Aug 11th, 12:00 AM

Humanities discourse in games classroom: research through design with Games4Impact

Sam Yang
Media Design School, New Zealand

Aslihan Tece Bayrak
Media Design School, New Zealand

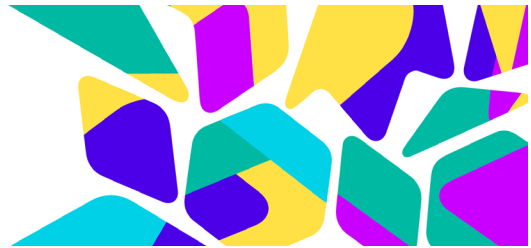# Humanities discourse in games classroom: research through design with Games4Impact

Sam YANG[a]*, Aslihan TECE BAYRAK[a]

[a] Media Design School, New Zealand
*Corresponding author e-mail: sam.yang@mediadesignschool.com

Abstract: Game development education is commonly considered to focus on game production with branching areas of game design, game programming or game art; nonetheless, developing games include more than what these three disciplines—design, software development, art— bring to the table. Acknowledging the transdisciplinary nature of games, we present a classroom approach that explores the social, cultural and humanistic identity of games via research through design while also encouraging students to leverage the expressive power of games. The merit of this approach is using game making as a space to ignite inquiry on socio-cultural contexts and facilitate an exploration for complex topics in a playful manner. This paper presents a reflective practice, methods of inquiry, and case examples to effectively apply design research in a project-based classroom environment. Case examples demonstrate strengths of the application for student learning and for the actualisation of design research in the classroom.

Keywords: game design; design research; research through design; games4change

1. Introduction

This paper provides a window into a current classroom practice in which class time and space is used to contemplate on wider contexts of games in relation to social, cultural, political and all humanly aspects of art and science. By using games as a starting point, this practice encourages students to conduct critical discussions on social cultural and economic aspects of daily life, understanding social norms, individuals' roles and responsibilities towards building and conserving a healthy community. Our approach focuses on games and their influence on individuals and society using the cultural layer of games as an entry point for difficult conversations. Considering how critical inquiry for social and cultural norms, beliefs, and tendencies may not be easy to initiate, may be less interesting or seen less useful by application oriented learners, or even hard to actualize within an application focused learning environment, we question how these conversations can be held more effectively

in a classroom. In response, we suggest game making to be an effective tool in humanities classrooms, towards making difficult conversations more accessible in applied learning environments.

Playing and making games have been suggested as powerful tools for learning, building empathy, crowdsourcing and research, and design for social innovation (Gee, 2003; Belman and Flanagan, 2010; Schreier, 2016; Bayrak, 2017; Bayrak, 2019). Moreover, the process of game making has been suggested to have enclosed research through design prompts (Laurel, 2003; Bayrak, 2019) that helps to uncover new knowledge and provide a fertile ground for exploration and learning. Norman (2010) advises that design education needs to encompass scientific enquiry, behavioural sciences, technology and human factors as well as the ability to work cross-disciplinarily. We believe our work aligns with this advice closely since a game making space is naturally multi-disciplinary, and our classroom brings together students from art and software engineering disciplines to explore a humanities spectrum of games together in the process of making games. Therefore, our classroom practice revolves around two goals; (1) encouraging discussions and research in social and cultural contexts by using games as an entry point, (2) encouraging students to actualize their findings in their practice by making games. In order to reach these goals, we ask students to work through a project-based brief exploring a chosen topic while also participating in classroom discussions, doing written analysis, critique and evaluation. This means students are encouraged to explore as per the demands of their project (of their choice) and develop knowledge in the process of making. Kafai (2006) argues that games enclose *instructionist* and *constructionist* perspectives; *instructionist* with lessons already embedded in, and *constructionist* by allowing students to construct their own games with the instructions they are building within. In this light, we see our brief for games for impact (games4impact) as a prompt for teaching students the socio-cultural impact of games. Attempting to develop games for impact means working towards uncovering not only the issues to be addressed with the help of a game but also the means of creating impact with a game. Within this context, we see the types of impacts as follows:

- Fostering systems thinking;
- Building social ties, creating identity;
- Facilitating social innovation;
- Fostering learning and motivating behaviour change;
- Facilitating self-expression and actualisation;
- Harnessing collective action.

Since a key theme of our course is situating games within a larger social and cultural ecosystem, we acknowledge that social, cultural and technological changes are interconnected and influential on digital media as driving forces while also being equally influenced by the digital media itself. Therefore, aligned with our goals, the strength of this classroom is two-fold: (1) designing to learn by using game design as a social, cultural, political, and psychological inquiry; hence, research through design (RtD), (2) designing to reach(-out) by researching how to design to leverage the abilities of the medium; hence,

design research (DR). With a project-based structure, we leverage the participatory and interactive nature of games towards promoting further contemplation on what kind of role games may play and how they can promote a positive change in society. In addition to the critical inquiry throughout the development process, final artefacts developed by student teams create further discussion on not only the issues attempted to be addressed but also the potential impact of a game on the audience with a reflection on the goals.

Our approach in developing this course can be considered as action research within an educational setting. Gapp & Fisher (2006) suggest that action research can be an effective approach for identifying creative solutions to improve the quality of teaching and learning. For us, the students taking this course are not only the subject participants of the developed course but also participants of the research process. The course materials, assignments, and workshops are progressively refined and updated based on reflections to improve the quality of teaching and learning. At the time of writing, the work presented here has been utilized in practice for four consecutive semesters in our games and humanities classroom at Media Design School, New Zealand.

2. Related work

Literature on games within the contexts of learning, physical and mental health, therapy, social and philosophical inquiry, etc. has been growing fast. Suggestions on utilising games for the betterment of society (Swain, 2010; Bogost, 2011; Schrier, 2016; Bayrak, 2019) agree that the full potential of games have not yet been fulfilled. Bogost (2007) argues for the expressive power of games through their procedural rhetoric, and that the ability of games to teach new things and create behavioural change comes from their ability to induce self-inquiry despite and with the help of their lightweight image of being a "plaything".

2.1 Game design for a purpose
Game design as a practice is human-centred and values competency in teaching the player affordances of the game world, limitations of their actions, and consequences of these actions in-game. Games with a purpose are particularly designed to impart knowledge or induce awareness via the experience they offer. Despite the authorial intent—whether a game is designed with an in-built purpose besides entertainment or not— games influence the perception of their players as various cultural values develop within the gaming community both "by design"—with authorial intent—, and "by evolution"—with player contribution— (Bogost, 2008). Moreover, Bogost states: "games are not just stages that facilitate cultural, social, or political practices; they are also media where cultural values themselves can be represented—for critique, satire, education, or commentary." Both Gee (2007) and Farber & Schrier (2017) suggested that games enable their players to develop empathy and provide an active space for social-emotional learning. Belman and Flanagan (2010) suggested four design principles for designing games to foster empathy while emphasizing a positive contribution of empathy on people's attitudes and behaviours

towards other individuals or groups, pro-environment and pro-social behaviours. Flanagan addressed this as a challenge for critical play stating that "The challenge, then, is to find ways to make compelling, complex play environments using the intricacies of critical thinking to offer novel possibilities in games, and for a wide range of players." (Flanagan, 2009, pg.6).

With "Mechanic is the message", Brenda Romero (n.d.) emphasizes the importance of active engagement that compels the participants by making them "a part of the experience rather than a passive observer". Towards identifying how games as a medium become a vehicle, Swain (2010) developed a list of best practices while advising on (including other steps not presented here) learning objectives and play-centric design. Their core pointer within play-centric design is on iterative design towards creating original play mechanics that serve the purposes of the idea (learning objectives).

Flanagan & Nissenbaum developed values at play framework (2014) to encourage intentional design that aims to integrate human values into games. They argue that values are products of implicit and explicit decisions made during the design process. Therefore, a designer should consider how the content might be interpreted by a game's audience, and what kind of values the content suggests or infuses. Their card-based design method called grow-a-game (Tiltfactor, n.d) is available to the public both commercially and for free.

Games with motive are referred to as transformational games by Schell, drawing attention to the transformational effects of such games (Culyba, 2018). These games are designed to create a specific change (intention) that extends into the real world (transfer) and remains even after the player is done playing (persistence). The framework encloses an eight-step development chart with guiding questions so that the gap between current status (of the player in terms of their knowledge, habits, etc.) and transformation (player's transformed self) can be bridged with the help of the game developed via the framework.

2.2 Games and game design in classrooms

Especially for applied systems thinking, the contribution of games for design classrooms as a DR tool has been argued before (Bayrak, 2019). Prior to this, Kafai presented several examples for successful application of game design practice as a learning tool in mathematics classrooms (Kafai et al., 1998). Initial studies on game making as a learning environment were followed with additional research on the pedagogy of game making. Kafai suggested game design as a context for children's learning arguing that game making is constructionist in nature (Kafai, 2012). Constructionism leverages voluntary participation since the necessity to pursue knowledge originates from the demands of the project (Kafai & Burke, 2015); therefore, students pursue knowledge actively and become "producers of knowledge". Referring to the educational games developed by the students in her secondary school mathematics classroom, Kafai (2012) notes that students' tacit knowledge on games allows them to develop effective games for learning even though combining instructional material with game making may seem challenging.

Robertson et al. also presented games as powerful learning environments that motivates

independent pursuit of knowledge (2008), also emphasizing that "Making a game [...] is not a passive experience." (Robertson et al., 2008, pg. 562).

3. Our classroom practice

We acknowledge the challenges of creating engaging classroom experiences for complex topics. In our experience of teaching this class for six semesters, two of which lacked well-defined project-based guidance, we quickly realized that classic approaches including taught classes, and show, analyze and debate sessions do not seem to work effectively without the help of applied workshops. As McLuhan (1967) pointed out with "Medium is the message", media carries the polarity of its medium. With its grammar and interconnected nature, games create a culture, an environment to act on, and a response in the form of social implications. In this context, RtD helps to create design knowledge through the process of designing an artefact while also developing knowledge, empathy and awareness about the chosen topic in the process. DR, —for the tools, grammar, and elements of game making,— helps with developing more impactful experiences to deliver an intentional message. Therefore, our approach leverages both RtD and DR for an effective humanities course within the game development curriculum. Our course structure, assignment brief, and workshops are discussed in the following sub-sections. In addition, the following section presents example projects developed in class.

3.1 Course structure

This course runs over a 16-week curriculum with weekly lectures and workshops. Aligning with the multidisciplinary nature of game development, it welcomes students from both art and programming disciplines. The students enrolled in the course mostly do not have a design background but have taken an entry level game design course prior to this; therefore, they do not have a working knowledge of research through design or design research.

Component description states that the purpose of the course is to introduce students to non-technical, human aspects of game development through a series of lectures, discussions and practical exercises.

Learning outcomes are:

- Understand societal, cultural, and ethical issues relating to digital games;
- Investigate game design and critique gameplay from a societal and cultural perspective;
- Critically analyse games from historic and contemporary perspectives.

3.2 Assignment brief and assessment criteria

The assignment brief presents a set of guiding principles to the students and uses a weighted holistic rubric to assess student work. We acknowledge that the artefacts created within this course may all be very different from one another, may not exactly successfully fulfil

their purpose (as put forward by the students with their research statements) or may create adverse results that were not anticipated. We see all these possibilities in different parts of the success spectrum, mainly relying on the learning during development. This means student reflections on the shortcomings of the artefact is a success factor that is as valuable as an artefact fulfilling its initially set goals. Thus, students are expected to work in teams —participate in a healthy discourse with diverse opinions, to pick a humanities topic— research/investigate social and cultural contexts, to prepare a research statement—construct knowledge that informs and contextualizes their work in relation to the chosen topic, to develop a game—find working features to present their message, and to write a post-mortem—reflect on their learnings from the entire process.

The overview of Games4Impact assignment points to the potential of games to address social, political and cultural issues or promote positive change in society, and reads as:

> "Students are expected to collaboratively explore game design approaches and create an artefact to present their perspective on a topic/theory of their choice. Since the exploration and thought process is as valuable as the artefact itself, a 1000-1500 words essay should accompany the artefact as the research statement."

Assignment guidelines state that the artefact can be of digital or non-digital nature, and a focus on intention, purpose and communication is encouraged over technical complexity. In either platform, the expectation is developing suitable game mechanics to deliver the intended message. Some guiding questions are also provided: (1) What are the values that you want your artefact to reflect?; (2) What is the goal and how is it represented/addressed?; (3) How can the artefact merge the message or the goal into the gameplay of the artefact?

Table 1   Assessment criteria

Assessment area		Description of the expectation
1. Artefact	Purpose:	Artefact clearly presents the purpose and fulfils this purpose as presented in the Research Statement.
	Impact factor:	The artefact manifests the purpose and goals via the participation of its users.
	Suitability:	The intended experience is suitable for the purpose and the topic of exploration with the provided content and interaction.
	Structure:	Artefact comprises relevant elements that are suitable to the type of artefact—digital or non-digital, closely serving for the purpose and motivating the values via interaction.
	Cohesion:	The exploration is cohesively contextualised to fit in the style of the artefact; all elements are in cohesion for the intended experience.
2. Research Statement	Purpose:	Clearly outlines the intention and aims of the project while explaining how these are presented within/by the artefact.
	Comprehension:	Specificity and range of knowledge are presented to contextualise the ideas informing the artefact.

	Criticality:	Evaluates the relevance, impact and value of each point raised to situate the artefact in a wider context.
	Attribution:	The theory, ideas and the artefact are situated in a wider context with enough credible sources of scholarly nature. The attributions are correct, and referencing adheres to the required style-guide.
3. Individual Reflection		Individual Post-mortem is written in a suitable tone and form presenting the contribution of the individual.
		Clearly states and explains the contribution to the creation of the artefact.
		Critically reflects on the successes and failures of the artefact in addressing the chosen topic and its contextualisation.
		Presents a reflection on the creation process of the artefact, addressing what went right, what went wrong and how it could be improved.

3.3 Workshops: inquiry methods and class activities

Throughout the component, discussions are initiated in weekly lectures, then elaborated in workshops. The workshops in the first half of the semester are used to develop scientific inquiry skills, argument building, and academic writing while the second half employs a project-based structure to encourage practice-based inquiry. In addition, class discussions are also carried on in a private blog that is only accessible by the students enrolled in the course. The blog is used to offer a continuous discussion space highlighting values in diversity of opinions, perspective sharing, and compassion towards all members of the community. We consider our classroom to represent a well-coordinated social-emotional learning environment (Weissberg et al., 2015) that promotes healthy emotional and cultural discussions across team members and classmates. In addition to the presented material, students are given core readings to cultivate their understanding. These readings are motivating sources and mainly discussed in Section 2.

Core questions asked in class activities include:

- Do games reflect values: Whose values are they? How can we forge a value into the activity that a player performs?
- Mechanic is the message: How could the values be manifested through the basic mechanics of interaction?
- How would a game's constraints and affordances reflect values?
- How do a game's features embody values?

During the workshops, as games evolve, class activities pose questions that attempt to validate the current status of a game:

- Identify the value(s) reflected in your game.
- If we start to think of human values as a main point of interest, is there a core value that is explored/reflected in your game?
- How might the content be interpreted by your game's audience?

4. Example Cases: Student Projects

This section presents five example games developed in this class and discusses student learning as per (1) purpose—referring to the goals of the practice, (2) gameplay—structure of the experience, (3) process—referring to the design process, and (4) evaluation—results and concluding remarks. Table 2 shows a brief summary of the projects.

Table 2   Project summary

Game	Key Impact	Merit for RtD	Merit for DR
Rocket Run	Motivates behaviour change	Learned the core factors behind distraction and loss of motivation	Understanding how to develop appeal and create dilemma in gameplay
Wayward	Facilitates self-expression and actualisation	Explored motivating factors behind human behaviour and decision-making	Using learned systems to influence player choices
The Park	Harnesses collective action	Learned of innovative approaches towards solving pollution in urban spaces	Translating a social issue into an allegorical interactive experience
Devoid	Facilitates self-expression and actualisation	Self-realisation; gained an authentic understanding of the grieving process	Presenting serious and heavy content within an interactive experience
Burning Books 47	Facilitating social innovation	Expanded knowledge on books of cultural and social importance	Dissonance between research and development limited impact

4.1 Rocket Run

Purpose

Rocket Run discusses the topic of procrastination by presenting the player with a balancing act between short-term gratification and long-term goals. The player is tasked with landing a rocket ship safely while being distracted by an optional activity to collect points, drawing from O'Donoghue and Rabn's (2001) ideas on inducing procrastination.

Gameplay

Gameplay begins in the rocket ship that is steadily falling, indicated by a status bar at the bottom of the screen. Floating crates in space whiz past the rocket and can be blasted to collect points. The player cannot use the lever and the cannons simultaneously. To land safely, they have three options: ignore the crates completely and hold the lever down to slow the ship's descend; collect points at the early stages and spend the rest trying to slow down; alternate between collecting points and slowly descending consistently.

Figure 1   Gameplay showing the player using the cannons to gain points from breaking crates.
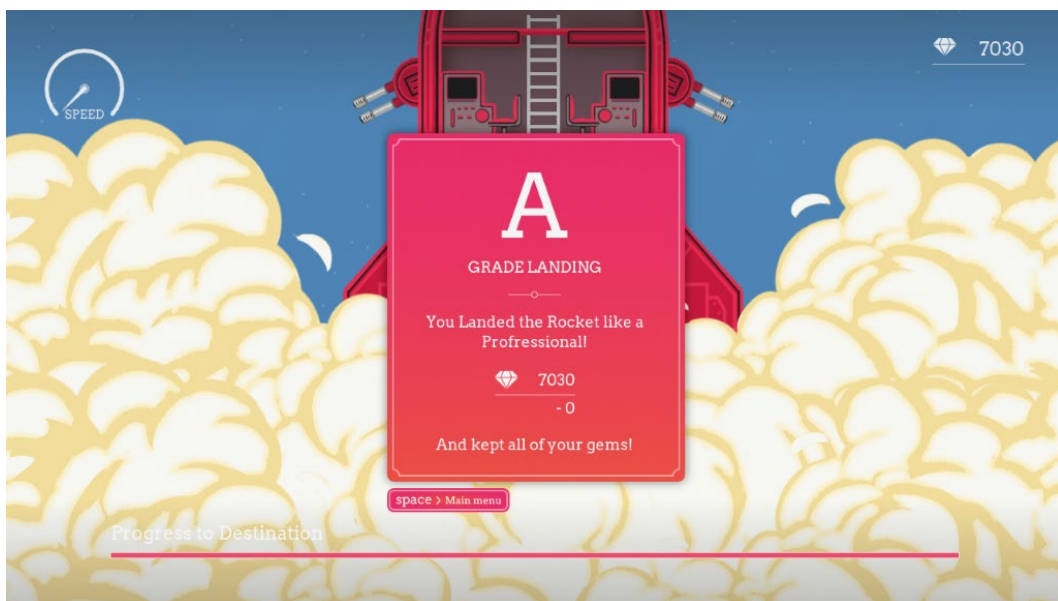

Figure 2   Win screen of the game indicating a successful landing of the rocket ship.

PROCESS

The team created several mini prototypes before landing on the current one. Careful scoping and iterations helped the team to focus on refining the game to better convey their message.

EVALUATION

The final artefact successfully weaved the key message into the experience with nuance, while short-term gratification and long-term goals were adequately juxtaposed for player engagement. Artefact's success became more apparent in a playtest session where the

participants realised that they have fallen for the distractions and missed the main goal. Despite the lack of scholarly engagement in the research statement, the argument was well structured showing that the assignment successfully incited an exploration for the topic. In their post-mortems, two students mentioned the effects of procrastination, promptly stating that "the irony of what happened in this project was something to be learned from." Overall, the outcome demonstrated a critical investigation and actualisation of learnings in practice.

4.2 Wayward

PURPOSE

Wayward aims to create a discourse around player motivation by exploring the concepts of intrinsic and extrinsic motivation. It attempts so by addressing the three needs as per self-determination theory (SDT) by Deci and Ryan (1985), and by providing the player with a quest without an extrinsic reward.

Figure 3   Dialogue cut-scene with elderly woman, where she explains that there is no reward for the task that she requires help in doing.

GAMEPLAY

Gameplay begins by explaining the premise and instructing for daily actions. The next day presents a request for help from an elderly woman; this will undoubtedly cause them to be late to school, yet without any tangible reward. When the day ends, the concluding screen references player's actions for the day and summarises the core message of the game. If the player chooses to help the elderly woman, they will inevitably be late to school. However, they will also spot the elderly woman outside their window smiling at them.

PROCESS

The original idea was stress related to school assessment deadlines. Later, in the process of developing the idea, the students discovered that motivation had been the underlying core idea. Team focused on the message through several iterations, yet the clarity of the message proved harder than expected.

EVALUATION

The final artefact was successful in its completeness, but the message still lacked depth as the choice for intrinsic motivation remained unclear. The elderly woman acknowledging the player with a smile attached an extrinsic reward to an intrinsically motivated action, therefore worked against the intended message. Team's research statement had a clear argument but lacked explicit engagement with credible sources. Nonetheless, students' post-mortems showed that they gained a greater understanding of the medium; hence, knowledge and practice were united. Despite a lack of success in application, team was successful in pursuing further conceptual meaning for their mechanics.

4.3 The Park

PURPOSE

The Park aims to bring awareness to the positive effects of beautification in urban spaces. The game locks the players into a specific path of action towards winning the game, which upon realisation also completes the message of the game.

GAMEPLAY

The player can either pick trash off the ground to lessen filth or plant trees to increase beauty of the space. A higher beauty score lessens the appearance of new trash; however, trees cannot be planted until money is earned through picking up trash. Once all potential tree planting spots have been used and all trash is picked up, the game ends with a victory screen.

PROCESS

Despite a delay in starting development, proper planning with a well-grounded research helped the students to focus on how to deliver the intended message within the remaining time.

Figure 4   Desaturated colours reflect the filthy status of the neighbourhood.

Figure 5   Saturated colours reflect the low filth and high beauty status of the neighbourhood.

Evaluation

The final artefact managed to communicate the message in a highly effective manner. The research statement engaged with a range of academic and news articles effectively with a solution-driven angle. Post-mortems noted a recently gained understanding of themselves and working within the medium through the process—an example of growth in systems thinking. Therefore, the assignment was successful at encouraging the team to investigate and transfer their research into practice.

4.4 Devoid

Purpose
Devoid explores grief and loss by placing the player in spaces visually reflective of the state of their mind, mainly aiming to represent the five stages of grief (Kübler-Ross, 1969). The artefact serves as a mode of self-expression for the team members, whose friend was battling cancer.

Gameplay
Gameplay consists of five rooms that the player wakes up in. Each room represents one stage of grief visually: (1) denial—a half-lit room with objects strewn across the room, (2) anger—a dimly-lit room messier than the first, (3) bargaining—a well-lit tidied room with a laptop in use on the bed, (4) depression—the same room as bargaining but with laptop closed and put aside, (5) acceptance—a brightly lit room that is neat and composed.

Figure 6   Room that represents denial.

Process
Since the students in this team were at the brink of losing a close friend to cancer after a long battle, they approached this game with strong emotional ties and a desire to create an impactful experience. However, this level of close attachment to the topic led to an unfortunate over-scoping.

Evaluation
The final artefact was incomplete; however, the process of making the game was not only a learning opportunity for the students but also a part of the message itself. The team's eagerness to begin the production phase caused a limited understanding beyond their own

personal experiences. This became evident in both the final artefact and research statement, both lacking criticality and depth. In dealing with strong emotions, the production process became a therapeutic experience for the students; thus, the assignment reached a different kind of success, perhaps resilience. Conversely, the assignment failed in achieving its goal of inciting a deeper understanding for the topic.

4.5 Book Burning 47

PURPOSE

Book Burning 47 discusses the topic of censorship by tasking the player for the fate of some "controversial" books. The books reference real ones that were banned by a governing body at one point in time; collectively representing information and freedom of thought. The two possible end states of the game illustrate the outcome of censorship at extreme levels.
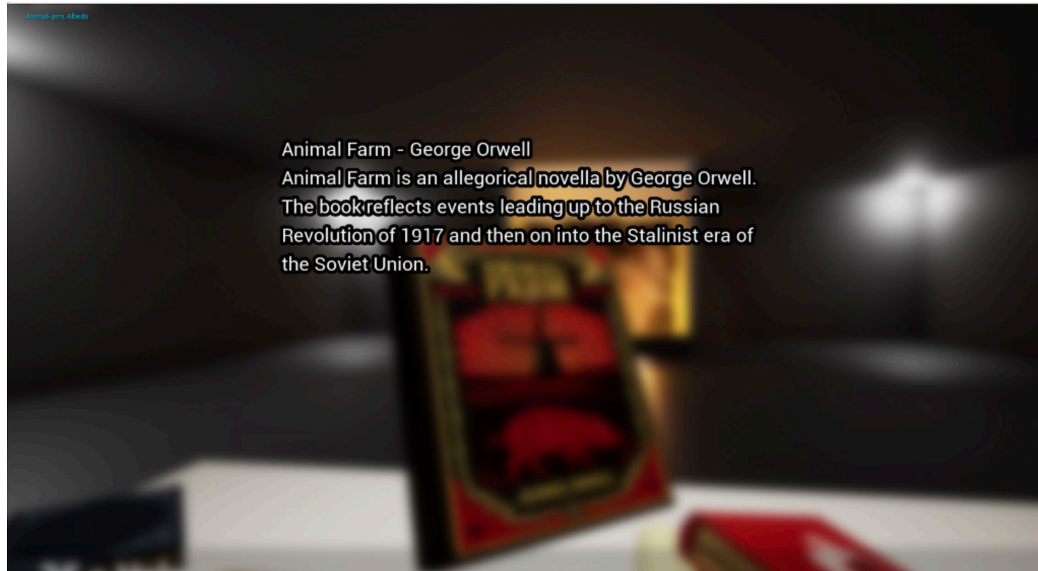

Figure 7   Books on table for review.

Figure 8   Animal Farm book picked up and description read.

GAMEPLAY

In the game, players review books over four days while the state of the room changes each day, reflecting the impact of the player's actions on the regime. Burning books results in more propaganda filling the room, but empty bookshelves; passing books results in indications of rebellion through broken glass and messy floors. Burning books also leads to illiteracy signalled by book descriptions no longer being readable. At the end of the four days, a cut-scene presents either the empire gaining total control or being toppled.

PROCESS

Although it took the team a while to settle on an idea, once solidified, the team had a strong grasp of their topic. However, they struggled to implement all features planned.

EVALUATION

The artefact managed to convey the intended message to some degree even though some features remained incomplete. The research statement lacked depth yet presented a well-crafted argument. The core idea suggested a rhetoric; however, the final disposition remained simplistic and lacked nuance. Post-mortems indicated lack of research across the team, which potentially factored into the lack of actualisation. Therefore, the assignment failed to leverage collective action for exploration and research. Potentially, the students became familiarised with the books to some degree.

5. Learnings and Reflections

Teaching faculty noticed that rather than the successful creation of an artefact, the student journey in developing the artefact enhanced the student learning. This became visible via the research statements and the post-mortems. Since we started using the idea of making

a game as a prompt, student engagement clearly increased especially when compared with the older versions of the component. We see this as a success for the current teaching and learning environment. We use the research statements as a means to evaluate students' contextual awareness towards the chosen topic, how the assignment has prompted the team to conduct research and articulate their findings. As much as this can be analysed by the criticality/depth of their text and quality of the sources, we realised that the depth of understanding surfaces with the depth of the artefact, how the artefact presents the topic to its audience, and in its nuance of delivering a core message. Examples of this has already been discussed in the case studies section.

We believe that the faculty plays an important role in facilitating the process for the students. A lack of communication across team members has been an obstacle while discrepancies in each member's understanding and progress hinders a project significantly. Regular meetings proved effective in maintaining the focus on key learning outcomes. Where possible, the regularity of these meetings offers a good chance to keep the students on track for all three fronts: quality of research, strength of the argument through engagement with source materials, and effectiveness of their final artefact in conveying their points. In the case of developing Wayward, the team had great success on the two areas discussed in meetings which were their logic and application of ideas in the final artefact, but failed when it came to scholarly engagement; something the teaching faculty could have been more observant of. Moving forward, scheduling mandatory meeting sessions with each team would be ideal rather than mostly allowing each project to find its own course.

One consistent trend among our students is a tendency towards the production phase, and that the research segment prior to starting production is easily overlooked. This is due to the same excitement that encourages students to explore complex themes in the first place. As such, balancing these two parts will result in more successful learning outcomes. The more meaningful games came from teams that found a balance between research and application while attempting to find simple and effective features to present their topic through iteration. More emphasis on this is necessary so that a more structured approach for DR is put in place to aid the students in realising the core of their topic and how to articulate it in the game.

In earlier versions of the component, teams were required to present a core reading to guide their research and root their starting point. We observed this becoming problematic due to teams' sole reliance on that one reading without other considerations while moving forward. We hope that a change toward requesting a review with a suitable scholarly breadth can improve the ground research significantly although it creates an overhead for the teaching faculty in terms of breadth of material to be looked over.

In retrospect, lecture material has evolved to broaden the students' understanding of what can be considered a game for impact. This resulted in a greater range of chosen topics, as witnessed in examples such as *Rocket Run* and *Wayward*.

6. Conclusion and Future Work

We have presented a classroom practice leveraging RtD approach to enhance student learning for humanities in game development curriculum. We have shown that RtD and DR can be applied in a classroom setting naturally with implicit prompts. An extended, larger version of this class could also include a component requiring teams to research their audience in greater detail and consider publishing/presenting an artefact with an audience focus. Therefore, the potential for similar work in larger networks to serve for and ignite greater change and awareness in the society may increase.

Although our classroom practice is originally developed for a curriculum for game development education, we believe the idea of making a game as a process to explore social sciences and humanities discourse can still work for student groups who may not have trained for game development. Non-commercial dimensions of game-making relies on tacit knowledge and interest, and there is a large do-it-yourself community of game enthusiasts; therefore, prior experience in game making is irrelevant for experimental purposes. In the future, we are hoping to develop a tool to help facilitate the design process more effectively in the classroom. The inquiry methods, class activities and the set-up of our project-based classroom environment would hopefully inspire other educators and researchers.

7. References

Bayrak, A. T. (2019). Games as a Catalyst for Design for SocialInnovation. Unlocking legendary tools, *The Design Journal*, 22:sup1, 1409-1422, DOI:10.1080/14606925.2019.1594966

Bayrak, A. T. (2017). Jamming as a design approach. Power of jamming for creative iteration. *The Design Journal*, *20*(sup1), S3945-S3953.

Belman, J., Nissenbaum, H., Flanagan, M., & Diamond, J. (2011, September). Grow-A-Game: A Tool for Values Conscious Design and Analysis of Digital Games. In *DiGRA Conference* (Vol. 6).

Belman, J., & Flanagan, M. (2010). Designing games to foster empathy. *International Journal of Cognitive Technology*, *15*(1), 11.

Bogost, I. (2007). *Persuasive games: The expressive power of videogames.* Mit Press.

Bogost, I. (2011). *How to do things with videogames*. U of Minnesota Press.

Bogost, I. (2008). The Rhetoric of Video Games. In Katie Salen.The John D. and Catherine T. MacArthur (Eds.), *The Ecology of Games: Connecting Youth, Games, and Learning* (P. 117–140). Foundation Series on Digital Media and Learning. Cambridge, MA: The MIT Press. doi: 10.1162/dmal.9780262693646.117

Culyba, S. (2018). *The Transformational Framework: A process tool for the development of Transformational games*. figshare.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and selfdetermination in human behavior*. New York: Plenum.

Farber, M., & Schrier, K. (2017). *The limits and strengths of using digital games as empathy machines*. Working paper. Retrieved from https://d27gr4uvgxfbqz.cloudfront.net/files%2Fd61c7672-81d3-4ae0-8cc0-b14f53d1ab01_Working%20Paper%205.pdf

Flanagan, M. (2009). *Critical play: Radical game design*. MIT press.

Flanagan, M., & Nissenbaum, H. (2014). *Values at play in digital games*. MIT Press.

Gapp, R. and Fisher, R. (2006), "Achieving excellence through innovative approaches to student involvement in course evaluation within the tertiary education sector", *Quality Assurance in Education*, Vol. 14 No. 2, pp. 156-166. https://doi.org/10.1108/09684880610662033

Gee, J. P. (2003). What video games have to teach us about learning and literacy. *Computers in Entertainment (CIE)*, *1*(1), 20-20.

Kafai, Y. B., Franke, M. L., Ching, C. C., & Shih, J. C. (1998). Game design as an interactive learning environment for fostering students' and teachers' mathematical inquiry. *International Journal of Computers for Mathematical Learning*, *3*(2), 149-184.

Kafai, Y. B., & Burke, Q. (2015). Constructionist gaming: Understanding the benefits of making games for learning. *Educational psychologist*, 50(4), 313-334.

Kafai, Y. B. (2012). *Minds in play: Computer game design as a context for children's learning*. Routledge.

Kafai, Y. B. (2006). Playing and making games for learning: Instructionist and constructionist perspectives for game studies. *Games and culture*, *1*(1), 36-40.

Kubler-Ross, E. (1969). *On Death and Dying.* Macmillan, New York.

Laurel, B. (2003). *Design research: methods and perspectives.* MIT press.

McLuhan, M., & Fiore, Q. (1967). The medium is the message. *New York*, *123*, 126-128.

Norman, D. (2010). *Why Design Education Must Change*. http://tinyurl.com/oaz3u6m (Accessed 12 August 2019).

O'Donoghue, T., & Rabin, M. (2000). *Choice and Procrastination.* UC Berkeley: Department of Economics, UCB. https://escholarship.org/uc/item/5r26k54p (Accessed 17 January 2020)

Robertson, J., & Howells, C. (2008). Computer game design: Opportunities for successful learning. *Computers & Education*, *50*(2), 559-578.

Romero, B. (n.d). *Mechanic is the message.* http://brenda.games/work-1 (Accessed 13 January 2020).

Schrier, K. (2016). *Knowledge games: How playing games can solve problems, create insight, and make change.* JHU Press.

SG Labs. (2017). *Building transformational games.* Retrieved November 16, 2018, from http://sglabs.schellgames.com/post/158631099103/building-a-transformational-game

Swain, C. (2010). The mechanic is the message: How to communicate values in games through the mechanics of user action and system response. In *Ethics and game design: Teaching values through play* (pp. 217-235). IGI Global.

Tiltfactor. (n.d). *Grow-a-game.* https://tiltfactor.org/game/grow-a-game/ (Accessed 13 January 2020)

Weissberg, R. P., Durlak, J. A., Domitrovich, C. E., & Gullotta, T. P. (Eds.). (2015). Social and emotional learning: Past, present, and future. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P. Gullotta (Eds.), *Handbook of social and emotional learning: Research and practice* (p. 3–19). The Guilford Press.

About the Authors:

Sam Yang is a lecturer at Media Design School, with a passion for digital illustration and concept art.

A. Tece Bayrak is a games scholar, teaching game development at Media Design School. She sees gameplay programming as art, also believes in the power of games for change.