in view to examine the potential impact of the Proof of concept in ameliorating the challenge of effective management of student's coursework activities, when it is developed to a fully functional product.

Stakeholders

Primarily our research directly impacts on students of the University of Westminster, with potential application to the broad sector of higher institutions in the United Kingdom. The intended beneficiaries of our research are Course leaders and Directors of learning who would begin to adopt insights drawn from this research as functional requirements in the design and management of student's coursework activities in collaboration with the Information Technology team.

Section 3

Methods

Overall a mixed method was adopted in answering the research questions. Using a subjective sampling technique, we conducted a primary research with 15 respondents selected from postgraduate students at the Faculty of Media, Arts and Design to understand students' sentiments on possible challenges faced in the effective management of their coursework activities, tasks and schedules. Using a questionnaire, we were able to capture their sentiments and reactions to our potential solution, which we used as a feed forward mechanism for our design considerations. (result attached in the appendix).

In the second phase of our research, we adopted an experimental research design method in the evaluation of our Proof of concept. Our proof of concept was designed using Sketch design software, while we used Invision prototyping software to simulate our designs in an interactive and visually engaging manner. The design piece was also tested with our respondents and the results are attached in the appendix of this report.

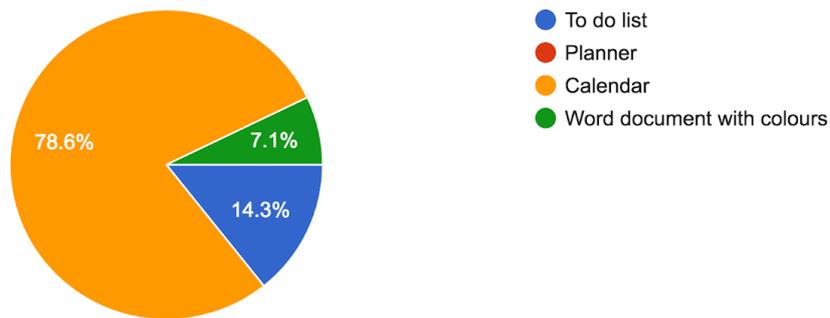
Section 4

Results

Primary Research

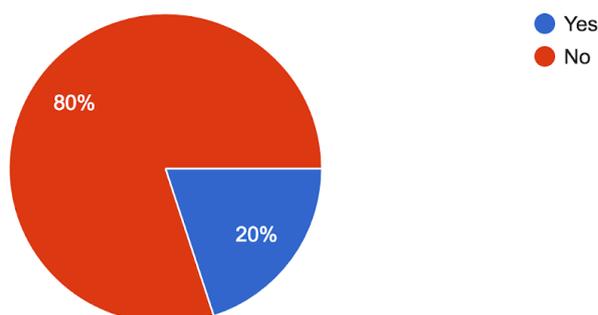
Overall, the result of our primary research conducted reveals that students find the use of heatmaps as most suitable to creating personalised and visually driven approach to prioritising their tasks and coursework activities, when compared to existing tools such as to-do-list applications and Google calendar which accounted for a larger percentage of use by our respondents. The comparative advantage for them would be the ability for the heatmap to reflect assigned tasks from blackboard automatically without manually entering them. Thus, making it easier to manage updated coursework activities in real time.

Existing tools used by students for managing their course work activities.



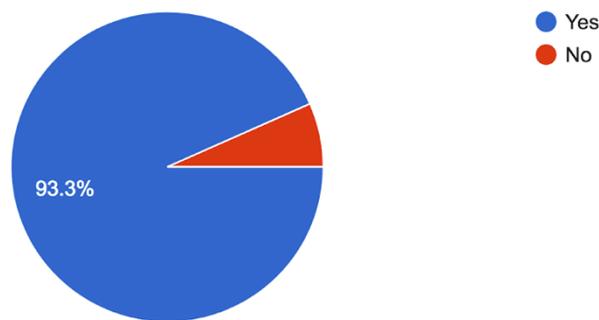
50% of the users recur to their preferred method daily. Although, most of the users do not check the Blackboard platform every day: 66.7% of the students check the platform soon after they have received the e-mail notification of their course works. However, they suffer from information overload when there are several emails to attend to.

Does Blackboard help you prioritise your task?



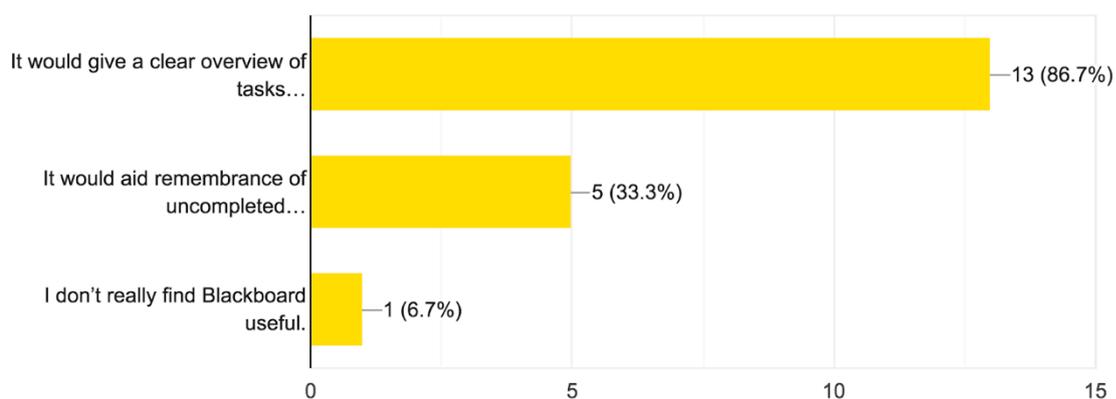
Although our respondents identify the use of email notifications as the primary means to checking their Blackboard account for new notifications on coursework activities, 80% of the respondents however expressed the use of Blackboard as not effective in having a holistic view of their tasks as well as managing their progress of their commitments to each task.

Would you consider the use of visual representation as a better way to capture all course work information sent to Blackboard?



93.3% of our respondents consider the use of visual representations and rich media as a better way to capture all coursework information sent from Blackboard, as this would provide them with a clear overview of their tasks and pending commitments to coursework activities.

Why would you consider the use of visual representation as a better way of capturing course work information sent to Blackboard?



The major underpinning as revealed by our research for student's motivation to the use of our proposed visual representation in capturing coursework information from Blackboard is having a clearer overview of their tasks and the ability to monitor the status of uncompleted tasks. The result of our research validates the use of our proposed heatmap solution towards solving this problem is statistically significant.

Experimental Design

At this stage we created a proof of concept using mock data from Blackboard for the departments of Music, Fashion and Interactive Media Practice. The mock data were used in creating prototypes of coursework activities and simulating how this tasks and activities could be managed using our proposed heat map application using Invision. (The details of prototypes and the result of our user test are attached in the appendix.). Overall our respondents provided both functional and user satisfaction feedback. The feedback gotten from the design perspective highlighted some design improvements which are noted for future development of this work, while from a functional perspective they expressed satisfaction in clarity of the use of the proposed solution to view and prioritise coursework tasks as well as the fact that it is time saving.

Section 5

Discussion

Possible Limitation: In the light of our identified aims and objectives as stated in our proposal our limitation is not being able to reach out to our predetermined sample size, considering also the opinions of undergraduate students of the Faculty of Media Arts and Design due to time constraints on the team. Additionally, although we intended to develop a Minimum Viable Product (MVP), our final outcome was however limited to a Proof of Concept as we were not able to get access to use data from Blackboard early in the project cycle and this interrupted our project timeline and commitments towards the application development. However, we were adequately able to conduct our primary research, design and test our Proof of Concept to validate our value proposition as stated in the problem statement and identified in our objectives.

The result of our research and feedback clearly aligns and validates our hypothesis on the positive impact of heatmaps as a way of ameliorating the challenge of helping students effectively manage their coursework activities. Although we anticipated in our design that users would be primarily interested in using the application for managing their coursework activities we however discovered that several other issues were of interest to our respondents in meeting their user experience needs. Factors like making a multi-language version and using it to manage their personal itineraries were issues our respondents considered for a comprehensive user experience. However due to time constraint we could not take the feedback from this sprint into the final consideration of the design but were noted for future developments and we highly recommend that these features be put in consideration for future research and design consideration.

Section 6

Conclusions and Recommendations

This research has been able to demonstrate in clear terms that there exists a challenge with students managing coursework activities as a result of having an unclear or unorganised set of tasks and how to effectively monitor them from start to completion. We have however proposed and validated our hypothesis on the use of heatmaps (visually driven illustrations using colour indications) is vital in helping to simplify complex information or coursework activities into simpler manageable tasks. However, we have also been able to identify key points to be considered by our stakeholders (Course Leaders and Directors of Learning) for future developments. Our recommendations are:

1. To promote an overall mental wellbeing, design consideration should be given to how to manage individual goals and objectives as well.
2. To have a seamless experience, coursework activities from Blackboard should be updated in real-time to students heatmap application.
3. It is also expedient to undertake focused group sessions with students across all the schools at the university of Westminster in order to extrapolate other unidentified concerns that could be related to managing their courseworks and how best they think it could be solved. This would ensure that the application is not just built for the students, but rather having the student's user experience at the core of development.
4. We also believe that considerations should be made to include push notifications to alert students when they are not giving enough attention to their overall pending tasks.
5. The colours used should also be done with the consideration of those who are visually impaired.

We are optimistic that the use of our proposed heatmap solution will not just help students effectively prioritise, but consequently affect their academic performance and overall mental well-being. So, we strongly recommend that efforts be put in place to implement this solution on a full scale.

Section 7.

Dissemination

We intend to create more awareness and have more feedbacks from students on their perspectives to our proposal and thus will like to circulate our reports via the Students Union publication, requesting students to participate in an online poll and survey where they can introduce various perspectives and share their thought on how best they think the challenge of managing coursework activities could be better handled. We are also interested in having our report circulated to our Stakeholders (Course leaders and Director of Learning), via the University publication, who would be able to draw valid insight from our research and proposal and implement this concept to promote effective coursework management for students at the university of Westminster. Consequently, we aim to have our reports shared at educational learning conferences that would promote the need and adoption of our proposed solution across higher institutions in the United Kingdom.

Section 8

Reflection

The research experience was instrumental in helping us understand how better to work as a team. It also opened us to understanding how well to achieve our tasks by working on tasks related to our areas of strength. We also learnt to help each other in achieving our sub tasks assigned to each members of the team.

The major challenges encountered in the project was having access to the Blackboard data for our development which delayed and interrupted our development and testing. To avoid this challenge in the future, we believe we needed to have done some level of feasibility study on the functional requirements for our proposed solution before embarking on our project, to have predetermined earlier in the development cycle, what the scope of our project can contain and begun early enough.

Appendix

Proof of Concept Design

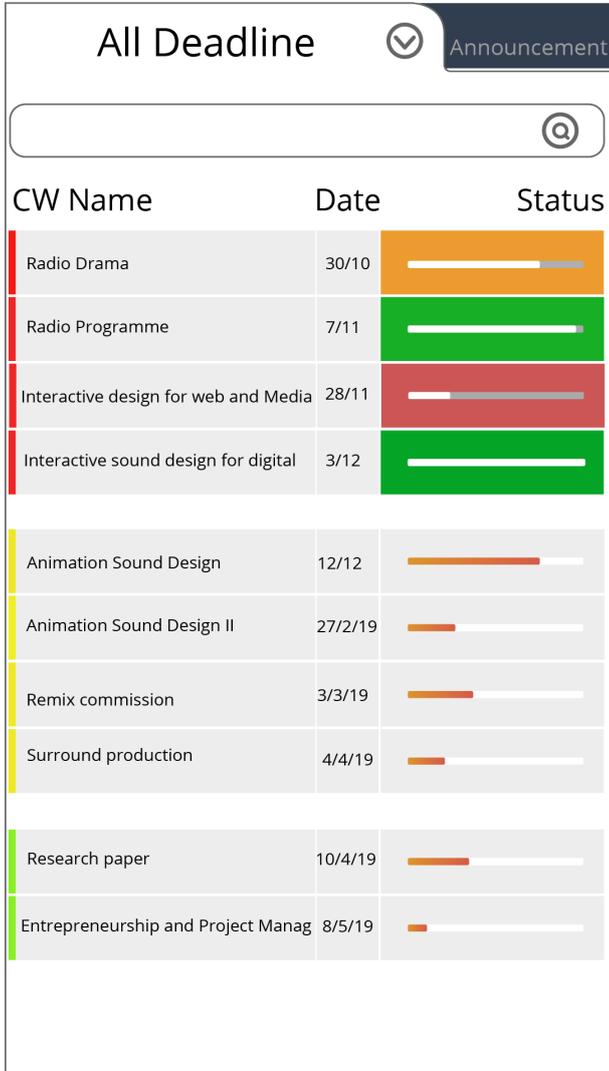


Figure 1. (List of all tasks completed, in progress and pending)

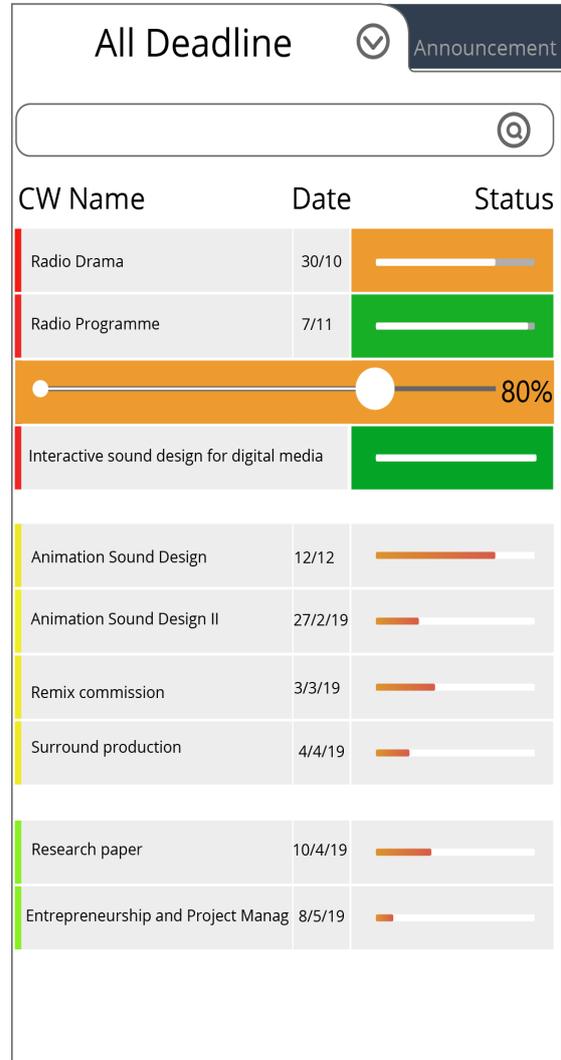


Figure 2. (modifying percentage completion of a task in progress)

Legend

-  Task Pending
-  Task in Progress
-  Task completed

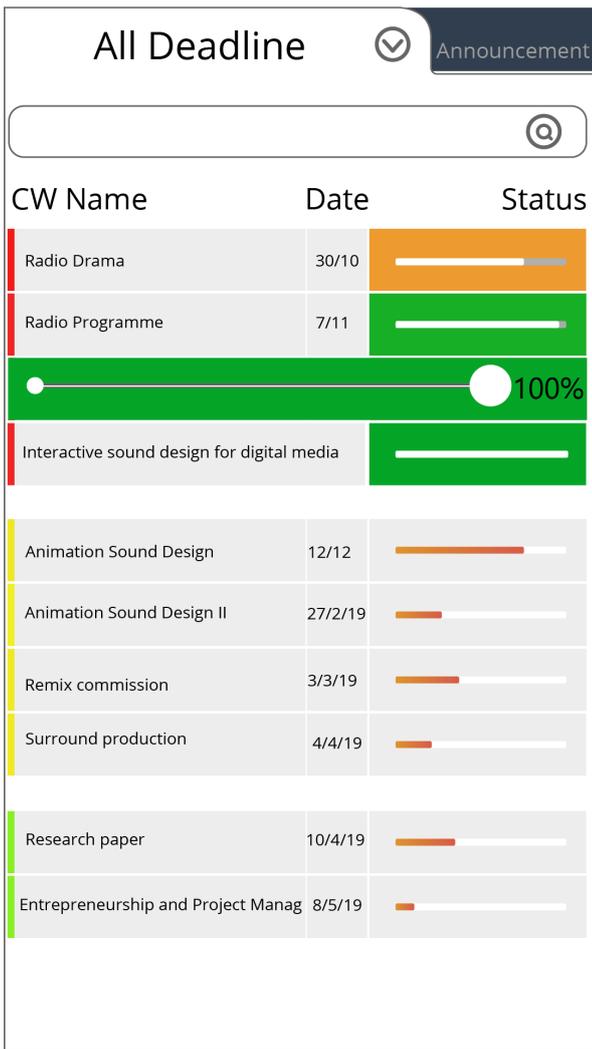


Figure 3. (modifying percentage completion of completed task)

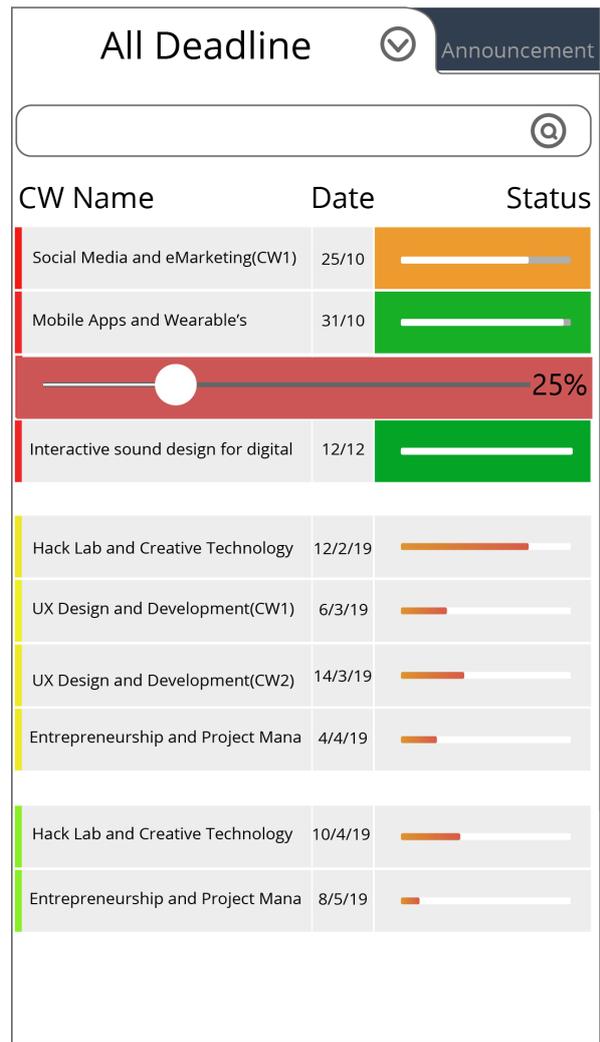


Figure 4. (modifying percentage completion of pending task)

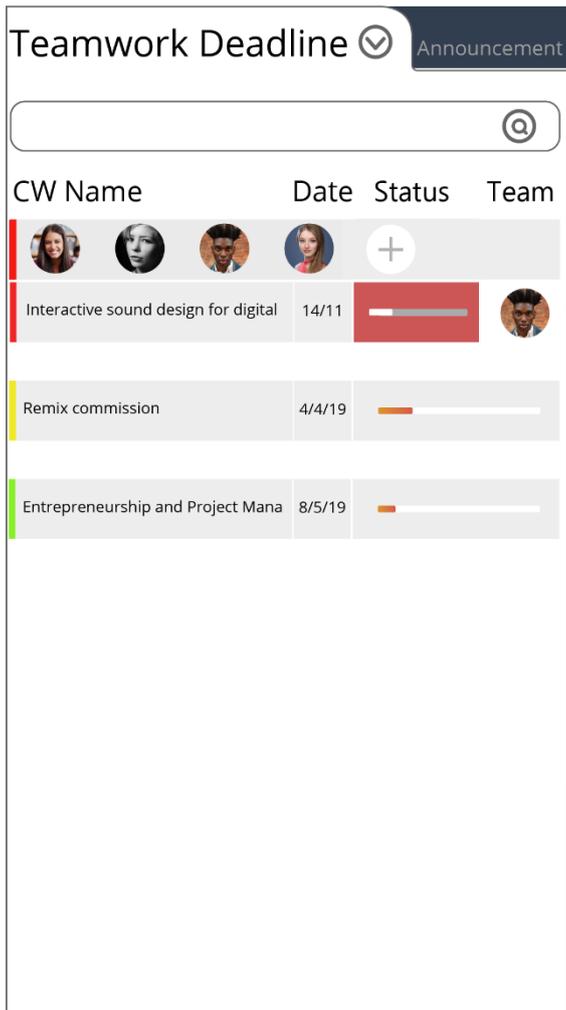


Figure 5. (percentage of group tasks)

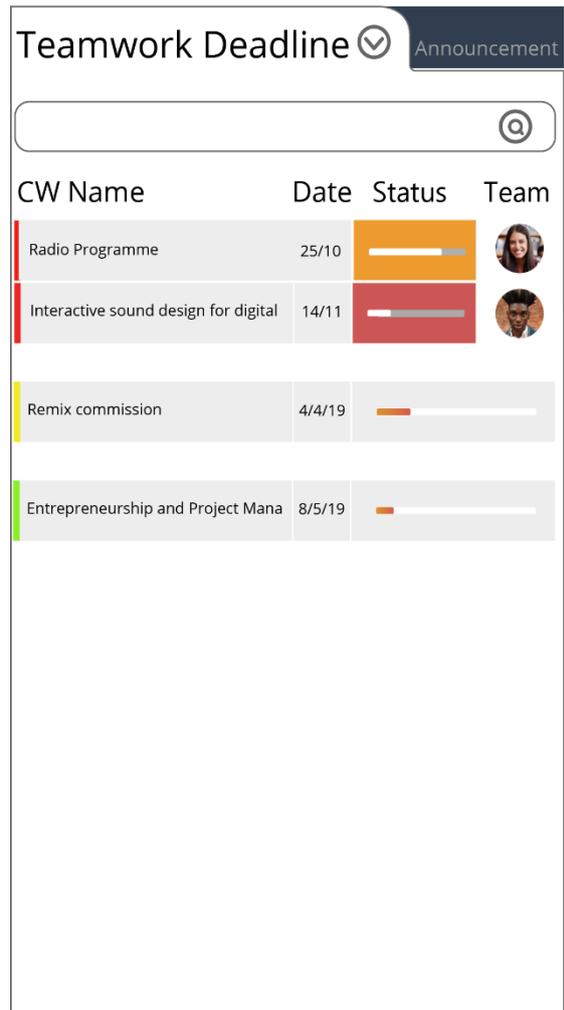


Figure 6. (percentage of group tasks)

Respondents Feedback (based on the proof of concept)

Major	Feedback detail
Journalism	<p>It's a clever choice to try this.</p> <p>Score :80</p> <p>But it should not totally displace BlackBoard</p>
IMP	<p>Quite useful for us who are relatively busy studying abroad but still working on assignments from China.</p> <p>Score :85+</p> <p>Saves time, straight forward, powerful.</p> <p>It would be good if it allows me to add my own assignments or missions</p> <p>Also the calendar page should show how long much time I need to accomplish my work.</p>
Diversity and the Media	<p>Will definitely use it because of the importance to meet deadline</p> <p>Score:90+</p> <p>1.But, I consider a better experience, if tasks could be linked to the module handbook for details or expectations about the course work submission.</p> <p>2. Having a multi-language version will be great.</p>
Digital Media	<p>I think to some degree it can replace the BB and clearly clear show what I need to do</p> <p>If its use is not limited to students in the school, I will recommend it to others.</p> <p>Overall the design is good.</p> <p>Score:90+</p> <p>I think the status should show not just the process of completion, but also list of what is left to be done.</p>
Film, Television and Moving Image	<p>Excellent design and idea for the Heat map !</p> <p>Will Definitely to use the app. Quite useful for me.</p> <p>Score:80+</p> <p>And the weakness is that the color is not very attractive and distinct.</p> <p>You should also consider the ability to set notifications</p>

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Creation Date: 25/09/2019 16:32:00
Change Number: 2
Last Saved On: 25/09/2019 16:32:00
Last Saved By: Moonisah Usman
Total Editing Time: 1 Minute
Last Printed On: 25/09/2019 16:32:00
As of Last Complete Printing
Number of Pages: 12
Number of Words: 2,536
Number of Characters: 13,909 (approx.)