Ethics as Play: Video Game Development as a Speculative Activity

Abstract

In this project, we aim to understand the learning process of students from two universities as they collaborate to develop serious video games that address ethical issues in data science, AI, and machine learning using the Directed Research Group model. Looking at the participants, content, and format of the course through the lens of participatory design-based research, aids in centering relations as the goal, keeping fun, or gameplay as the means for building mutual understanding, and through which speculative imagining of the future can be utilized. Students are able to collaborate on research projects, where they can co-design experiments based on their own games and participate in collective meaning-making as a contribution to scholarship. This paper explores the different stages of the course as speculative activity.

Introduction

"I find game design really interesting. I wanted to be…a game developer when I was younger. And I'm kind of oddly living out my dream in college, which I didn't really expect at all, but it's…happening" - Student participant

The goal of our project, Collaborative Research: Diversifying Human-Centered Data Science through the Research and Design of Ethical Games, was to use the process of game development as a way for students to be exposed to data science ethics and create a viable game the students could utilize as research material for their own research and to test on their intended audience. It was important that students were able to position themselves and identify themselves as scholars in the field of data science and AI/ML. It was designed as a two-year course that began the spring semester of 2022 (the first quarter), and the class consisted of undergraduate and graduate students from the University of Washington (UW) and the University of North Texas (UNT) meeting together weekly using Zoom.

Background

Why Video Games
Video games are an easy entry point into academia or STS (science-technology-society) topics, it was an attractive draw for students who often play video games in their free time and grew up playing video games with friends and family. In addition to their comfort level, the course provided opportunities to learn technical skills in a low-risk environment, as the class was set up as credit/no credit for the UW students. One of the selection factors for student participants was that they were a member of an underrepresented group as a way to address the lack of diversity in the data science field [1]. So, game development made a good fit for this population of students to learn about the subject of human-centered data science.

Directed-Research Group Format
The directed research group format is a model of education that is unique to UW. It removes the hierarchy of teacher-student and it instead forms a student-as-colleague model as a part of the shared community of practice that focuses on scholarly research [Turns & Larson]. In other words, it acts like a learning lab where students participate in project-based learning in the university setting. It was conceived to meet the standard of instruction for undergraduate education that was set by the Boyer Commission on Educating Undergraduates, the Council on Undergraduate Research, and the National Conference for Undergraduate Research, which was to develop autonomous undergraduate researchers [Hu].

UW partnered with UNT, a Hispanic-serving institution trying to establish its role as a research university, to replicate this model in a different institutional setting. PIs, student researchers, and ancillary instructors from both institutions coordinated through weekly meetings and replicated the DRG format, that you will get out what you put in. There is a multi-tiered approach to mentorship and guidance. Students worked in self-directed groups on projects of their own choosing. It became evident that the students felt ownership of the DRG when they initiated the creation of a Slack channel to facilitate better communication and another student created a more efficient attendance log-in sheet, solving administrative issues.

Collaborating Online

Not surprisingly, the makeup of student participants covered a wide variety of disciplines, from psychology to business analytics, spanning from students in high school receiving dual credit to Masters students. In order to mix the students from UNT and UW in working groups, it was easier to meet using Zoom once teams were assigned. Previous DRGs met in person, but due to the pandemic and working with two different campuses, meeting on Zoom consistently made the course more streamlined. Collaboration from meeting notes to course design occurred on shared Google documents and slides. This also allowed classes to be recorded on Zoom which were available to students if they missed the class along with readings and class presentations. Meeting online had its benefits as well as challenges, but it seems to emulate real-world working conditions going forward.

Video Game as Mediator
The benefit of working with video games as a mediator, is that when dealing with potentially distressing issues of bias and discrimination it affords a safe psychological distance. Creating a safe learning environment was vital, especially because we had a few students under 18 and the makeup of the class was racially diverse. Schulzke suggests video games are the perfect medium to be viewed as thought experiments, where you can model philosophical problems in a simulated reality. While you are able to get direct answers from players through gameplay and their decision making, much of it is done implicitly. In the same way, while lectures along with case studies of harms biased AI can cause were provided in the first part of the class, but it was not connected to any expectation they should address these cases in their own game, or how it should be done. While the narrative of a game can be used set up explicit problems that raise philosophical questions, the mechanics set the rules that govern the range of choices in the game [Schulzke, 2012]. As we will cover in the next section, it is best not to be aware of this cognitive process, but to be fully immersed in the game. The hope is that upon engaging with these educational video games, players will leave with deeper data ethics literacy and can apply critical thinking about its harms and benefits in their own daily lives.

Video games were used for many other purposes throughout the class as well. They initially served as icebreakers as we all were getting to know each other virtually and an opportunity to just have fun to ease any tensions or sense of nervousness. Then they were used as team-building exercises to build upon that rapport. In one instance, we played an online version of Code Names, then another time we tried to collectively play Wordle by sharing the screen and going around to poll everyone. Soon we were sharing our own experiences with games. I learned that one of the undergraduate students who was silent during discussions was a regular Wordle player who often figured out the word quickly as he watched us struggle to solve the puzzle. We also took class time to closely look at examples of educational or serious video games and offer feedback on them. As a class, we played the game, Spent []. Then we discussed whether or not it was effective in its intention to provide empathy for populations dealing with poverty. Then we took classtime to play a serious game of our choosing from a prescribed list.

Game Development
According to Kafai's constructionist method of learning, developing games provides a deeper learning experience than just playing video games []. Several classes were spent learning Construct, an online game development software that does not require extensive experience coding. We used a human-computer interaction (HCI) approach to game development, which meant using participatory design, low-fidelity prototypes, and formal and informal usability evaluations [1].

There was little direction about what kind of game to create (even one group went from creating a card game intended for the whole family to play to a video game) or which issue in data science/AI/machine learning to use. Yet, there was a reminder that they needed to balance the educational aspect with the fact that it is still a game and needs to ultimately be fun to play. To take that further, Kaufman et al. found that to overcome the player's psychological 'reactance' or resistance to persuasive messages in games, developers must utilize a subtler approach, which would be to interweave the focal message through intermixing (not using 90% of positive communication, but 50/50) obfuscating and distancing. One proposed activity here could be using examples from serious games and having participants vote for how they would embed the message in the game design by voting on Kahoot.

Participatory Design and Co-Design
The format and goals of the course easily lends itself to be viewed through the lens of participatory research design in that it cultivates, "transformative agency among historically marginalized individuals…toward specific and consequential ends [Bang & Vossoughi pg 173]". The DRG model pushes back on the traditional power relationship

of professor and student and aims to quickly move the student from the role of "the researched" to the position of the researcher through guidance and collaboration.

As the two-year course progresses, the students become more independent, to the point where they develop their own research and experiments themselves. In the first stage of the DRG that spans the first semester, students attend lectures, participate in group discussions, and create a game in groups and end with a final prototype. We are currently in the second stage, where the instruction team tells students about publication and research opportunities that emerged from this project. They were free to participate in any of them based on their interests and availability and take on any role they want, whether first author or secondary author. In the only research opportunity where students were not invited, it was because it required watching student interviews so we decided that student privacy superseded this research opportunity. In the third stage, students' research experience would be extended when they are able to test the video games for the intended audience and then design the experiment based on data collected. Details of the third stage are still in genesis as we hope to secure funding to complete.

These three stages of the DRG emulate the three levels of student participation in research described by Kremer & Bringle that starts with the teaching model where instructors impart research skills and how research is conducted, that leads to the technician model where the student takes on low-skilled roles, and then ultimately the colleague model where the student takes on a significant role in many phases of research. This kind of engagement resulted in greater research productivity, and stronger interest in research as a career choice, and students attending graduate programs rated higher in research productivity than students who did not do research as undergraduate students [Kremer & Bringle, 1990]. The goal of participatory research design is to center the partnering and collaborating as a new way to develop knowledge. Simultaneously, in order to receive federal funding, research needs to be produced, so why not fill the gap in undergraduate education by providing opportunities for students to contribute. Yet, while examining tensions in power, there should be a periodic check, or, "our designs and partnerships may reproduce some of the inequalities we seek to transform [Bang and Vossoughi, p. 178]".

Speculative Activity
Staley takes a speculative design approach to reform higher education, stating that we need to allow for multiple possibilities in reimagining the purpose of the university and how it will take on future forms as "feasable utopias" [Staley, 2022]. So, in building these future forms, he addresses and critiques current practices, serving to unsettle the present [Staley, 2022]. Unsettling is an important first step of change because it is necessary before the process of reimagining relationships between learning, teaching, and questioning foundational concepts that are taken for granted. This includes settled expectations hidden and embedded into the structure of our society which accounts for the ineffectiveness of education for nondominant students and includes deficit-oriented language used about students from nondominant communities [Bang et al., 2013].

As Garcia et al. indicate, a speculative approach does more than just identify and critique inequalities, but "invites in collective imagining and action [] ". As far as the future of research, there is little to no research about minority gamers, let alone their playing educational games [2], so we can probably assume there is even less research about diversity in game development. Where there is a gap, students can fill it.

In addition to relationality, play and imagination can be considered as pedagogy as they are woven throughout the process of game development. Imagination and play can be explored in research as well. In order for the students to receive the full impact of this kind of work and approach, they could develop research and create partnerships with communities to co-imagine solutions and to co-create future iterations of the game. Community members would be invited to test the games and provide feedback about its effectiveness and even contribute to the game design.

Mistakes and Improvements
In gathering feedback from students from semi-structured interviews, they overall really enjoyed their experience and the course as their entrance into ethical issues about data science. But they also spoke about the need for clearer instructions and guidance in their group dynamics. For example, Masters-level students were looked up to by other students and they were assumed to take on a leadership role, even when they felt inadequate.

The biggest issue was working out meetings when the two institutions were on different schedules. UNT followed a semester schedule while UW students were on a quarter system. While content was able to be covered from classes that did not overlap, the instruction/research team did not realize the disheartening effect it would be for the students

in the quarter system to have to carry the group work load and have to solely present their games at the end of the second quarter, 3 weeks after the semester-based students ended their school year. During several presentations, students reported that students in their group from the other institution did not respond to communication and they also did not attend the last 3 classes (yet were invited to attend). Perhaps another factor was that UW students took the course as pass/fail and a few of them had attended DRGs before so better understood the expectations, whereas UNT students were still graded and probably were still extrinsically motivated, so that once they received their grades, their motivation to voluntarily continue was diminished.

Also, while DRGs met in person in the past, due to the pandemic and because two institutions were working together, meeting virtually was our only option. While we had planned an in-person gathering of all the UNT students to create a sense of shared community and because they seemed particularly passive during online classes. The day and time was agreed upon via Doodle and we planned for snacks and games, but a snowstorm that closed the campus forced us to cancel. The UNT students might also have been passive in class because it did start three weeks earlier for the rest of the cohort. The UW students were able to introduce themselves using slides, and visual aids but the UNT students were not given the same opportunity when they introduced themselves.

Another issue was knowing how to give students meaningful feedback to students. While we were a multi-disciplinary team, none of us were familiar with the game development process enough to challenge specific game mechanics or show how to continually center the tension between play and educational goals of the game in guiding ways rather than superimposing our own views. This could be helped by inviting visiting speakers who have professional game development experience to speak about juggling multiple goals and stakeholders. Also, there could be lectures on specific game mechanics with examples and then a follow-up discussion or assignment that fosters deeper thinking.

What is 'success' or 'effectiveness' in PD design for the different people involved (designers, researchers, participants, users)?

Instead of focusing on outward goals or requirements for funding, I would focus on all the participants' self transformation and measure of personal satisfaction and meaningfulness, and how the work informed each. This could be done through qualitative interviews, surveys, or narrative reflection statements taken throughout each semester/quarter of participation.

How do we genuinely co-design without enforcing our, often external, perception on people's realities and needs?

I think that it would be to balance centering relations, pushing back prescribed or historic roles of power, with being objective and not too subjective, which is a tendency for participatory design. Centering relations takes the focus off any external goals that may not align with others. The opportunity for re-assigning roles naturally occur when participating in different projects, so shortening project lengths could help with not enforcing our own perception on others. It can provide different contexts. Another idea would be to provide moments of self-reflexion and/or self-assessment as a means to stay grounded and not so externally focused.

Short Bios

Mimi Byun

Mimi just completed her first semester in the Ph.D. program at the University of North Texas in Information Science, where she is also a research assistant. Current research interests include metascience, knowledge equity in Wikipedia, and web archives for scholarly use.

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