Team: Unit 3
Part 1: Understanding the Problem

This report outlines a deep understanding of the problem space concerning online learning, focusing on user needs, task characteristics, environmental factors, and design constraints, as required for the first substantive report of this project. The insights presented here are derived from the provided project overview and initial findings, aiming to inform subsequent design phases without prematurely suggesting solutions.

1. Overview of the Problem and Statement of Necessity

The COVID-19 pandemic significantly altered the educational landscape in the Philippines, ushering in an era of online classes. While offering a safe learning environment, this shift has introduced considerable challenges for students, particularly concerning self-pacing and managing academic demands. Students often find themselves struggling to keep up with coursework due to a lack of timely notifications from existing online platforms and the subsequent accumulation of unfinished tasks. This leads to increased stress and negatively impacts their learning experience.

An interface or system is necessary to address these issues because current online learning platforms often lack the specific functionalities required for effective self-pacing and task management. Students are forced to constantly check for updates, leading to inefficiency and anxiety. A dedicated application can provide a centralized, user-friendly solution to track progress, facilitate review, and offer features that directly mitigate the identified pacing and notification deficiencies, thereby reducing student stress and improving their online learning efficacy.

2. Description of Important Characteristics of the Users

The primary users of the proposed system, SASHA (Student Assisted Studying and Homework Application), are students currently engaged in online classes, ranging from Senior High School to College levels. These users are typically accustomed to digital learning environments but are experiencing difficulties with the current online class platforms, specifically regarding pacing and staying updated with course requirements. They are likely to be seeking tools that can help them organize their academic lives more effectively, reduce stress from unmanaged tasks, and provide convenient ways to review course material. Given their academic context, they are likely to appreciate straightforward, intuitive interfaces that do not add to their cognitive load. The design will need to cater to users who may be less tech-savvy, ensuring ease of learning and use.

3. Task Analysis

3.1. Description of Important Characteristics of the Tasks Performed by Users

Users of the system seek to perform several key tasks to manage their online learning effectively:

- **Pacing and Progress Tracking:** Students need to monitor their progress on various activities, marking them as complete, incomplete, or in progress to maintain a steady pace and avoid task accumulation.
- **Note-Taking and Review:** Users require a method to create and organize "cliff notes" or reviewer sheets for their courses, serving as personal study guides.
- **Self-Assessment:** Students need to create and take self-generated review quizzes (multiple choice, matching type, word-based answers) to prepare for assessments, with the option to include timers to simulate exam conditions.
- **Study Environment Enhancement:** Users may desire to enhance their study environment by optionally listening to ambient music or lo-fi tracks to improve focus and mood.
- **Information Seeking:** Students are currently engaged in the task of constantly checking online platforms for updates, a task that the new system aims to streamline through better notification mechanisms.

3.2. Description of Important Characteristics of the Task Environment

The task environment is predominantly virtual, centered around online learning platforms provided by educational institutions. Students interact with these platforms from various personal settings, often relying on mobile devices (specifically Android phones, as per the design constraint). The current environment is characterized by:

- **Information Overload/Scarcity:** Students are either overwhelmed by unorganized information or struggle to find timely updates, leading to constant manual checking.
- **Lack of Integrated Pacing Tools:** Existing platforms do not adequately support individual student pacing, leading to a "stockpile of unfinished tasks."
- **Digital Dependence:** Learning is entirely mediated through digital interfaces, making the usability and efficiency of these interfaces critical to the student's success and well-being.
- **Potential for Distraction:** The home or personal study environment can be prone to distractions, making tools that enhance focus (like ambient music) potentially valuable.

3.3. Simple Structured Task Analysis of the Problem

Based on the provided flowchart (Figure 1), the problem-solving approach can be structured as follows:

1. **Start:** Initiate the process of understanding pacing issues.
2. **List Down Possible Problems:** Identify potential problems related to pacing issues experienced by online students.
3. **Data Gathering (Phase 1 - Problem Validation):**
   - Create a survey to determine if the identified problems are apparent among students.
   - Distribute the survey via online messaging (e.g., Messenger, Discord).
   - **Decision Point:** Do we have 10-20 respondents to answer the survey?
     - If No: Continue distributing surveys.
     - If Yes: Proceed to data interpretation.
4. **Data Interpretation (Phase 1):**
   - Tally the data and feedback gathered from the survey.
   - **Decision Point:** Are there problems or issues evident involving pacing during online classes?
     - If No: Re-evaluate the problem identification (loop back to "List down possible problems").
     - If Yes: Proceed to Data Gathering (Phase 2).
5. **Data Gathering (Phase 2 - Feature Identification):**
   - Create another survey to identify the features and design elements respondents would like to see in the application.
   - Distribute this survey via online messaging.
   - **Decision Point:** Do we have 10-20 respondents for this survey?
     - If No: Continue distributing surveys.
     - If Yes: Proceed to data interpretation.
6. **Data Interpretation (Phase 2):**
   - Tally the data and feedback gathered from the survey.
7. **Prototyping:**
   - Use the collected data as a building block in creating the SASHA Application.
8. **Finish:** Conclude the initial development phase.

This structured analysis highlights the iterative nature of problem understanding and solution conceptualization, emphasizing data-driven decisions.

4. Analysis of the Existing System (15 pts)

The existing "system" primarily refers to the online class platforms currently used by educational institutions. While these platforms facilitate virtual learning, they exhibit significant deficiencies that contribute to student stress and pacing issues:

- **Ineffective Functionality:** The provided platforms "may not function as effectively as they should be," implying technical glitches, poor user experience, or a lack of specific features.
- **Lack of Proactive Notifications:** A major deficiency is the absence of "frequent notified updates," forcing students to "constantly checking the sites for updates." This reactive approach to information access is inefficient and anxiety-inducing.
- **Absence of Pacing Support:** The current systems do not offer integrated tools to help students manage their own learning pace, leading to the accumulation of "stockpile of unfinished tasks."
- **Limited Review/Self-Assessment Tools:** While some platforms might have quiz features, they may not offer the flexibility for students to create personalized review quizzes from their own notes, or to practice with timers.
- **Potential for Stress:** The combination of these deficiencies directly contributes to "an unhealthy amount of stress to the learner."

The strong points of the existing system, though not explicitly detailed in the provided text, can be inferred as their primary function of enabling online interaction between teachers and students and delivering course content. However, these strengths are overshadowed by their shortcomings in supporting student self-management and well-being.

5. Description of the Larger Social and Technical System (15 pts)

5.1. Social System

The larger social system is profoundly shaped by the ongoing impact of the COVID-19 pandemic, which necessitated a rapid and widespread adoption of online learning in the Philippines. This shift has created a new normal for education, where students are expected to adapt to virtual learning environments. Within this system, there's a growing awareness of the mental health implications of online learning, particularly the stress associated with managing academic workload remotely. The project acknowledges this by aiming to alleviate stress related to pacing issues. The social context also includes the competitive landscape of study aids, with established competitors like Notion, Quizlet, and StudyBlue setting benchmarks for user convenience and functionality. The project seeks to integrate seamlessly into students' existing study habits and preferences within this evolving educational and social landscape.

5.2. Technical System

The technical system in which SASHA will operate is primarily the Android mobile ecosystem. This imposes specific constraints and opportunities:

- **Mobile-First Design:** The application is explicitly "only intended for android phones," meaning the design must be optimized for mobile screen sizes and touch interactions.
- **Platform Integration:** While SASHA aims to improve upon existing online class platforms, it will likely need to coexist with them, potentially requiring students to switch between applications.
- **Accessibility Considerations:** The technical design must account for user accessibility, specifically addressing color blindness by prioritizing "signs and words more often" over color-dependent cues.
- **Minimalist UI:** To avoid a "clustered or compressed" interface on smaller screens, the design will need to be minimal and efficient.
- **Feature Integration:** The application will incorporate features like progress tracking, note creation, quiz generation (with multiple choice, matching, word-based, and timer options), and ambient music playback, requiring robust technical implementation.
- **Data Collection:** The project relies on survey data for both problem validation and feature identification, indicating a technical process for data collection and interpretation.

6. Initial List of Usability Criteria

The success of SASHA will be judged based on the following usability criteria, which align with the team's stated conditions for success:

- **Learnability (Ease of Learning):** The user should be able to "learn the ins and outs of the app easily."
  - **Measurement:** This can be measured through usability testing with new users, observing the time taken to complete core tasks, the number of errors made, and qualitative feedback from user surveys regarding perceived ease of learning. A post-task questionnaire (e.g., System Usability Scale - SUS) could also be used.
- **Aesthetic and Non-Distracting Design:** "The look and feel of the app's design does not distract the user."
  - **Measurement:** This can be assessed through user surveys asking about visual appeal and distraction levels. Eye-tracking studies during task completion could also provide objective data on where users' attention is drawn. Qualitative feedback during interviews about the design's impact on focus would be crucial.
- **Convenience and Efficiency (Competitive Parity):** The user finds it "as convenient as other competitors such as Notion, Quizlet, and StudyBlue."
  - **Measurement:** This can be measured through comparative usability testing where users perform similar tasks on SASHA and competitor applications, evaluating task completion time, efficiency, and user satisfaction. Surveys could directly ask users to compare SASHA's convenience to these established tools. Feature comparison matrices and user flow analysis against competitors would also be valuable.
- **Accessibility:** The application should be usable by a wider range of users, specifically addressing color blindness.
  - **Measurement:** Conduct accessibility audits using automated tools and manual checks. Perform usability testing with users who have color blindness to ensure they can effectively navigate and understand all features without relying solely on color cues.

7. Discussion of Implications

The insights gained from understanding the problem space, users, tasks, environment, and constraints have profound implications for the eventual design of SASHA:

- **User-Centered Simplicity:** Given that the target users are students (Senior High School to College) who are already stressed by online learning, the design *must* prioritize simplicity and intuitive navigation. Overly complex features or cluttered interfaces will exacerbate their existing problems. This implies a need for clear labeling, consistent layouts, and minimal steps for common tasks.
- **Direct Problem-Solving Features:** The core features (progress checking, cliff notes, quiz maker) directly address the identified pain points of pacing issues and lack of effective review. The design should make these features highly visible and easily accessible, as they are the primary value propositions.
- **Proactive Information Delivery:** The current issue of "no frequent notified updates" implies that SASHA should incorporate robust notification mechanisms (within Android's capabilities) to alert students about upcoming tasks, deadlines, or changes, reducing their need for constant manual checking.
- **Adaptive and Inclusive Design:** The constraint regarding color blindness means that color should never be the sole indicator of information or status. The design must rely heavily on text, icons, and distinct visual patterns to convey meaning, ensuring accessibility for a broader user base.
- **Mobile-First and Minimalist Aesthetic:** The Android-only and screen size constraints necessitate a truly mobile-first design approach. This implies prioritizing essential information, using responsive layouts, and adopting a clean, minimalist aesthetic to prevent the UI from appearing "clustered or compressed." Large, easily tappable touch targets are also crucial.
- **Competitive Awareness:** The goal of being "as convenient as other competitors such as Notion, Quizlet, and StudyBlue" means the design should analyze the best practices of these applications in terms of user experience, efficiency, and feature integration, and strive to meet or exceed those standards within SASHA's specific problem domain. This implies a need for a streamlined workflow and efficient interaction patterns.
- **Focus on Well-being:** The mention of "unhealthy amount of stress" implies that the design should subtly incorporate elements that promote a positive user experience, such as the optional ambient music feature, and ensure that the app itself does not become another source of stress. This could extend to clear feedback mechanisms and error prevention.

In essence, the design of SASHA must be an empathetic response to the challenges faced by online students, translating their struggles with pacing and information management into a simple, accessible, and highly functional mobile application that actively contributes to their academic success and reduces their stress.