Lab 2: Requirements & Specifications Sections 1 & 2

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1 Introduction

Section 1 will review the purpose and scope of the application KnowTime. Important terms to better understand KnowTime will be included as well as the references used to support KnowTime's goals and features.

1.1 Purpose

This document will provide the software requirements specification and scope for the KnowTime application.

1.2 Scope

Students often struggle with time management. Studies have demonstrated that 78% of students report that they struggled with time management at some point during school while 80% of instructors stated that they noticed their students struggle with time management all or most of the time (Cengage Learning Student Engagement Insights Survey, Spring 2015, as cited in College Success Plan, n.d.). If not done well, time management can lead to burnout, lack of motivation, and feeling overwhelmed (T. Kennedy, personal communication, Feb 13, 2024. Other negative side effects caused by poor time management skills include:

- lack of sleep,
- declining academic performance,
- procrastination,
- poor diet,
- and an increased risk of dropping out of school (College Success Plan, n.d.).

In the current process flow, students who struggle with time management can easily fall into a cycle where they continually fall behind, forcing them to prioritize which assignments they can complete and which they need to set aside. These students may also be forced to turn assignments in late or not at all. A cycle like this could turn into an endless loop with the student falling behind further and further as the semester continues. Students who can avoid this vicious time management cycle or break out of it can also struggle due to a lack of resources or uncertainty on how to improve themselves if they receive an undesirable grade. This struggle and uncertainty can eventually lead to burnout, stress, and an incomplete study session.

KnowTime hopes to help students avoid this cycle and fill in the gap for those who would like to improve by providing features and resources that will help students develop long-term organizational, time management, and study skills while also providing tools to assist with preventing burnout and increasing focus and motivation (Gold Team, 2024).

1.3 Definitions, Acronyms, and Abbreviations

Grade Tracker: Grade tracking will be based on user-inputted grades. It will look at their grades, and the time spent studying, which may be entered by the student or automatically generated if the task was completed during a study session within the website. It will then generate a graph correlating time spent studying with the grade they received. They will also be able to filter this graph by tags. This will allow students to view a particular class to determine how they can improve. The student will set a goal for the grade and view how they are progressing over time.

Pomodoro Timer: The Pomodoro timer technique was created by Francesco Cirillo in the 1980s while he was a university student. To follow this technique, the student sets a timer for 25 minutes to complete a task. Once the timer goes off, the student takes a 5-minute break and then continues to work again for another 25 mins. After four sessions, the student takes a 15–30-minute break (Scroggs 2022).

Study Plan: A study plan will be generated based on various factors that will be entered by the student. Examples of information entered that will be considered are assignment due dates, exam dates, and times that the student has specified they are busy. Study plans also consider time spent on similarly tagged tasks and the need for breaks between tasks.

Task: A Task is any assignment that the student needs to complete, whether that be a homework assignment, an exam, or just making time to study or gather materials. Tasks can have multiple tags and are created by the student in the web application.

1.4 References

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1.5 Overview

Section 2 of this document will describe the KnowTime application's perspective, functions, and user characteristics. Section 3 will describe KnowTime's requirements. The requirements section of this document will be organized by feature.

2 Overall Description

Section 2 will describe KnowTime's product perspective, functions, and user characteristics in detail to gain a better understanding of KnowTime and its goals.

2.1 Product Perspective

KnowTime will be a web application whose goal is to help students develop studying, organizational, and time management skills that will assist them in school and beyond while also providing them a personalized and supportive environment to complete their coursework. This web application will include various features that are known to assist students in their studies. KnowTime's features will help students with studying and managing tasks while providing them feedback and tracking tools to give them insight into their study habits and how to improve them. Other features will provide information on resources and support to help alleviate any feelings of being lost or alone in their endeavors. KnowTime will also be accessible across various platforms to encourage consistent usage (Gold Team, 2024).

2.2 Product Functions

KnowTime's main features are as follows:
- a calendar with reminders,
- the ability to import one's school calendar into the application,
- a pomodoro timer with customizable study sessions,
- progress and task tracking,
- a grade tracker,
- a study plan generator,
- information on study and mental health resources
- a points system,
- and a community forum (Gold Team, 2024).

    Of these features, the customizable timer, community forum, and personalized study plan generator separate KnowTime from its competitors. KnowTime will also include account management and social networking features. The features and their planned implementations for the prototype and Real-World Product (RWP) are displayed in Table 1 below. These features will be explored in further detail as well.

Feature	RWP	Prototype
Account Management		
User Account	Functional	Implemented
Authentication	Functional	Not Implemented
Access Control	Functional	Partial
User Interface		
Calendar	Functional	Implemented
Pomodoro Timer	Functional	Implemented
Task Board	Functional	Simulated
Study Time Tracker	Functional	Simulated
Grade Tracker	Functional	Simulated
Study Plan	Functional	Simulated
Mental Health Resources	Functional	Implemented
Study Resources	Functional	Implemented
Points System	Functional	Simulated
Content Removal	Functional	Not Implemented
Notifications	Functional	Implemented
Add/Delete Friends	Functional	Simulated
Report Users	Functional	Not Implemented
Flag Inappropriate Content	Functional	Partial
Hide Flagged Content	Functional	Partial
Block User	Functional	Implemented

Direct Messaging	Functional	Simulated
New Thread Activity Notification	Functional	Not Implemented
New DM Notification	Functional	Not Implemented
Subscribe to Thread	Functional	Simulated
Contact Us Page	Functional	Not Implemented
Community Forum		
Create Discussion Thread	Functional	Simulated
Reply to Thread	Functional	Simulated
View Discussion Thread	Functional	Simulated
Like/Dislike Thread	Functional	Simulated

Table 1 Features: RWP vs Prototype

KnowTime will allow students to have basic account management controls such as the ability to change passwords, time zones, profile pictures, and notification settings. Notifications can be received as emails or text messages. Email will be required to register for an account, and phone number will be optional. Students will also have the choice to have their accounts deleted permanently if they choose to no longer use the application and do not want their information stored. Authentication will be implemented for users to help protect their accounts and information as well.

The calendar will allow students to track upcoming deadlines and exams. Students can also choose to add their assignments and courses manually or import them from their Canvas and BlackBoard calendars and accounts (Team Gold, 2024).

KnowTime's pomodoro time will allow students to either follow the classic pomodoro timer method (Scroggs, 2022) or customize their study sessions and short and long break times. The pomodoro method is known to help students study better (Alves, 2023; Scroggs, 2022). These timed sessions will be recorded by the application. The sessions will then be organized by either imported or student created assignments and customized tags. The corresponding assignment will be selected by the student in a drop-down menu on the timer page that connects

to their list of assignment. These recorded study sessions will give students insight into how much time they study for a certain topic. Students will also be able to manually enter times if they choose not to use the timer.

The task board will provide students with a tool to track tasks and course progress by allowing students to create their own tags and tasks and move them around on the task board into different common task board categories, such as "On Hold" or "In Progress." The task board will help with organization and time management while increasing feelings of motivation and confidence by visualizing tasks and upcoming due dates, which increase awareness and accountability (Li, 2017; Parrish, n.d). If requested, the task board can also send notifications by email or text message. Students will have access to a progress graph as well that will give them insight into how much time and how many sessions they spent on an assignment.

The grade tracker will be implemented through a graphing system to allow students to track their grades and grade progress. Students will enter grades manually for their assignments. The tracker then creates a visualization for students to view their grades alongside how long it took them to study for that assignment. Assignment time will come from the pomodoro timer's recorded sessions or the manually entered times. Students will be able to filter their grades by course tags to drilldown on one course. Tracking grade progress is included as a feature since it can help students identify areas of strength or weakness (7EDU Impact Academy, 2023), which helps with prioritizing, planning, and time management.

The personalized study plan is a unique feature offered by KnowTime that considers time recorded from the pomodoro timer or manually entered times, the student's grades, times blocked off in the calendar, and upcoming assignments. The study plan generator takes this information and creates a study plan customized for the student that will increase or decrease study time depending on the data reviewed while also ensuring that the student takes an adequate number of breaks. First-time users or students who choose not to use the other features required to create the study plan will receive a generic study plan. The study plan will provide students structure, and an example of what time management looks like when trying to reach one's goals (Team Gold, 2024).

University academic and mental health resources will be provided to students. This feature will raise awareness about university resources students may not have known were

available to them. These resources include counseling and accessibility services, tutoring in different subjects, and writing resource centers (Gold Team, 2024).

KnowTime's points system is how KnowTime hopes to gamify the studying process to make learning more enjoyable (Wang, 2021) and increase feelings of motivation and achievement (Davies, 2024). Students will be able to collect points as they achieve certain milestones while studying, such as using the timer for the first time or entering a certain number of grades. These points can then be used to unlock cute avatars to be used as profile pictures.

The community forum will play an important role in helping prevent burnout and discouragement by providing students a place where they can engage with others and by eliminating feelings of isolation (Team Gold, 2024). Students will be able to search for content, subscribe to threads to receive notifications on updates, create discussion threads, reply to threads, view threads, and like and dislike threads. KnowTime is set up to send a notification to the administrator when a certain thread has received a determined number of down votes. When this happens, the administrator reviews the content and decides whether the thread needs to be removed completely, hidden, or left. By including this feature, KnowTime hopes to foster a community of peer learning and support.

Social networking in KnowTime will be limited to the forum and the ability to add users as friends and block users. Students can search for other users and choose to block them or add them as a friend. Once added as a friend, students will be able to send direct messages to each other. When a message is received, the receiving student will get a direct message notification.

2.3 User Characteristics

The primary user roles for KnowTime are the individuals who are using the application and its features and an administrative role. The users using the application can be divided into three categories:

- college, high school, and middle school students looking for assistance with time management,
- instructors who want to help students with time management through the community forum or by sharing resources,
- and anyone who struggles with time management in general.

Although KnowTime was developed with college students in mind, middle school and high school students can also fall victim to the negative side effects of poor time management. Instructors can participate in KnowTime's endeavor to help students by sending resource information through the Contact Us page or by reaching out to students through the forum. Instructors can also raise awareness of KnowTime to their students that struggle with time management in class by providing students with the link to the application. Anyone that struggles with time management can also use KnowTime's features, such as the calendar, task board, or timer when trying to prioritize tasks or set goals. The administrative role for the KnowTime application would be responsible for moderating the forum, replying to inquiries sent through the Contact Us page, and deleting accounts when requested.

2.4 Constraints

N/A

2.5 Assumptions and Dependencies

N/A

3 Specific Requirements

3.1 External Interface Requirements

3.1.1   Software Interfaces

3.1.2   Hardware Interfaces

3.2 System Features

3.2.1   Account Management

3.2.2   Social Networking

3.2.3   Pomodoro Timer

3.2.4   Task Tracking and Progress

3.2.5   Grade Tracker

3.2.6   Points System

3.2.7   Calendar

3.2.8   Study Plan

3.2.9   Community Forum

3.2.10 Academic and Mental Health Resources