Thesis Project Portfolio

Redesigning the Incentive Spirometer through Gamification

(Technical Report)

The Ethics of Gamification

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

Introduction

My STS research and technical work is intertwined with each other. Both papers draw on the concept of gamification. My STS work analyzed the complex ethics related to gamification, while my technical work used gamification to redesign a medical device, the incentive spirometer. Together, my work aims to understand the impacts of gamification and implement it in an ethical way.

Project Summaries

My STS paper addressed the ethical concerns that arise from implementing gamification in technology. Gamification is the process of adding game-like elements to non-game applications. It is used across many industries and is successful at engaging users. The first ethical concern I explore is the fact that this engagement can be seen as a form of manipulation. The engaging quality of gamification can lead users to make decisions they would not otherwise make. This leads me to the conclusion that gamification in its redirection of attention is manipulation. However, the second ethical concern that is explored is if manipulation is always unethical. This has a more ambiguous conclusion as I assert that there are ways to have actions of manipulative quality, such as gamification, which are not entirely unethical. I suggest that the balance of manipulation and ethics comes through a process of transparency between the designer and user.

My technical work redesigned the incentive spirometer (IS), a commonly used medical device. This work was motivated by the lack of patient engagement with the IS. Although it is commonly prescribed, many patients do not follow through with provider recommendations. The

new design my team and I created uses gamification to motivate patient use. Our design used a simple gamification of lights that turned on to correspond with use of the device. The device is visually engaging and makes using the IS more fun. To come to our final design decision, we iterated designs and interviewed providers. Overall, this project provides a pathway towards a more patient-centric IS design.

Conclusion

My simultaneous work on both my STS and technical projects helped me to have a deeper understanding of the impact of my work. Particularly in the design decisions of my technical work, I worked to consider and balance the ethical implications that any design would bring. The designs that we proposed to the providers all fit within my concept of ethical gamification. This is because they were all able to be implemented in a way that allowed for transparency and user understanding. At the same time, my STS work was highly inspired by the decision of my technical project to use gamification. Without this method being used in the technical work, I likely would not have been inspired to dig deeper. In the end, both parts of my work collaborated with each other to create an impactful project.

Acknowledgments

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