

Rain World Video Game Modifications: When Technology Meets Unleashed Creativity

Creativity is putting your imagination to work, and it's produced the most extraordinary results in human culture. ~ Sir Ken Robinson

Author: Julia Burns

One of my favorite parts of being a co-founder of Pathways High (PH) is talking with our students because their enthusiasm for their projects is contagious and I always learn something new. My recent interview with Miles, a Pathways High junior, is no exception.

I sought out Miles after PH's lead technology teacher, Chris Kjaer, enthusiastically shared with me that Miles had "rocked his first trimester Defense!" Similar to a master's thesis defense, the Pathways High Defense process enables students to earn mastery or advanced mastery credit for a learning standard by conducting additional research on a project, expanding the project deliverables, and/or utilizing their project in a community application. Miles's defense was centered on the development of modifications (mods) to the Rain World video game, changing how the game looks or behaves. Miles' programming productivity is remarkable, creating five game mods in 6 months. This was possible due to his acquisition of extensive knowledge and skills utilizing multiple software tools and programming languages over several years.

Miles' passion for game design and programming began when he was ten and his father bought him his first computer. Miles taught himself the [Unity C#](#) programming language and [Unreal Engine's](#) Blueprint Visual Scripting System to create simple video games. Miles explained that Blueprint is a beginner's level tool as it has pre-generated plug-ins which don't require the developer to know how to code in the underlying C++ programming language. The Blueprint Scripting System enabled him to construct objects and create individual functions and gameplay events in his video games.

During his middle and early high school years, Miles' coding expertise grew significantly. He learned how to use Blender, a 3D modeling software tool, to create complex 3D images in his game mods. Anyone who has seen today's video games can appreciate the sophisticated, highly realistic graphics, but likely does not know all that is involved in creating these images. Miles explained that when rendering the movements of human figures or robots with joints in the game, the mathematical process known as inverse kinematics allows you to position the last bone in a bone chain and the other bones are positioned automatically. For example, when programming someone's finger to move forward to flip a switch this would cause their arm to follow. In addition, by using Unreal Engine's high-performance physics and destruction system called Chaos Destruction, Miles is able to achieve cinematic-quality visuals in real time. When I asked Miles how he gets his ideas for game mods, he said that after he's been working late into the night, his creativity takes off as his mind sheds conventionality and embraces the connections of disparate concepts and images to generate something novel.

Furthermore, Miles attributed his ability to excel at computer programming to the opportunities he has at Pathways High to work with multiple industry-grade technologies in a tech seminar arc. Pathways High offers a series of seminars, including programming, drones, robotics, and data analytics that a student can spiral through multiple times, learning progressively more complex programming languages and technical skills. Through its partnership with [LAB Midwest](#), Pathways High has brought in Mastery Coding and advanced manufacturing

technology such as [Fanuc](#) robot arms and [Amatrol](#) Skill Boss and associated curriculum that enable students to earn industry certifications.

Miles's Defense presentation received accolades from community panelist Kris Falkner, CEO and Chairwoman of [Server](#), who served as one of Miles's Defense evaluators. Kris commented that she was particularly impressed with Miles's presentation because he was able to explain the video gaming technology in a way that she, someone without video gaming experience, could understand.

Fast forward three months and Miles defended another programming project that involved using the Artificial Intelligence (AI) tool [Chat GPT](#) to program non playable characters (NPCs) in video games to evolve their "personalities" based on initial dialog with other characters. NPCs are controlled by the computer, rather than a real player and are used to advance the plot, give context on the environment, or simply make the game more interesting. One of Miles's defense evaluators, James Hischke, Director of Consulting Services at [Codeworks](#), provided the following feedback on Miles's project. "It was so impressive to see Miles combine the generative AI capabilities of Chat GPT and the voice generation capabilities of [ElevenLabs](#) to take his contributions to the gaming world to an even greater level."

Furthermore, after speaking with Miles at the Pathways High Exhibition of student work held three times per year, [Rockwell Automation](#) Global Academics Manager Joe Zaccaria said, "Miles's non-player character development project led us to discuss data orchestration and what is necessary to build effective AI models. I was astounded at the depth of knowledge Miles possesses and how well he can articulate the practicalities and realities of AI model development. Pathways High has created an enabling environment for Miles."

Currently, Miles has 14,200 unique visitors and 3,200 subscribers to his Rain World game mod site, putting him in the top 40 of Rain World game modders world-wide. As for the future, Miles' prospects are many and exciting. First, he aspires to release his own video game while still at Pathways High. Next, if he's not too busy with his gaming business, he'd like to attend UW-Milwaukee, Madison, MSOE, University of Illinois Urbana-Champaign, or Stanford after graduating from Pathways High. One thing is certain, any of these university communities would benefit greatly from Miles' unleashed creativity and tireless work ethic.