Lineage: Co-Creation of a Game-Based Educational Intervention with Young People Through the Lens of Reproductive Justice

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BACKGROUND AND THEORY

Game-based interventions for youth STEM/health education have ample precedent and apparent promise [1-5]. A large body of work has shown that games are feasible, acceptable and enjoyable ways to explore health and social issues including bystander interventions and sexual health [1,2]. There are a number of unique affordances of games as learning tools, including the ability to create an exploratory experience, that make them particularly suited for learning new skills [6, 7]. Games of all types offer players interactive contexts for thinking through and experimenting with complex problems in a hands-on fashion. Both game design and play have been shown to activate a wide range of thought styles, facilitate interdisciplinary learning [8], promote prosocial behavior[9], foster cognitive and emotional empathy[10], model alternate modes of action, and enable players to frame problems differently through procedural interaction [11].

The Social-Cognitive Career Theory is a key framework for research on women and racial/ethnic minorities and pursuit of STEM/health careers[12,13]. The Social Cognitive Career Theory posits that in middle and high school, successful learning experiences help promote the development of self-efficacy and positive outcome expectations for college success and careers in STEM among populations that are currently underrepresented in those fields.

In human-centered design, the designer and end user are brought together early in the development process, so that products are tailored to the intended audience [14-16]. This design approach seeks to respond to the existing needs, wants and limitations of intended users rather than making the user adapt once a solution or tool is already developed.

OBJECTIVE

To use the Social Cognitive Career Theory and human-centered design to create a game-based intervention that uses a Reproductive Justice lens to illustrate historic instances of injustice within the medical and scientific communities, increase students' self-efficacy around STEM/health, improve outcome expectations around STEM/health careers, and advance systemic change.

CO-DESIGNING WITH YOUNG PEOPLE

Session 1: Conducting Research
Young people conducted research and presented on reproductive justice principles in historic and medical contexts.

Session 2: Storytelling
Young people connected tenets of reproductive justice to their lived experiences using storytelling and digital journaling.

Session 3: Prototyping
Young people learned basics of game design and developed game prototypes in breakout groups.

Session 4: Iterating
Young people iterated on specific game mechanisms and desired points of affect

Image 1. Anarcha

REPRODUCTIVE JUSTICE THEMES FROM STORYTELLING AND PROTOTYPING

- The right to bodily autonomy
- Consent in medical context
- Health care provider/patient interactions
- Dynamics of privilege & power
- Instances of historic injustice
- Power of collective action

DESIRED GAME AFFECTS

The opposite of isolation: sense of connectedness to history, movements
I could be them: ability to visualize oneself as a STEM professional
I could do that: improved outcome expectations around ability to advance systemic change

GAME DESCRIPTION

- *Lineage* incorporates elements of social-cognitive careers theory to address the desired game affects and design objectives.
- The game includes STEM/health professionals who played a part in addressing medical/science injustices throughout history.
- In the game, players take on the role of activists who confront threats to their community members' right to bodily autonomy and consent.
- Players must also pool their resources to take on larger systemic challenges that threaten the bodily autonomy of all community members
- Each time players address a systemic challenge, they're able to unlock new components from the "ancestor web", a shared resource that improves players' ability to solve new challenges.
- As players "unlock" ancestors, they learn about how each person is connected to reproductive justice both historically and ideologically.

Image 2. Bill Jenkins PhD, MPH

Targeted affects, design elements, and theoretical framework components of *Lineage*

Targeted affect	Design element	Social Cognitive Career Theory
"I could be them"	The *Lineage* web comprises a variety of "STEM/health justice ancestors,". Lineage ancestors are STEM/health professionals from underrepresented minority groups who serve(d) as change agents for justice within their field	Self-efficacy / perceived behavioral control
"I could do that"	Unlocking new ancestors within the *Lineage* web illustrates the accumulated effects of individual action toward systemic change	Outcome expectations
"The opposite of isolation"	The *Lineage* web situates players as part of a larger reproductive justice movement as they move through (and eventually place themselves within) the ancestor web.	Contextual factors

Figure 1: Initial prototype of a digital ancestor web for *Lineage*

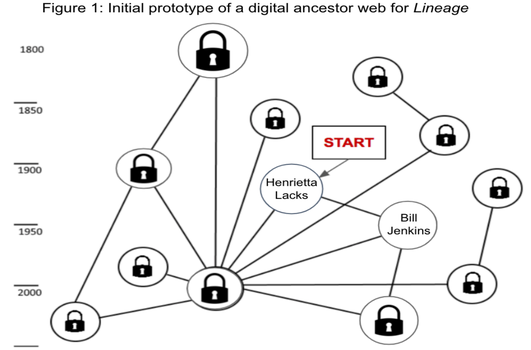

Image 3. Henrietta Lacks

Image 4. Dawn Wooten, LPN

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