Art Games: Creating Video Games Within an Art Curriculum

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Abstract: As an influential form of digital visual culture, video games offer art educators numerous pedagogical opportunities. My paper intends to show how making video games through an art-based curriculum provide young people one of those opportunities.

Many supporters of games in education discuss learning from playing games, but fewer studies focus on the creative learning from making games. Research focusing on game creation primarily connects game development to Science, Technology, Engineering, and Math (STEM) subjects. However these studies do not focus on the creative, metaphoric, interactive components of game creation. Yet for many of the 20th century art movements, game practices were foundational to developing an aesthetic that rejected standards, practices, and systems within art.

From my current research, I provide examples of students learning about complexity thinking by producing video games as part of a 4-8th grade art-based curriculum.

Games as Art Making

While few research studies on the value of making games as art projects exist (Keifer-Boyd, 2005; Gill, 2009; Peppler, 2010), currently, research studies in art education have not looked at the impact of making video games with students. Studies in disciplines outside of art education have concentrated on whether or not student-made games were efficient and effective to teaching math (Kafai, 1995) language (Robertson & Good, 2005), or computer science (Seif El Nasr & Smith, 2006; Dalal, Dalal, Kak, Antonenko, & Stansberry, 2009). However these studies were not focused on the creative, metaphoric, interactive components of game creation.

Games, defined in this study as structured play, provided the foundation for many of the works from 20th century art movements, such as Dadaism, Surrealism, Situationism, and Fluxus, embodied issues of complexity in their use of game making methods by exploring and exposing rules of political, economic, and environmental systems (Flanagan, 2009). By contextualizing games within the historical practices of artists throughout the 20th century and digital media practices of the 21st century, game creation can be understood as credible art content for parents, school administrators and the contemporary art classroom.

My study included four classes of students, ages 8-13, learning concepts and methods of game development including physical, tabletop, and video games over a 5-day period in a camp-styled course. This research relies on using complexity theory as an umbrella concept, designed to include, combine, and elaborate on the insights of any and all relevant domains of inquiry, such as economics, physics, and biology (Sumara & Davis, 2009). By making games as a method to approach concepts of complexity, the finite scope of the game creator's abilities and emergent game behavior are exposed to reveal how complex and interconnected our daily lives are.

Students in this study learned video game programming through the visual interface of Game Maker, using a curriculum developed around the language of move, avoid, release, and contact (MARC) (1). The abstracted concepts of MARC framed scenarios that can have social, philosophical, theoretical, political, or psychological implications for students (2). Considered as metaphors for procedural options in different types of systems, MARC is theorized to connect students to video game unit operations as a way to develop artistic metaphors for the systems of everyday lives.

Sam: The Unit Operations of MARC Everywhere

Conducting interviews 3-months after the course, Sam, age 10, saw a connection between the complicated 3-D games he plays and the game he made in the course:

> I have these 3-D video games that are very large complicated worlds, but I still try to figure out how the game works, and if the designers used Game Maker, how to get the game to work … I actually thought once that the world could be like a game because if somebody made it a game and if you touched your desk, or you touch a

> table, it would need to be solid to move it … But that's impossible to make a game like that because it would take like a million years.

Sam immediately established the difference between games as being simple and complicated, describing the complexity of the vast worlds of his 3-D games. Sam noted the games he plays have many types of objects interacting in complex ways, a programmable task that would be difficult to recreate in all the ways we interact in daily life.

Gina: MARC Important to Gameplay

Learning the how to make games and using the MARC concepts, Gina age 11, began seeing games as a maker, glimpsing below the playing surface to understand how video games work with interdisciplinary knowledge:

> When the course was over, I went home and would talk to my parents about what we were doing and try to explain to them, how you put actions and objects in the game…us(ing) actual examples…I would pick up a pencil then I would be contacting it. Then if you released the pencil…you are dropping it. If you catch something, that would be contacting it, and all this different stuff … if this was happening in real life and if they were throwing this, then it would be releasing it and if I were catching it, then I would be contacting it.

Thinking about MARC in the games they played, students considered how computational systems of video games work. Students, like Gina, understood that MARC actions work simultaneously, acting as connected parts of a system to make the game function properly.

During the course, students continued to use the basic concepts of MARC to make personal decisions to change the forms of complexity in their games. When students moved beyond the introductory tutorial, they changed their game systems, determining the level of complexity by creating new rules, game objects, and behaviors. Designing pedagogical strategies in a game development curriculum that explores complexity encourages students to expand their knowledge base. Applying the open metaphors of MARC to art-based game making, the course content demonstrates the interconnection of academic subjects and deeper understanding of cause and effect to situations in life. By making games in the traditionally less rigid, creative space of the art classroom, gives students the freedom to play and learn by taking risks or failing.

Conclusion

It can be explained to parents that this game-based art pedagogy honors and values the history of art, inspired by the game practices of the Dadaists, Surrealists, Fluxus, and Situationists. Students-made games can be considered a form of action research, an iterative process of theorizing, testing, and receiving feedback to the game systems they created. In this iterative process of making, students problematize and problem-solve complex and emergent ideas.

Endnotes

(1) I developed MARC as a way to abstract the actions of many video games into a language showing commonalities across video game genres (shooter, action-adventure, role-playing, strategy, etc.) and describes events in everyday life within a game context.

(2) **Social**: *Making Friends* – move (moving towards a desirable person), avoid (getting away from undesirable people), release (removing friends from social circles), contact (take actions to becoming friends).
Philosophical: *Aesthetics* – move (steer towards aesthetic preference), avoid (steer away from aesthetic pitfalls), release (masking aesthetic mistakes), contact (making aesthetic choices).
Theoretical: *Semiotics* – move (grab signs that have multiple meanings), avoid (strengthening established meanings), release (send signs to the vocabulary pool), contact (combine signs with other signs to create new meanings or remove meanings).
Political: *Universal Healthcare* – move (getting the health bill passed), avoid (losing votes), release (messages to the public promoting the bill), contact (persuade and acquiring votes).
Psychological: *Anxiety in public speaking* – move (give speech in front of the class), avoid (poor inflection, students laughing), release (saying words at the proper time), contact (making eye contact, using inflection).

References:

Dalal N., Dalal, P., Kak, S., Antonenko, P., & Stansberry, S. (2009). Rapid digital game creation for broadening participation in computing and fostering crucial thinking skills. *International Journal of Social and Humanistic Computing*, 1(2), 123-127.

Flanagan, M. (2009). *Critical play: Radical game design*. Cambridge, MA: MIT Press.
Gill, D. V. (2009). Usefulness of video game experience for students learning and creating digital 3-D. *Visual Arts Research*, 35(2), 109-121.
Kafai, Y. B. (1995). *Minds in play: Computer game design as a context for children's learning*. Hilldale, NJ: Lawrence Erlbaum Associates.
Keifer-Boyd, K. (2005). Children teaching children with their computer game creations. *Visual Arts Research*, 31(1), 117-128.
Peppler, K. (2010). Media arts: Arts education for a digital age. *Teachers College Record*, 112(8), pp. 2118–2153.
Robertson, J., & Good, J. (2005). Children's narrative development through computer game authoring. *TechTrends*, 49(5), 43-59.
Seif El-Nasr, M., & Smith, B. K. (2006). Learning through game modding. *ACM Computers in Entertainment*, 4(1), 3B.
Sumara, D., & Davis, B. (2009). Complexity theory and action research. In S. E. Noffke & B. Somekh (Eds.), *The SAGE Handbook of Educational Action Research* (pp. 358-369). Thousand Oaks, CA: Sage.