Ethical Conduct in Design

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Table of Contents

Project Description

Introduction to the Design Project

Smoking is a major public health concern that affects people and the community. Despite the overwhelming evidence of smoking's health risks, many people, especially long-term smokers (smoking age over ten years), struggle to quit due to nicotine's addictive properties and the complex interaction of psychological and sociocultural factors. We aim to provide smokers with a complete solution to help them to quit.

Problem Space

The problem is smoking's persistence despite extensive proof of its health risks. Smoking causes several preventable diseases, including lung cancer, heart disease, and respiratory problems. However, nicotine dependency, behavioural habits, and triggers make quitting difficult [1]. Many smokers attempt to quit but fail due to a lack of support.

Specific Phases

User Research Phase

1. Objective Definition:

- Define the goals of the user research phase, such as understanding smokers' motivations to quit, their current strategies, and their receptiveness to a smart locker solution.

2. Participant Recruitment:

- Identify individuals who are now engaged in smoking and are actively endeavouring to cease this habit or are contemplating smoking cessation.
- Engage with prospective participants through social media platforms, virtual communities, or local support organizations like Facebook quit smoking support communities.

3. Interviews:

- Perform individual interviews with people who have long-term smoking histories.

- Ask open-ended questions to explore the individual's experiences, obstacles, and thoughts about the use of an intelligent locker as an aid in their cessation efforts.

4. Data Collection:
- Take detailed notes.
- Record audio (with permission) to capture participants' responses accurately.

5. Data Analysis:
- Analyse the interview notes with transcripts and find the theme of problems.
- Examine the correlations between users' attitudes about cessation and their perceptions of an intelligent locker solution, focusing on identifying discernible patterns.

Prototyping Phase:

1. Conceptual Design:
- Create a conceptual design for the smart smoking cessation locker based on user research insights.
- Construct a rudimentary prototype demonstrating the locking mechanism's functionality (Arduino board) and a simple LED timer system.

2. Initial Prototyping:
- Utilise cost-effective materials to fabricate a practical depiction of the underlying notion. For instance, build a basic and simplified LED timer.

3. Usability Testing Preparation:
- Plan usability testing scenarios that mimic how users, especially those with long-term smoking histories, would interact with the locker in real life.
- Define the specific activities that participants are required to do throughout the testing process. For instance, discover how their thoughts or behaviours change when their cigarettes are locked.

Evaluating Phase:

1. Usability Testing:
- Recruit participants who are long-term smokers.
- Ask participants to interact with the prototype, attempting to use it to regulate their cigarette access.

2. Observation and Data Collection:
- Observe participants' actions, comments, and struggles as they use the prototype.
- Take notes and capture their feedback on the prototype's usability and effectiveness.

3. Feedback Analysis:
- Analyse usability testing data to identify pain points, issues, and areas for improvement.
- Pay attention to participants' reactions to the LED timer countdown system and the concept of limiting cigarette access.

4. Prototype Refinement:
- Based on usability testing feedback, make necessary improvements to the prototype.

5. Iteration:
- Create an updated prototype incorporating the refinements and carry out supplementary iterations of usability testing to substantiate the modifications' efficacy.

Ethical Issues

Table 1: A list of potential ethical issues related to the project, along with evidence and an action plan to deal with each issue:

Ethical issues			
Informed Consent and User Autonomy (Consent)			
	User Research phase	**Prototype phase**	**Evaluation Phase**
Hypothetical scenario:	Some participants may not fully understand the research purpose or their rights	In interviews, many participants are willing to accept anomalies because they do not want to be told their smoking age.	Participants might not fully comprehend the evaluation process and its implications.
Action Plan:	• Provide clear explanation of the study's purpose, procedure, and potential risks. • Use informed consent forms to help participants understand the context better • Allow participants to ask questions before giving consent	• Write user documentation that clearly explains the purpose and features of the prototype. • Clarify the explanation using plain language	• Detailed information about the evaluation process should be provided to participants. • Outline the evaluation procedures and potential risks in informed consent forms • Ensure participants understand our evaluation process by answering their questions and concerns

Ethical issues			
Data privacy and Confidentially (Confidentiality)			
	User Research phase	**Prototype phase**	**Evaluation Phase**
Hypothetical scenario:	Disclose the participants personal and sensitive information from unauthorized access or misuse	The prototype collected user data in an unsecure manner	No safeguarding user data collected during the evaluation and preventing data breaches
Action Plan:	• Anonymize data when reporting findings. • Inform participants about data handling policies and how their data will be used.	• User data can only be accessed by authorized individuals • Clearly explain to ensure how their data will be collected during the prototype phase	• For secure data storage and analysis, use Sync.com. • Communicate data handling policies to participants and obtain their consent for data collection

Ethical issues			
Accessibility and Inclusivity (Representation and audiences)			
	User Research phase	**Prototype phase**	**Evaluation Phase**

Hypothetical scenario:	Disabilities cannot fully participants in user research activities	When doing the usability test, the user may with visual impairments may struggle to interact with the LED timer interface	Those with disabilities cannot participate fully in our evaluating process due to visual impairments or other limitations
Action Plan:	• Make sure that research venues are physically accessible	• Test the prototype with users who have difficulty accessing our smart cigarette time locker system	• Install features like text-to-speech for the LED timer interface

Ethical issues			
Conflicts of interest (Representation and audiences)			
	User Research phase	**Prototype phase**	**Evaluation Phase**
Hypothetical scenario:	Researchers or developers with personal or financial interests that could compromise objectivity	A conflict of interests could lead to biased design decisions. Refer to user interviews; some participants may not want to implement a quit smoking system for the public.	Evaluation outcomes are influenced by conflicts of interest

Action Plan:	• Clearly disclose any potential conflicts of interest to participants and stakeholders.	• In order to avoid undue influence from individuals' personal interests, ensure that the design process is multidisciplinary , and team based.	• When evaluating our project to the audience, if we use words like “never” or “evolutionary” which may set unrealistic expectations. • While our smart cigarette locker may can assist in managing cravings, implying complete elimination of cravings may oversell the product's capabilities.

Ethical issues			
Unintended Psychological Effect (Minimising harm)			
	User Research phase	**Prototype phase**	**Evaluation Phase**
Hypothetical scenario:	Participants might experience stress or negative emotions during user research, such as interviews.	In the user research, it was found that many people feel anxious when they haven't smoked for quite a while when interacting with the prototype	During the process of conducting usability testing, one of the participants exhibits visible signs of frustration at encountering difficulty in accessing smokes because of the constraints imposed by the smart locker. This

			emotional response underscores the possibility of adverse psychological consequences.
Action Plan:	• Provide clear explanation of the study's purpose, procedure, and potential risks. • Use informed consent forms to help participants understand the context better	• Consult behavioral psychologists during the prototype design phase to minimise negative emotional triggers.	• Monitor participants' emotional well-being and provide resources for managing stress or anxiety.

Principles of Ethics

User Research Phase:

1. Informed Consent

In this project, we use the ethical principle of informed consent in user interviews, which clearly explain to participants the purpose of the interviews, the types of questions we will ask, and how the information will be used to understand their queries better, state a preference, and reason through a consequential life decision to detect incompetence for our project [4].

2. Privacy and Confidentiality

When doing the interview, participant recruitment, and data collection, we should assure participants that their information will be kept confidential and any data collected will be anonymised during analysis because public health agencies frequently require personally

identifiable health information to conduct certain public health activities. The success of these activities depends on data quality and accessibility [5].

Prototype Phase:

1. Transparency

During the prototype phase, we aim to ensure transparency in communication about our prototype's features, limitations, and expected outcomes, which helps us track our problems and make the necessary changes [6]. We communicate the purpose and functionalities of the prototype to users, avoiding exaggerated claims and preventing users from having unrealistic expectations about the prototype's capabilities.

2. Beneficence and Non-Maleficence

Striving to maximise benefits while minimising harm to participants. Designing the prototype to effectively assist users in quitting smoking without causing unnecessary distress or damage refers to value-sensitive design, which distinguishes it specifically [7]. Prioritising users' well-being ensures that the prototype's design focuses on positive outcomes while avoiding potential negative psychological impacts.

Evaluation Phase

Accessibility and Inclusivity

Making the evaluation process accessible to all participants, regardless of their ability. To accommodate participants with disabilities, such as visually impaired people, provide text-to-speak on LED timers for evaluation materials and physical accessibility. Using accessibility principles, which can be used to determine the frequency and severity of accessibility problems, has also allowed us to identify and prioritise the various accessibility shortcomings that our project faces [8].

Social Impact

Social and Economic Benefits:

Smoking cessation not only benefits individuals but also their families and communities. Reducing smoking rates can lead to a healthier workforce, decreased absenteeism, and increased productivity, thus contributing to economic growth [2][3].

Reference

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