GAME:IT Elementary Learning Objectives, Standards & Skills

We take great pride in the fact that **GAME:IT ELEMENTARY** is not simply a terrific introductory level computer programming course, but a lot more. We do focus on programming skills but also on each discipline related to STEM (science, technology, engineering and math).

Using game design and development as the teaching vehicle, **GAME:IT ELEMENTARY** exposes your students to a wide range of concepts and technical skills in six separate areas that will greatly help them succeed in the future.

1. Technical skills related to software development, computer programming & graphic design
2. Creative, innovative & critical thinking
3. Communication and collaboration as an individual and part of a team
4. Using appropriate and accessible digital tools for research and learning
5. Using engineering, physics & mathematical concepts critical to game development
6. Post-secondary and career options & resources related to STEM

1. Technical Skills

A. Programming through a drag-n-drop method
B. Programming by writing code using GML
C. Follow technical and increasingly complex programming instructions in order and detail
D. Program original game projects
E. Use digital design resources and color theory to draw and animate sprites, objects, platforms, backgrounds and loops
F. Become familiar and competent in using game engines (Game Maker); open files, save files, create and program original material, integrate separate files into a final game project, create and edit audio sound effects & music
G. Technical writing; user instructions, game directions, game rules and document development process within a development team

2. Creative, Innovative & Critical Thinking

A. Learn steps of the engineering design cycle (discover- evaluate, design- evaluate, develop- evaluate, deliver- evaluate) and how it works as a practical problem solving method
B. Use gained technical skills to improve game programs
C. Use gained technical skills to create, design & program original working games
D. Troubleshoot existing game programs to fix bugs and ensure performance
E. Test fellow classmate's games to ensure performance
F. Perform self-evaluations of projects against the required established directives
G. Perform evaluations of classmate's projects against the required established directives

H. Develop a marketing plan for original programmed game to include; target audience, current competition, delivery options, product pricing, logo design and strategy to spend budgeted funds

3. Communication & Collaboration

A. Form game development groups to achieve directive of creating original game
B. Assign tasks to members of development group to achieve directive of creating an original game
C. Use the engineering design cycle within the development team to achieve directive of creating original game
D. Project management; students will have opportunity to lead a development team, assign tasks, evaluate progress, facilitate communication among team members and ensure that project is completed within time deadline
E. Conduct two in-class presentations including demonstration of original game

4. Using Digital Research Tools

A. Use appropriate internet websites to gather and analyze research on a variety of subjects including; game development, marketing statistics, post-secondary education options and careers in game development & technology
B. Use appropriate wiki's and blogs to engage other (distance) users of Game Maker for research, ideas and help

5. Engineering, Physics & Math

A. Learn how the process used in designing and developing software can be applied to other design and development projects like bridges, buildings and machines
B. Learn how basic physics concepts like gravity, acceleration, velocity, speed, trajectory, Newton's Laws of Motion, force & elasticity are used in game development
C. Use required mathematical techniques to perform physics calculations in determining how physics is used in gaming compared to the real world
D. Use knowledge of math & physics to evaluate behavior in games in the "virtual world" as compared to the "real world"

6. Further Career, STEM & Post-secondary Education Options

A. Research how technical & communication skills used in game design translate to other technology industries and businesses
B. Research required post-secondary diplomas, certificates & degrees needed to gain employment in game development and other technology based industries
C. Research career trends, wage data and employment opportunities in game development and technology based industries