Supporting Critical CS Identity in an Anti-colonial Video Game

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Abstract. This paper explores how the design of the video game *Guaiya Means Love* could support critical computer science (CS) identity development through identity positioning (Gresalfi & Hand, 2019) and double binds (Gutiérrez et al., 2019). The combination of two mechanics - *make choices in anti-colonial story* and *hack the game's source code* - affords a fertile landscape for youth to develop their stance around political dimensions of computation and start to imagine themselves as critical, computational, anti-oppression actors.

Rationale

Many CS Education scholars now believe research should examine students' CS identity development (Vakil, 2018). However, as Vakil (2018) argues, "CS learning environments...must also take seriously students' *political* identities [i.e.] one's awareness of and commitment to issues of power and inequality in society as well as a demonstrated sense of agency to 'imagine a new and different world'" (p. 40). This paper explores a design that aims to deeply engage student political identities in CS identity work, asking: How might *making choices in an anti-colonial video game storyline* support a political commitment to issues of power, while in the same game, how might *hacking the game's source code* support agency to reappropriate normative CS toward bettering society?

Gresalfi and Hand (2019) outline supports for youth to reposition math identity away from "who is smart" toward a more productive and critical math identity. They suggest alternate narratives like using math to identify and report on unequal access to food. These narratives model a commitment to issues of power and classroom norms which emphasize student agency. In CS, Vakil would add that these shifts in students' *commitment to issues of power* and their *agency to repurpose CS* are key indicators of a developing critical CS identity.

Since CS is already classed and racialized, CS identity work must disrupt deficit views like "gaps" (1) and instead encourage the above forms of commitment and agency. A design for CS identity must not only support "productive problem-solving strategies" but also must have these strategies specifically address political contradictions. This dual support is called a "double-bind," which supports youth to become "designers of social futures" and to position themselves as actors against historical oppression (Gutiérrez et al., 2019; p. 8). Although becoming an activist is outside the current scope, the game may aid the process of "becoming," where developing a critical CS identity plays a crucial part. Thus, while problem-solving in the game's political conflict, both players' CS and political identities may be "activated" and a deeper, more critical CS identity may be supported.

Design

In *Guiaya Means Love*, players encounter the large U.S. military buildup scheduled to ruin and steal more indigenous lands on Guam (linked to real events). They make choices and encounter prompts to reprogram the game's code to support the islander resistance. Combining this anti-colonial storyline with the hacking mechanic may uniquely afford new and productive engagement with double binds and critical CS identity positioning.

Choices in an anti-colonial story could support productive problem-solving like exploring choices and subverting the code to improve the situation. Figure 1 shows how dialogue sets up the player to make a risky and strategic political choice - resist, or evacuate. Facing a tough choice, players may feel immersed in a significant problem, narrate their political identities, and shift their identity positioning (Gresalfi & Hand, 2019).

Hacking the game's source code may support critical CS identity by positioning players as designers of their futures (Gutiérrez et al., 2019). Players become emergent designers of the game itself with more control over how the world and the story could unfold. The goal is to support youth to deepen their participation in CS spaces while they challenge dominance and oppression. Figure 2 shows a teaser hack, but a more politically significant hack could be to identify a Denial of Service vulnerability to stop the exchange of weapons contracts.

The combination. By engaging in parallel tasks of storytelling and hacking, youth may reimagine computation as a viable tool to resist oppression. *Guaiya* aims to test and understand these affordances, and observe how youth may begin to reposition themselves toward a deeper, more critical CS identity.

Clara returns to the FNB[2] table as Tita finishes speaking, and Esperansa says, "Tita why hasn't the task force considered even more resistance? We should fight for our right to stay, instead of giving up and fleeing as they thieve and demolish our ancestral land!"

Tita's face turns grave, "Esperansa I've told you a million times, when lives are in danger, it's time to act pragmatically. When the time comes the Navy will get what they want."

"What if we expose these human rights violations? What if we can prove that the military buildup is death to our people? Clara, what do you think?"

Figure 1. Indigenous characters brainstorm how to best resist the US military buildup on Guam. Excerpt from dialogue where Tita and Esperansa debate (left) while the player-controlled character, Clara, faces a tough political decision (right).

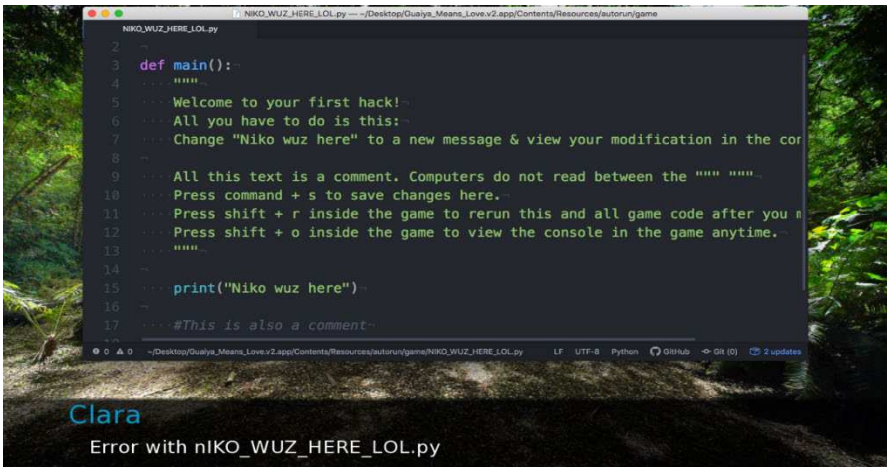

Figure 2. When an indigenous hacker (and cousin) Niko gives Clara a hacker challenge by locking her out of her computer in an infinite loop prank, the player is prompted to search through the game's source code with help from a clue.

Endnotes

(1) Moving beyond a "gap" of achievement or CS identity, as these form a deficit ideology that causes nuanced harm (Vakil, 2018)

(2) Food Not Bombs, an activist group that gives out free food to anyone who wants/needs it in urban centers all around the globe.

References

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