Prospectus

Medella: A Corporate Health Literacy Web Application
(Technical Topic)

User Configuration of eHealth Technologies
(STS Topic)

By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Sociotechnical Problem

Most people in the United States took some sort of health class in grade school where they learned what it means to be healthy. Still, there is a large number of people who run into issues later in life because they were not educated well or because there are few reminders about what they did learn in school. Health literacy is the ability to understand and use information to maintain good health (Institute of Medicine, 2013). It is required to "fully eradicate poverty, achieve universal primary education, and promote gender equality" (Institute of Medicine, 2013). People who lack health literacy tend to have higher mortality rates, health care costs, and frequency of using emergency services (Chesser, Woods, Smothers, & Rogers, 2016). Health literacy is a clear necessity for adults, and one of the ways of distributing this knowledge is through corporate web and mobile applications.

In order to increase levels of health literacy across America, my team and I plan to build a mobile-compatible web application that will be delivered through the workplace. The technology will deliver notifications to users about short quizzes, snippets of information, blogs, or videos in order to engage the user and allow them to learn about healthy habits. There are existing platforms to solve this problem, but they often branch too wide and become too complicated for the employee and business. While our proposed technology seems fairly straightforward, we must also consider the social factors and implications involved in building such an application, specifically in terms of user configuration. When building health applications, there is a certain ideal user that designers have in mind. If we do not address the issue of user configuration, we are losing a significant portion of the users who could stand to benefit from this platform.

Therefore, in order to effectively create a product that improves health literacy, we must consider the technical and social issues involved. In the following sections, I will outline what current platforms lack and how our application will be simpler and easier to understand. In addition, I will analyze what users are currently neglected from eHealth applications and why their involvement is so crucial to building better technologies to alleviate the lack of health literacy.

Technical Problem[1]

We are helping Medella design a corporate wellness platform to help improve companies' employees' health. The goal is to provide educational content to employees and statistics to employers to indicate overall health in the company. A successful product will help employees control their health while giving businesses feedback on their overall health.

One existing workplace health product is a mobile-first platform called Limeade ONE. Limeade uses a gamified approach involving assessments and rewards (*Limeade*). While Limeade provides many services, these are complicated and result in a steep learning curve. It can take time to learn to navigate the various features (Desai & S, 2019). Furthermore, using Limeade requires knowledge of its file-sharing system, Sharepoint, which adds more complexity (Desai & S, 2019).

Our product will serve as a platform that employees, employers, and the Medella team interact with. Employee health will be tracked to provide personalized resources. The platform will include quizzes with questions like: "How many cups of water should you drink in a day?"

[1] The Technical Problem section follows the format provided by my Technical Advisor. It was written collaboratively by all members of my Technical Project.

Employers will see aggregated employee data to learn how Medella has impacted the company's overall healthcare costs. Medella employees will be able to use the application to create content. There will be forms within the application to create quizzes, upload videos and write newsletters.

Gathering system requirements is vital to the development process because it ensures the client and developers have the same expectations for the finished product. Below is a list of our system requirements.

Minimum Requirements

- Businesses, employees, and the Medella team should be able to securely login.
- Businesses should be able to view aggregate health data points of company employees.
- The Medella team should be able to create quizzes and blog posts.
- Employees should be able to click on quiz links, view questions, submit answers, and receive a score after submission.
- The Medella team should be able to view aggregate and individual results for each quiz
- Businesses should be able to view aggregated results for each quiz.
- The Medella team should be able to input YouTube links into a form to display them in users' content feeds.
- Employees should be able to watch videos through the platform.
- The Medella team should be able to send emails to employees to inform them of relevant content.
- Employees should be able to opt out of receiving all information from Medella.
- Users should be able to view a page with a mission statement and contact information when going to the webpage without a log-in.

Sample of Desired and Stretch Requirements

- The Medella team should be able to use a newsletter builder form to add text, images, and links to health-related topics to newsletters, as well as publish the newsletters to employees.
- Employees should be able to view previous quiz submissions.
- The Medella team should be able to track clicks by users and businesses on the website in order to monitor user engagement.
- The Medella team and businesses should be able to see a graph depicting how Medella has impacted healthcare costs.
- Employees should be able to opt out of receiving only one type of content (quizzes, blogs, videos, etc.)
- The Medella team should be able to limit content to specific users.
- Businesses should be able to view the dashboard data broken down by department.

STS Problem

eHealth is an emerging concept that uses technology to improve the spread of medical information and access to public health. There are several varying definitions of eHealth, but the general consensus is that it involves the application of information technology to improve healthcare (Eysenbach, 2001). Some examples of eHealth applications include: Healthfinder (a database of information) and Health Promotion Online (promotes healthy habits) (Atkinson & Gold, 2002). The Journal of Medical Internet Research uses 10 e's to describe eHealth applications: efficiency, enhancing quality, evidence based, empowerment, encouragement, education, enabling, extending, ethics, and equity (Eysenbach, 2001). These attributes portray

eHealth's versatility and potential for making an impact on health. Consequently, one use for eHealth applications is to deliver information necessary for improving health literacy.

While eHealth applications like Healthfinder and Health Promotion Online appeal to a vast majority of the population, some users are neglected because of the assumption that users are familiar with using technology. People with lower health literacy tend to have lower rates of access to computer and the internet. However, even when given access to an internet-based patient portal, they have difficulty navigating these systems. In one particular patient portal, people accessed the "Labs View" function and avoided more interactive functions because they did not feel comfortable with this more complex technology (Sarkar, et al., 2010). This suggests eHealth resources are intended for people with prior experience using technology.

While technological education is an issue in terms of eHealth applications, we must not limit our approach to just this; we must also consider the implications of language itself. eHealth interventions like Healthfinder and Health Promotion Online generally cater towards English speakers only. Non-English speakers tend to feel less confident in "using information from the Internet to make health decisions" and in knowing "what resources are available on the Internet" (Knapp, Madden, Wang, Sloyer, & Shenkman, 2011). Not only does eHealth technology lack design features for non-English speakers, but there is also very little research on this topic. Specifically, Asian people are often overlooked in health literacy research. One possible explanation for this is that the umbrella term "Asian" encompasses a multitude of cultures and languages, and researchers do not have the resources to interview in all of these languages (Sentell & Braun, 2012).

By having a specific type of user in mind, readers may lack a complete understanding of who uses eHealth applications and how to make an inclusive design. For example, we may not

understand the needs of those who have limited English-speaking ability, especially people of Asian races. Approximately 35% of Asian Americans have limited English proficiency, making them the "most likely to be limited English proficient" (Ramakrishnan & Ahmad, 2014). Low English proficiency has been linked with low health literacy, suggesting that Asian Americans would benefit from eHealth applications. If we do not research this wide group of people, we may not be considering features that "at least 50 different ethnic groups with distinct cultures and languages" (Sentell & Braun, 2012) would like to see from eHealth applications.

As outlined by the user configuration framework, in the past, it has been understood that the 'ideal' user for eHealth interventions is someone with knowledge about how to use complicated web sites, mobile apps, and fitness trackers. However, I will look into how Asian people who have limited English proficiency have also been neglected as possible users of this technology. Perhaps incorporating features specifically for Asian languages will allow technology to become more inclusive to people from all cultures and backgrounds in order to increase health literacy for everyone.

I will utilize user configuration to explore how ideas about users' identities have been configured by designers of eHealth applications. User configuration is the idea that designers have a user with certain characteristics in mind, which encourages designers to configure predetermined ways for users to access and use the technology. In this framework, designers "encode" a specific configuration, and users must "decode" the technology in order to fully understand it. In addition, technologies have a "script," which reflects the ideas designers have about users and instructs users on how to use the technologies (Oudshoorn & Pinch, 2003). I will use this framework to analyze why current eHealth platforms like Healthfinder and Health Promotion Online may not be working for Asian Americans who do not speak English.

Conclusion

Health and overall well-being should be a primary concern for people across the country. As demonstrated above, health literacy is key in being able to maintain and improve one's health. In order to alleviate the lack of health literacy in the United States, I will use a two-part solution that addresses the technical and social components.

Part of the solution will involve creating a mobile-compatible workplace web application that delivers quizzes, videos, and blog posts to users. While there are existing platforms, they are often too complicated and difficult to learn. Our application will have one specific focus on health literacy, allowing it to be more simplistic. The second part of the solution will involve analyzing various user types that have been the target of eHealth technologies and research. I will then address whether any users have been neglected, and how we should incorporate this research into our platform. Ultimately, I will use the combination of these to create a solution that works for all users.

Word Count: 1760

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