



Computer and Information Technology Software Development and Game Design



ORGANIZING THEME/TOPIC	FOCUS STANDARDS & SKILLS
<p>Object Oriented Programming (OOP)</p> <p>Integrated Development Environments (IDE)</p> <p>Time Frame: 2 weeks</p>	<p>KS 10152.1 18 Demonstrate knowledge of software development environment.</p> <ul style="list-style-type: none"> • Create programs using game development tools and industry standard language. • Implement industry standards for documentation of programs. • Apply OOP principles of modular development to program design I (e.g. modular design, Integrated Development Environments, languages, documentation). • Control data flow using scope of variables, parameters, inheritance and encapsulation (e.g. private, public, static, and void/non-void methods). • Use API documentation and research to develop solutions to game design problems.
<p>Events</p> <p>Time Frame: 2 weeks</p>	<p>KS 10152.1.17 Identify the elements of the information processing cycles (i.e. input, process, output, storage).</p> <ul style="list-style-type: none"> • Understand how computers use event handlers to control their operation. • Apply input mechanisms (e.g. keyboard, mouse) to control game operation.
<p>Program Logic</p> <p>Time Frame: 5 weeks</p>	<p>KS 10152.1.22 Demonstrate knowledge of key constructs and commands specific to a language.</p> <ul style="list-style-type: none"> • Represent logic structures graphically with flowcharts and verbally with pseudo-code. • Create branching structures: if and if/else. • Create looping structures using while and for. • Apply multi-path branching to solve logical game design problems. • Create nested logical structures to solve game design problems. • Select and apply the appropriate logic structure to solve programming problems.
<p>Data Types and Structures</p> <p>Time Frame: 4 weeks</p>	<p>KS 10152.1.21 Demonstrate knowledge of the concepts of data and procedural representations.</p> <ul style="list-style-type: none"> • Create programs using numeric data types, operators, order of operations. • Solve programming problems using Boolean data and Boolean logical operators. • Use Strings and String operators to process string data. • Develop game programs that utilize arrays and standard array algorithms (e.g. search, sort).

<p>Game Design</p> <p>Time Frame: 4 weeks</p>	<p>KS 10152.1.23 Demonstrate knowledge of how programming control structures are used to verify correctness.</p> <ul style="list-style-type: none"> ● Make objects move, turn and react to other object and edges. ● Incorporate scorekeeping mechanisms. ● Explore other gaming concepts and platforms. ● Design and create a fully functional game. ● Create and control (e.g. movement, animation) appropriate game graphics. ● Build games that mimic real-world object behaviors. ● Control game operation via standard tools (e.g. time-keeping, life span, power-ups). ● Enhance game control with 'winning' screens and multi-level operation. ● Design, build, test, and complete fully functional game projects.
<p>Career Readiness</p> <p>Time Frame: 1 week</p>	<p>KS 10152.2.8 Identify and explore career opportunities in Information Technology.</p> <ul style="list-style-type: none"> ● Function effectively in individual and group project situations. ● Demonstrate knowledge of industry norms for workplace conditions and expectations. ● Use knowledge of career paths and trends to construct a plan for career development.