

# BLOCK

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## Problem

Social media distracts students trying to work on their school assignments. For instance, ninety percent of 18-29 years old use Facebook (Meier 2006) and many students “report that the social network site... Facebook ‘makes them’ lose track of time and that they delay tasks they actually intended to get done, such as writing term papers or preparing for final exams.” (Meier 2006) Similarly, in our interviews, several students reported spending time on social media during times they intended to use to complete school assignments or study for exams. Some of the most popular social websites that students get distracted by include Facebook, Youtube, and Instagram. (Meier 2006) Our sister team said that these social media sites are accessed through many devices including laptops, tablets, and phones, but one of the most popular devices is laptops.

One reason why students spend time on social media websites instead of doing their schoolwork is that social media is more pleasurable than homework. The students we interviewed agree that being on social media is more enjoyable than schoolwork. These students “use pressure to force themselves to focus, but this pressure is unpleasant and depends on external regulation.” (Hensley 2016) This explains why students prefer spending time on social media sites over doing schoolwork.

Students are negatively impacted when they get distracted. One negative impact is that students have less time to complete their work because they spent too much time on social media. The students we interviewed reported that when they rush to complete assignments, the quality of their work suffers and they get lower grades. They also report getting less sleep when they have less time to complete their work.

## Solution

In order to solve this problem we have decided to create a desktop application that reduces students’ ability to procrastinate. The application does so by blocking certain social media websites as well as helping students schedule out when to complete an assignment. Our application blocks students from accessing certain websites that they have added to a ‘blocklist’ during ‘time blocks’ or times that they have designated to complete assignments. The idea behind our application is that if students are no longer able to procrastinate on social media websites like Youtube or Facebook, they will spend more time studying and working on assignments and less time on social media. We decided to create a desktop application because it is one of the more popular devices students use to procrastinate and to limit the scope of our project.

There are many applications that attempt to solve this problem but we found that they tend to have significant weaknesses. For instance, many of these applications motivate the user to be productive through competition. This requires the user’s friends to actively use the application which takes a large amount of coordination on the user’s end. Additional weaknesses in other applications include the reliance on tools such as notifications and to do lists. According to our sister team, notifications and to do lists are often unsuccessful for chronic procrastinators because students are already aware of their assigned work and so the notifications and to do lists are redundant and quickly ignored. Other applications are ineffective because they simply give the user data about their technology usage (how much time spent on a device, what the user was doing on that device, etc.). The problem with this is that the user already knows that they need to spend more time doing homework or else they would not have downloaded the application in the first place. A larger, overarching problem with many of these applications is that they require a proactive step in the moment of procrastination. We intend our solution to come in some time *before* procrastination, not at the moment of procrastination. This is further explained below.

## Application Screens

### Calendar Page (main/default page)

Our main page is a calendar with time blocks and deadlines (Figure 28). The deadlines are placed on the calendar in the location that represents the time when assignments are due and time blocks are placed at a time designated by the user. The calendar defaults to the week view (Figure 1), but the user has the option to switch to the month view (Figure 4) clicking on the week and month button at the top of the page. The current day has a red dot behind the date, the text for this date is white, while the rest of the text on the screen is black. Past time is in a darker gray than the future time so the user will be able to clearly see how much time they have left until a deadline. The calendar has arrows on the sides where the user can go move by a week (Figures 2 and 3 respectively) or month (Figures 5 and 6 respectively) so they can see what deadlines have passed and what deadlines are coming up. If a user tries to go to a website that has been blocked in their browser, then they will be brought to an error screen (Figure 47).

The user can switch between week and month views using “Week” and “Month” button on the top of the page. When on week view, the text “Week” is in white and the background on the button is black and the text “Month” is in black and the background is in white. The color of the text and background is swapped when the “Month” button is clicked. Each column represents a day and the date is in the red header at the top. The first column is the current day. The next six columns represent the next six days. In the month view, the calendar begins on the current day and continues until exactly a month from the current day. Unlike week view, the first column represents Sundays, second column Mondays, etc. and the first day is placed in the column that corresponds to the current day of the week. In the month view, the user is unable to drag and drop, edit, duplicate, expand, shrink, and delete time blocks. This is because it is too difficult to add that much functionality when each day is so small. The month view is mostly so that a user can get some perspective on the deadlines (Will the coming weeks have less or more deadlines than the previous weeks? Are all the deadlines clumped together? etc.). The week view is the default view because it has the most functionality and contains the more pressing time blocks and deadlines.

In any of the popup boxes in our application, if the user clicks the red ‘X’ button in the upper right hand corner or the ‘cancel’ button at the bottom on any of the pop up boxes, the application will stop performing the action the box was attempting to complete and close the box. If the user clicks the ‘save’ button at the bottom of any of the pop up boxes, then that application will apply the information supplied by the user to the application and close the box. After pressing any of these buttons, the user will be brought to the current week, in week view.

The user can also import deadlines from a website onto the calendar by clicking the “Import Deadlines” button at the top of the page. Clicking this button brings up a box with several websites from which to import deadlines (Figure 7). In this box, Canvas and Catalyst are already established buttons, but the user can also add additional websites by typing the URL in the text box and clicking the ‘add’ button. Once the website is selected, the user is brought to the login page for website (Figure 8), if the user needs to login. Then the application imports deadlines from a website’s calendar onto our application’s calendar and a loading box is shown (Figure 9). Once, the deadlines are loaded, a box pops up (Figure 10). If a user selects a website with no calendar to import deadlines from, a website with a calendar but no deadlines, or a website that the application is already importing from then the user will be brought to error pages (Figures 11, 12, and 13 respectively). In Figures 11 and 12, if the user clicked ‘try again,’ they will be brought back to Figure 7. Once deadlines have been imported, the deadlines on the

calendar are labeled with the class and assignment name and with a line beneath it with a selected color (Figure 14). The algorithm for choosing a color is as follows:

1. Select any color from a preselected list of colors that is not used within a month of the deadline.
2. If there are more deadlines within a month of the given deadlines than there are preselected colors, lighten or darken a given color by 50% and use that color.

The deadlines are automatically checked for changes and updated if needed every time the user opens the application. Importing deadlines directly from the website reduces work for the user, prevents the user from making an error while inputting a deadline, and keeps the deadlines up to date. Deadlines are important because they give the user a reason to create time blocks and remind the user of the tasks they should do.

The user can create a time block by clicking the “Add Time Block” button at the top of page or clicking and dragging down an empty period of time on the calendar. When either of these actions are done, a box comes up (Figures 20, 21, and 22). The box asks for more details about the new time block. There is a dropdown menu of all upcoming deadlines that is used to associate the time block with a deadline. If there are more than four upcoming deadlines, the menu is scrollable. The user can also select how long they can edit the time block by selecting a time in the dropdown of preselected times (30min, 1hr, 4hrs, 6hrs). The box also has a textbox to add notes about the deadline. The user can edit blocklist for that particular time block. This blocklist has the default blocklist (found in the settings page) already checked off, but the user can uncheck some of the default websites. When the user presses the ‘save’ button at the bottom of the box, the box closes and a time block is entered onto the calendar (Figure 24). If the user clicked and dragged to bring up the box, then the time block will automatically be placed over that time. If the user clicked the “Add Time Block” button to bring up the box, then the time block will automatically be created for a period of five hours and will begin on the soonest hour that is at least an hour away. For instance, if the user creates a time block at 2:37pm, then the time block will automatically start at 4:00pm. If the user creates a time block at 1:00pm, then the time block will automatically start at 2:00pm. If the user attempts to place a time block over a deadline, an error message will come up (Figure 23). If they press ‘continue’ on this error message, then the time block will be scheduled over the deadline.

The user can also delete, expand/shrink, move and duplicate time blocks. The user can delete by clicking the trashcan button in the bottom, left-hand corner of each time block. This will remove the time block from the calendar. The user can duplicate the time block by clicking the button in the lower, right-hand corner of the time block. The duplicated time block will automatically be placed immediately after the original time block (Figure 25). The user can edit an existing time block by clicking the image in the upper left-hand corner of the time block. This will bring up the box with the time block information (Figure 22). The user can expand and shrink time blocks by dragging the edges of the time block to the desired times on the calendar (Figures 27, 28, and 29). The user can move an entire time block by clicking and dragging the image in the center of the time block (Figures 25 and 26). These functions allow the user to easily manipulate and personalize time blocks to the users’ needs. However, the user cannot edit, move, expand/shrink or delete time blocks after the time specified in the drop-down menu labeled “edit block time up to” which is in the box with the time block information (Figure 22). For instance, if the user selects 30 minutes in the “Edit block time up to” in the drop-down menu, then the user cannot edit the time block between 30 minutes before the time block and the end of the time block. However, there is an option in the settings that allows the user to give themselves the ability to delete time blocks during this period, but that will be explained in the settings page.

Each of these time blocks’ color correspond to the color of the deadlines. This way it is easy to see which time block goes with what deadline and the connection between the time block and the work that needs to be done is clearer. The calendar allows people to visually see

how much time they have left until a deadline and schedule out times to complete schoolwork which allows the user to improve time management.

## Settings Page

The user also can change settings in the settings page (Figure 31). The settings page can be accessed through the button labeled “Settings” at the top of the page. If the user clicks the left pointing arrow at the top of the page, the settings are not saved and the user is brought back to the last visited page. The first section of the settings page is the Deadlines section. The Deadline section shows from which websites the application is currently taking deadlines. The user cannot add websites within settings - the user can only do this from the main page using the ‘Import deadlines’ button. The user can stop importing deadlines from a website by clicking the delete button to the right of the website. This will remove all deadlines that were imported from that website and all associated time blocks.

There is also a Notifications section on the settings page. The user can determine when they want notifications for deadlines and time blocks. For deadline notifications, they have the options of 2 weeks before, 1 week before, 5 days before, 3 days before, and 1 day before the deadline. For time block notifications, the users have the options of 1 day before, 6 hours before, 3 hours before, 1 hours before, half hour before, 10 minutes before, and time of the deadline. They can select one of these options from each dropdown menu. The user can determine if they want desktop, text message, and/or email notifications. The user can select these by checking and unchecking the different options. The notifications prevent the users from forgetting about time blocks and deadlines and reminds them to schedule a time block for deadlines. The user can enter their emails and phone numbers for email and text notifications by clicking on the link labeled “Click to add [X]” (Figure 31). Once they have clicked that link, then a small text box will open (Figure 32) and the user can enter their phone number and email. Once they have entered their information and have clicked somewhere outside the box, their information will be saved and shown where the link once was located (Figure 33).

In the settings page, there is also the Default Blocklist section. The default blocklist is used to store websites that the user usually wants blocked so the user does not have to add websites every time they create a time block. The default blocklist has a text box labeled “Add new website.” The user needs to type the website URL into the textbox and click the “add” button and then the new website will be added to the bottom of the list (Figures 36 and 37). If the user attempts to add a website that does not exist, red text “Unable to find [url]” will appear to the right of the text box (Figures 34 and 35) The user can delete previously added websites from the list by clicking on the “Delete” button to the right of the website.

The user can also choose whether they want to delete a time block during a time block using a switch at the bottom of the page labeled “Turn off time block during”. This is for emergency situations in which the user might need to use some websites that they originally blocked. The black box with white text is selected, the gray box with black text is unselected. If ‘yes’ is selected, then the user can delete the restrictions during the time block, thereby allowing themselves access to the websites that they have blocked. If ‘no’ is selected, then the user cannot delete the restrictions during the time block. ‘No’ is selected initially and the user must go into settings to switch it to ‘yes’ if they want to delete restrictions during the time blocks.

## Notifications

The application also has three different types of notifications - email (Figure 38), desktop (Figure 39), and text message (Figure 40). These notifications are given at time specified by the user in the settings page. If the user clicks ‘Show’ in the desktop notification, the application will open and the user will be brought to Figure 28.

## Colors and Fonts

We chose the colors in our application because red is a color that expresses urgency (Chen 2012) and all the other colors are subtle and go well with red. Urgency is a sentiment we wanted to express in our application because it will help prevent procrastination. We chose the font used in our application because it is simple and easy to read.

## **Evaluation**

We conducted a couple interviews with groups of students who struggle with social media distractions while doing homework. At first, the group that had this distraction problem said the solution we provided might solve their problem but another problem might be not having the motivation to use the app. We redesigned our application to not only include time blocks but to also include deadlines imported from the user's school calendars. This way the user gets notifications for upcoming deadlines so that they can set up time blocks for those deadlines, the users will also be notified when the time block is approaching. We also have evidence that this design works because we tested the application with two other groups who had no idea of what the initial design was. The other two group confirmed that this design will work for them. Since it already imported their school calendars, it motivates them to open and use the app. We also interviewed other students outside of this class and they confirmed that this is an application they can use to overcome the problems of distraction and poor time management.

## **Limitations**

There are several limitations to our design. The first limitation is that our design can only block distractions on desktops/laptops. A user can still access social media on other devices during time blocks. Another limitation is that our application will only work for students who actively try not to procrastinate. Our application takes a lot of planning and while the application automates as much as it can and reminds the student to take certain actions, it will be the student who will ultimately determine whether or not they will procrastinate. On a similar note, another limitation of our application is that there is a fine balance between preventing users from procrastinating and controlling their behavior. Some people might appreciate less control because they will have less opportunity to procrastinate while others may not want an application to control their behavior at all. This might prevent people from using our application because they do not want to give it any control while others might find ways to abuse the control they have. For instance, a user has the option to turn off a time block if decided that they want that control in advance and a user can uninstall the application from their desktop. If a user is determined to procrastinate, our application will let them. Our application will also not work well for classes that do not post their deadlines online. While rare, it is not unheard of to have a class that only gives the deadlines during class. In that case, there would be no deadlines on the calendar. The user could work around this problem by making time blocks with the respective deadline in the notes section, but that reduces the usefulness of the color coordination and the calendar function. Our application also only works well for schoolwork. While not impossible for the user to use the application for tasks that are not schoolwork, the application is much less useful because those deadlines would not be on the calendar. The last limitation of our application is that the color coordination between the deadlines and the time blocks only work well for those people who are not colorblind. While the application is not impossible to use for colorblind people, the connection between the deadlines and the time blocks will not be evident.

## References

Chen, Y., Lien, C., Yang, C., Jhong, Y., Chen, T., & Lui, S. (2012, October 1). P1-10: The Association between Colors and Emotions. Sage Journals. Retrieved from <http://journals.sagepub.com/doi/abs/10.1068/if624>

Meier, A., Reinecke, L., & Meltzer, C. E. (2016, November). "Facebocrastination"? Predictors of using Facebook for procrastination and its effects on students' well-being. ScienceDirect. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0747563216304411>

Hensley, L. C. (2016, May). The Draws and Drawbacks of College Students' Active Procrastination. Project Muse. Retrieved from <https://muse-jhu-edu.offcampus.lib.washington.edu/article/619495>

# Mockups



**Figure 1.** The main page before any deadlines are imported and before any time blocks are created.



**Figure 2.** The main page when the left arrow is clicked. The previous week is shown on the calendar.



**Figure 3.** The main page when the right arrow is clicked. The next week is shown on the calendar.



**Figure 4.** The main page when the month button is clicked. The main page consists mostly of a calendar that begins with the current day and extends for the next month.

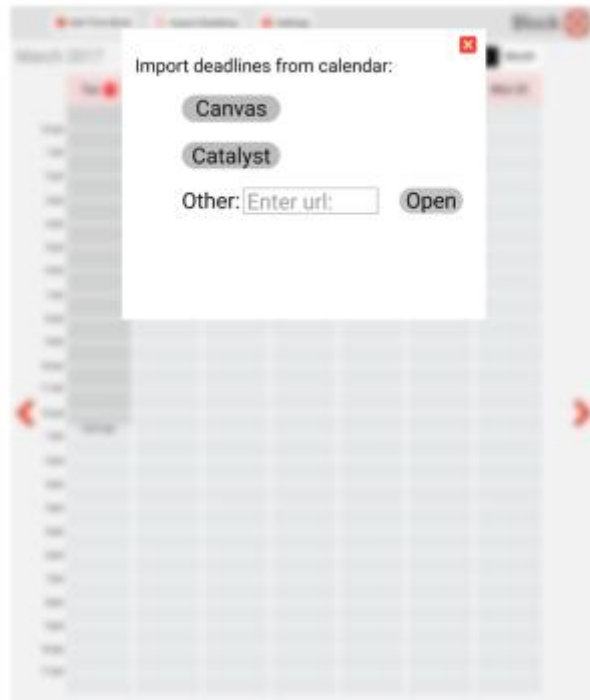




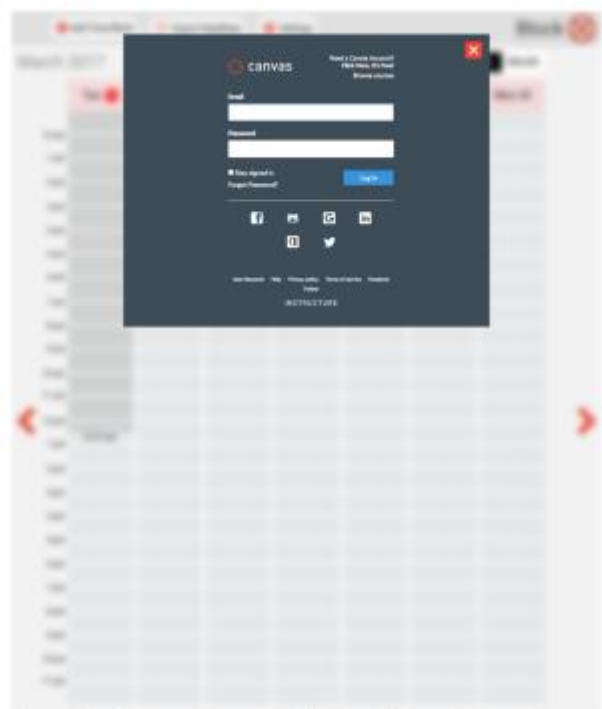
**Figure 5.** The main page when the month button and left arrow is clicked. The previous month is shown.



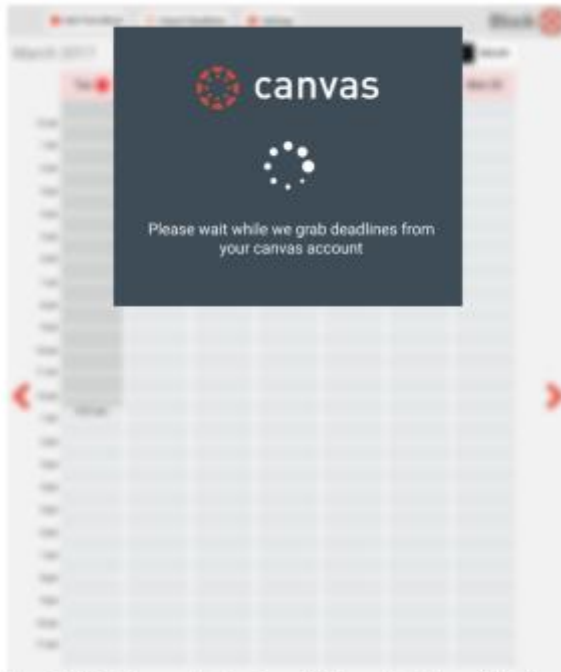
**Figure 6.** The main page when the month and right button is clicked. The next month is shown.



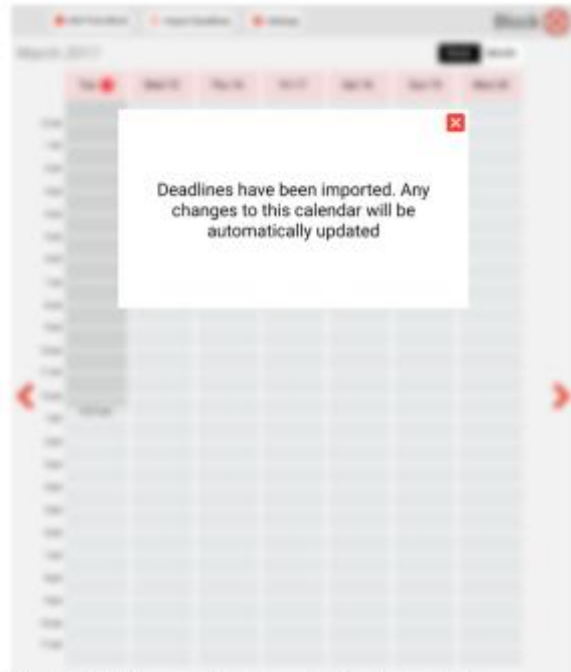
**Figure 7.** This box opens when the user clicks the import deadlines button. The user has the option to import deadlines from Canvas, Catalyst, or another website.



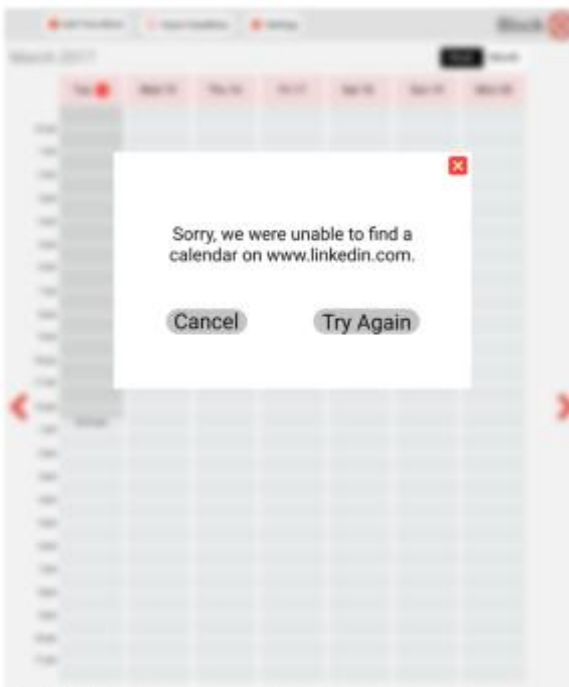
**Figure 8.** After the user selects a website (Figure 7), the user is prompted to sign into the website (only if needed). An example of the Canvas login page is shown above.



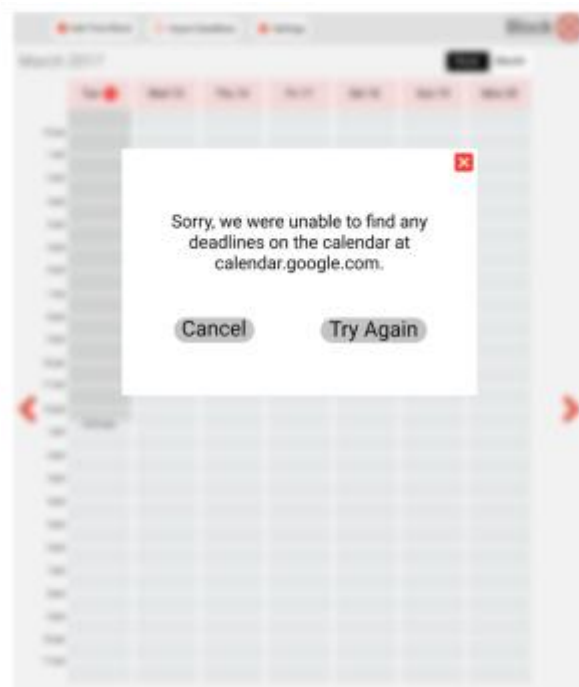
**Figure 9.** This is the screen that is shown while the application is grabbing the deadlines, choosing the colors for the deadlines, and placing the deadlines on the calendar.



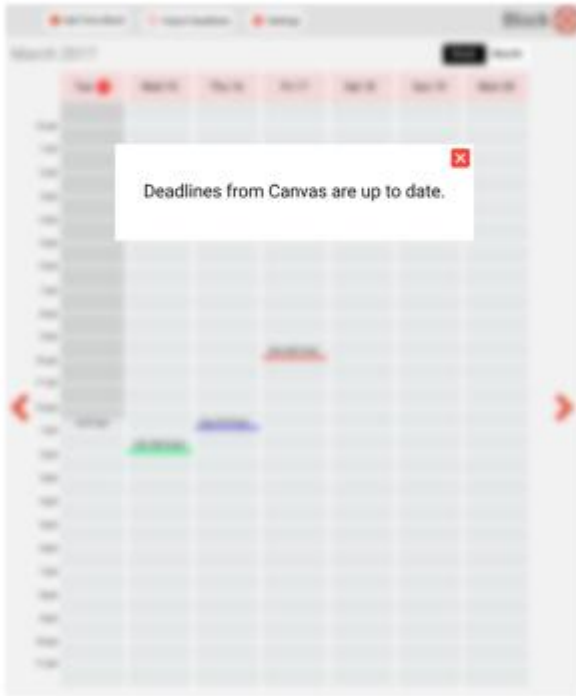
**Figure 10.** This is the screen that is shown after the deadlines have been updated.



**Figure 11.** This is the error message that is shown when the user types in a website that does not have a calendar in it.



**Figure 12.** This is the screen that is shown while the user types in a website with an empty calendar.



**Figure 13.** This is the screen that is shown after the application imports deadlines onto the calendar.



**Figure 14.** This is the main screen after the deadlines have been imported.



**Figure 15.** This is the main screen after deadlines have been imported, and the right arrow has been clicked. In this case there is no deadlines because there nothing is due from March 21st - March 27th because of spring break.



**Figure 16.** This is the main screen after deadlines have been imported and the left arrow has been clicked.



Figure 17. This is the main screen, on month view, after deadlines have been imported.



Figure 18. This is the main screen, on month view, after the left arrow has been clicked and the deadlines have been imported.



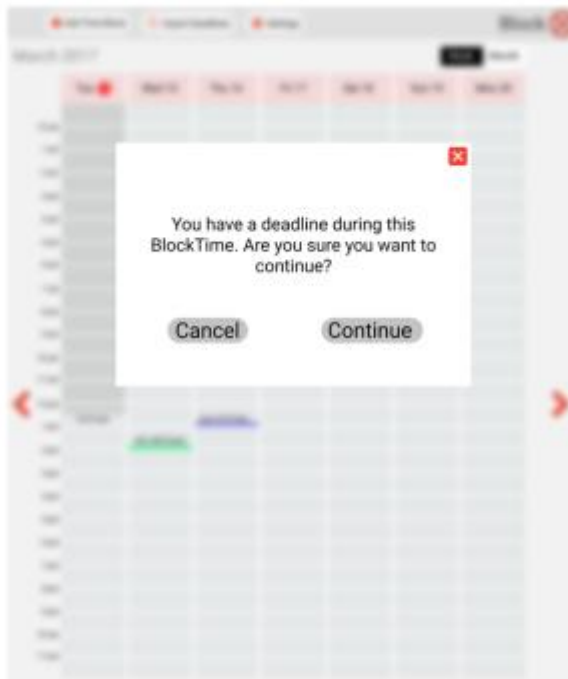
Figure 19. This is the main screen, on month view, after the left arrow has been clicked and the deadlines have been imported.



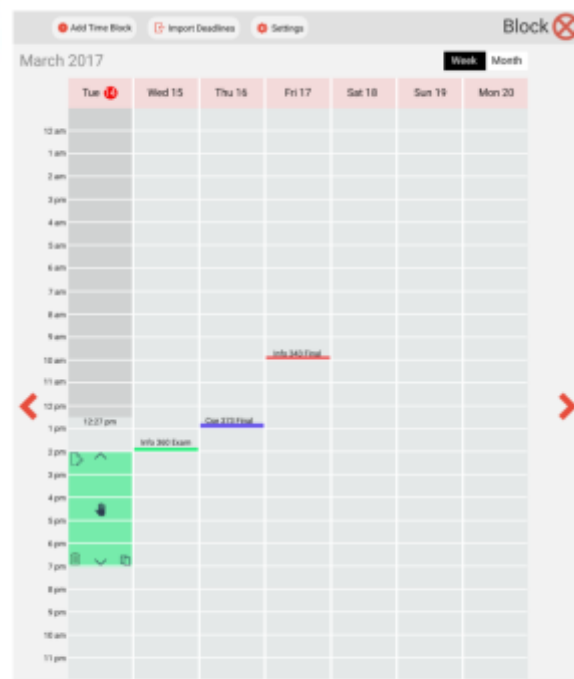
Figure 20. This is the box that the user uses to create and input information about a time block.

**Figure 21.** This is what Figure 20 looks like with the dropdown menu dropped down, the textbox filled out, and the block list edited.

**Figure 22.** This is what Figure 21 looks like after the user is done filling out the form.



**Figure 23.** This is the error screen that is known when the user tries to schedule a timeblock over the deadline.



**Figure 24.** This is the main screen looks like after deadlines are imported and a time block for the INFO 360 exam deadline is added.



Figure 25. This is the main screen looks like after the time block in Figure 24 is duplicated.



Figure 26. This is what the main screen looks like after the duplicated time block in Figure 25 is dragged to a new location.



Figure 27. This what the main screen looks like after a new time block for the Cse 373 deadline is created.



Figure 28. This is what Figure 27 looks like after the CSE 373 Final time block is expanded downwards.



Figure 29. This is what Figure 28 looks like after the CSE 373 Final time block is expanded upwards.



Figure 30. This is what the main screen, in month view, looks like once deadlines have been imported and time blocks have been created.

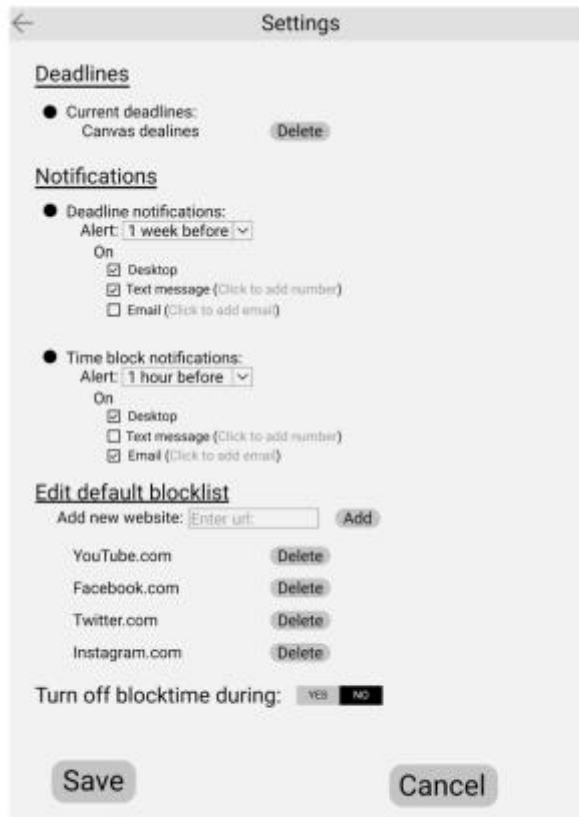


Figure 31. This is the settings page before the user enters anything.

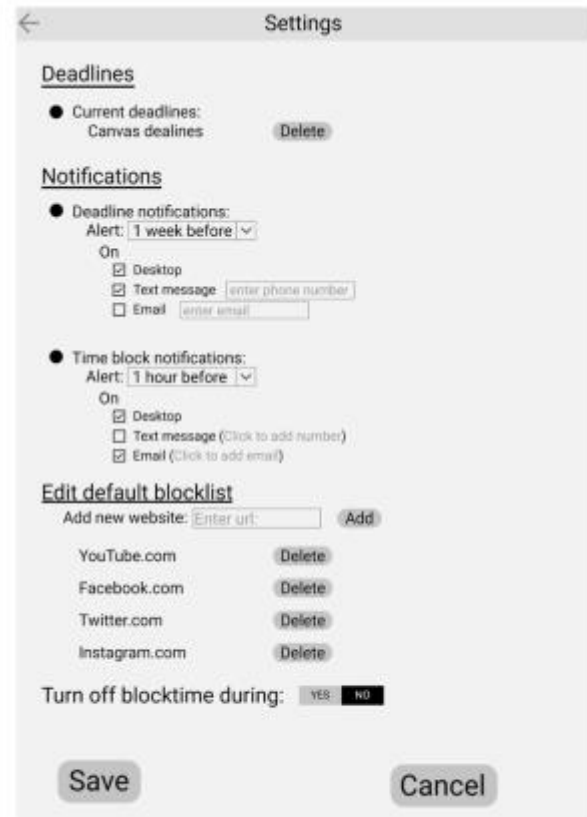


Figure 32. This is the settings page as the user enters their phone number and email.

Settings

Deadlines

- Current deadlines: Canvas deadlines Delete

Notifications

- Deadline notifications: Alert: 1 week before ▼
  - On
    - ☒ Desktop
    - ☒ Text message (206-555-5555)
    - ☐ Email (cashmeoutside@uw.edu)
- Time block notifications: Alert: 1 hour before ▼
  - On
    - ☒ Desktop
    - ☐ Text message (206-555-5555)
    - ☒ Email (cashmeoutside@uw.edu)

Edit default blocklist

Add new website:  Add

YouTube.com Delete

Facebook.com Delete

Twitter.com Delete

Instagram.com Delete

Turn off blocktime during: YES NO

Save Cancel

Figure 33. This is the settings page after the user enters their phone number and email.

Settings

Deadlines

- Current deadlines: Canvas deadlines Delete

Notifications

- Deadline notifications: Alert: 1 week before ▼
  - On
    - ☒ Desktop
    - ☒ Text message (206-555-5555)
    - ☐ Email (cashmeoutside@uw.edu)
- Time block notifications: Alert: 1 hour before ▼
  - On
    - ☒ Desktop
    - ☐ Text message (206-555-5555)
    - ☒ Email (cashmeoutside@uw.edu)

Edit default blocklist

Add new website:  Add

YouTube.com Delete

Facebook.com Delete

Twitter.com Delete

Instagram.com Delete

Turn off block time during: YES NO

Save Cancel

Figure 34. This is the settings page as the user attempts to enter a new website to the default blocklist.

Settings

Deadlines

- Current deadlines: Canvas deadlines Delete

Notifications

- Deadline notifications: Alert: 1 week before ▼
  - On
    - ☒ Desktop
    - ☒ Text message (206-555-5555)
    - ☐ Email (cashmeoutside@uw.edu)
- Time block notifications: Alert: 1 hour before ▼
  - On
    - ☒ Desktop
    - ☐ Text message (206-555-5555)
    - ☒ Email (cashmeoutside@uw.edu)

Edit default blocklist

Add new website:  Add Unable to find reddit.com

YouTube.com Delete

Facebook.com Delete

Twitter.com Delete

Instagram.com Delete

Turn off block time during: YES NO

Save Cancel

Figure 35. This is the settings page with the error the user gets after they have attempted to add a website that does not exist into the default blocklist.

Settings

Deadlines

- Current deadlines: Canvas deadlines Delete

Notifications

- Deadline notifications: Alert: 1 week before ▼
  - On
    - ☒ Desktop
    - ☒ Text message (206-555-5555)
    - ☐ Email (cashmeoutside@uw.edu)
- Time block notifications: Alert: 1 hour before ▼
  - On
    - ☒ Desktop
    - ☐ Text message (206-555-5555)
    - ☒ Email (cashmeoutside@uw.edu)

Edit default blocklist

Add new website:  Add

YouTube.com Delete

Facebook.com Delete

Twitter.com Delete

Instagram.com Delete

Turn off block time during: YES NO

Save Cancel

Figure 36. This is the settings page as the user reenters the new website to the default blocklist.



←

Settings

Deadlines

●

Current deadlines:

Canvas deadlines

Delete

Notifications

●

Deadline notifications:

Alert: 1 week before ▾

On

☒

Desktop

☒

Text message (206-555-5555)

☐

Email (cashmeoutside@uw.edu)

●

Time block notifications:

Alert: 1 hour before ▾

On

☒

Desktop

☐

Text message (206-555-5555)

☒

Email (cashmeoutside@uw.edu)

Edit default blocklist

Add new website:

Enter url:

Add

YouTube.com

Delete

Facebook.com

Delete

Twitter.com

Delete

Instagram.com

Delete

Reddit.com

Delete

Turn off block time during:

YES

NO

Save

Cancel

**Figure 37.** This is the settings page after the user has added a new website to the default blocklist.

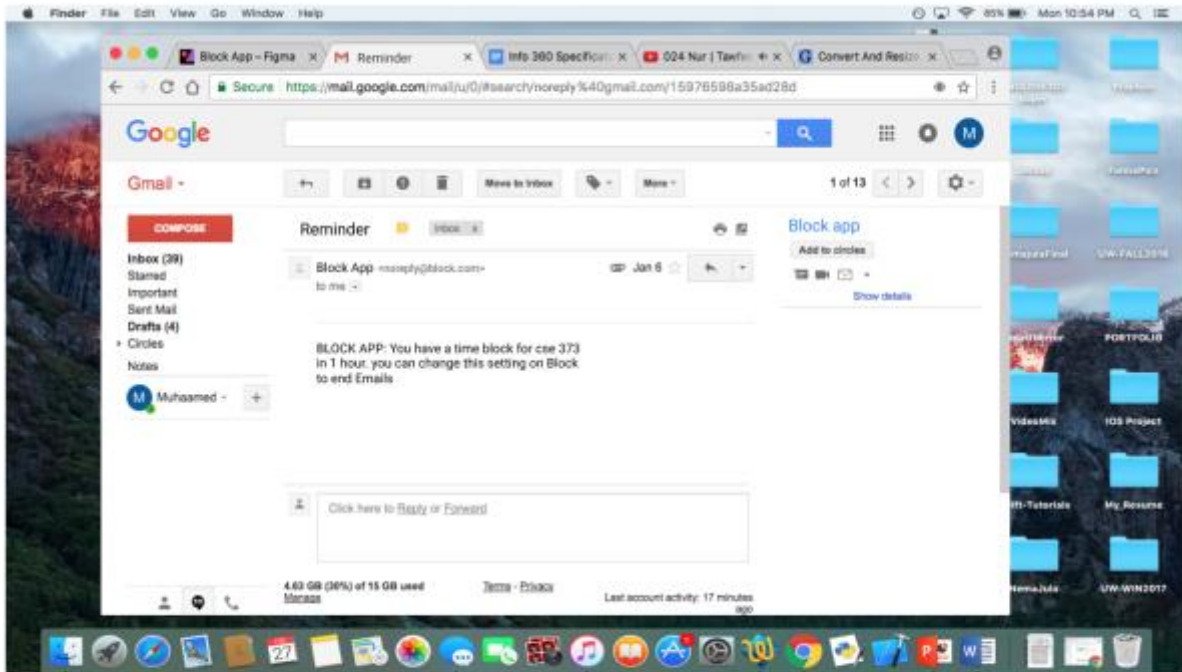
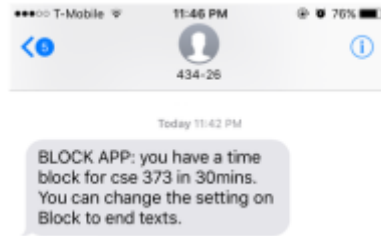


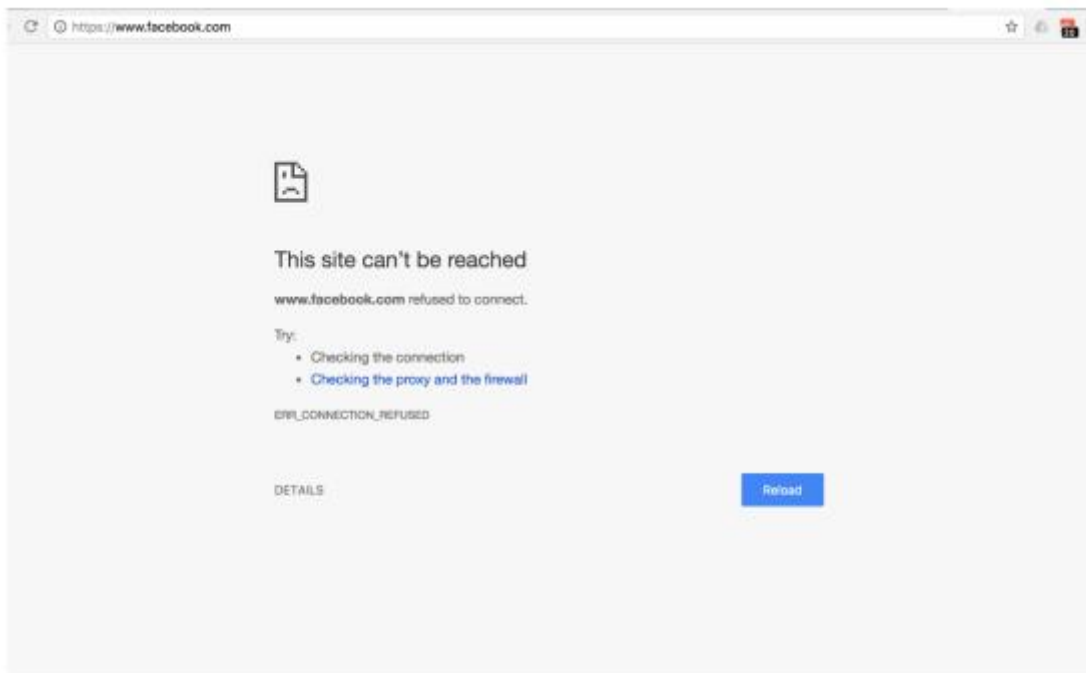
Figure 38. This is what the email notification looks like.



Figure 39. This is what the desktop notification looks like.



**Figure 40.** This is what the text notification looks like.



**Figure 41.** This is what the browser looks like when the user tries to navigate to a blocked website. Facebook.com is used in this example.