

MASCOUTAH COMMUNITY SCHOOL DISTRICT #19

Teacher: Amanda Popovich

Grade: 8

Subject: PLTW Computer Science

Year: 17-18

Project	Content	Skills	Assessments	Standards
Project 1	Becoming familiar with the MIT App Inventors program and where coding fits into the students future.	<p>KS 1.3A1 Recognize that computational thinking can be applied in multiple disciplines.</p> <p>KS 2.4D1 Describe the components of a mobile app.</p> <p>KS 2.4D5 Deploy an app using the emulator or a mobile device.</p> <p>KS 2.6A1 Identify ways that computing has changed or is changing society.</p> <p>KS 2.6A2 Give examples of technologies that assist or extend human capabilities.</p> <p>KS 2.6A3 Describe possible positive and negative social impacts of computing.</p> <p>KS 3.4A2 Describe the importance of protecting personal information.</p> <p>KS 3.5A2 Explore a variety of careers related to engineering, biomedical sciences, or computer science</p>	Unit 1.1 Packet	<p>Apply computational thinking to solve problems.</p> <p>LO 2.4D Design and develop a mobile app solution.</p> <p>LO 2.6A Analyze the implications of computing in society.</p> <p>LO 3.4A Abide by professional, legal and ethical standards when using digital resources.</p> <p>LO 3.5A Identify the variety of careers related to engineering, biomedical sciences, and/or computer science.</p>
Project 2	Linear Algorithms	<p>Create an algorithm or sequence or steps to accomplish a task.</p> <p>KS 2.2A2 Identify different algorithms that can be used to solve the same problem.</p> <p>KS 2.2A3 Analyze, break down, and explain the logic of an algorithm.</p>	Creation of a linear Algorithm	Analyze algorithms that accomplish a task.
Project 3	Translating Algorithms into code.	<p>KS 1.2B2 Describe the importance of involving prospective users early and often during the design process.</p> <p>KS 2.3A1 Explain the purpose of an abstraction.</p>	The Germ Guide App Conclusion Questions	LO 1.2B Apply user-centered design principles when creating a solution.

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		<p>KS 2.4A1 Identify and describe the high-level structures of a program, such as user interface components, data components, event handlers, and procedures.</p> <p>KS 2.4A2 Describe the appropriate code blocks and conventions used in the programming language.</p> <p>KS 2.4A3 Identify possible events that can occur during runtime and select the appropriate event handler blocks to respond to these events.</p> <p>KS 2.4B2 Design and develop a program by breaking a large plan into smaller modules using procedures and event handlers (if applicable).</p> <p>KS 2.4B3 Test code frequently as it is being developed.</p> <p>KS 2.4C2 Improve readability of code by creating or improving documentation, using descriptive variable and procedures names, and using comments.</p> <p>KS 2.4D1 Describe the components of a mobile app.</p> <p>KS 2.4D2 Navigate and use an app development software to design, develop, and test a mobile app.</p> <p>KS 2.4D3 Design an app's user interface using appropriate tools.</p> <p>KS 2.4D4 Select and use appropriate features to meet the desired functionality of an app, such as user interface components, layout arrangements, media objects, drawing and animation, sensors, location awareness, accessing phone features, and data storage.</p>		<p>LO 2.3A Develop and apply abstractions.</p> <p>LO 2.4A Analyze the structure and functionality of a program.</p> <p>LO 2.4B Create programs by developing and testing code in a modular, incremental approach.</p> <p>LO 2.4C Adapt or improve existing code.</p> <p>LO 2.5A Identify methods in which electronic devices communicate with each other.</p> <p>LO 3.2A Communicate effectively for specific purposes and settings.</p> <p>LO 3.3A Demonstrate the ability to manage multiple resources throughout a project.</p>

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		<p>KS 2.4D5 Deploy an app using the emulator or a mobile device.</p> <p>KS 2.5A1 Recognize various ways of transferring data from one electronic device to another, such as USB connection, Wi-Fi, or Bluetooth.</p> <p>KS 2.5A2 Use a systematic process to identify the source of a problem within individual and connected devices.</p> <p>KS 3.2A2 Use accurate and appropriate terminology.</p> <p>KS 3.3A2 Manage digital files appropriately.</p>		
Project 4	Understanding conditions in algorithms and coding	<p>KS 1.3A1 Recognize that computational thinking can be applied in multiple disciplines.</p> <p>KS 2.2A1 Create an algorithm or sequence of steps to accomplish a task.</p> <p>KS 2.2A2 Identify different algorithms that can be used to solve the same problem.</p> <p>KS 2.2A5 Create simple algorithms that involve variables, conditionals, operators, or logic.</p>	Coding with Conditions-Extension of Germ Guide App Universal Algorithms	<p>LO 2.4B Create programs by developing and testing code in a modular, incremental approach.</p> <p>LO 3.2B Document a process according to professional standards.</p>

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Project 5	Learning to incrementally identify and solve problems in code.	<p>KS 2.2A4 Locate and debug errors within an algorithm.</p> <p>KS 2.4B4 Debug programs using a variety of strategies to isolate and identify problems, including analyzing error messages, analyzing variable values line by line, generating output, or commenting out code.</p> <p>KS 3.1A1 Describe how diverse perspectives in collaboration typically produce the best results in a process.</p> <p>KS 3.1A2 Apply team norms to encourage productivity and define how a team will function and measure its success.</p> <p>KS 3.2A1 Communicate to meet the needs of the audience and be appropriate to the situation.</p>	Bug Blasters	<p>LO 1.1A Describe and analyze moments within a problem-solving process where persistence, iteration, and the positive aspect of failure played an important role in gaining understanding about a problem or unexpected observation.</p> <p>LO 1.3A Apply computational thinking to solve problems.</p> <p>LO 2.4B Create programs by developing and testing code in a modular, incremental approach.</p> <p>LO 3.1A Collaborate effectively on a diverse team.</p> <p>LO 3.2A Communicate effectively for specific purposes and settings.</p>

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Project 6	Using variables in code to create an app that saves and updates data.	KS 1.3A3 Decompose a problem into smaller parts. KS 2.1B1 Describe ways data can be stored on a digital device. KS 2.1B2 Store, access, and update data stored in variables (temporary data).	Game Time App Creation	LO 2.1B Create and store data during the execution of a program

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		<p>KS 2.4A4 Trace a program and deduce the values that variables will have after the code is executed.</p> <p>KS 2.4B4 Debug programs using a variety of strategies to isolate and identify problems, including analyzing error messages, analyzing variable values line by line, generating output, or commenting out code.</p> <p>KS 3.2A1 Communicate to meet the needs of the audience and be appropriate to the situation.</p>		
Project 7		<p>KS 1.1A1 Recognize that identifying complex problems, defining them clearly, and proposing solutions can be difficult and requires persistence and iteration.</p> <p>KS 1.1B1 Develop solutions employing non traditional techniques; novel combinations of artifacts, tools, and techniques; and exploration of personal curiosities throughout a creative process.</p> <p>KS 1.2A2 Explain the goal of any design process.</p> <p>KS 1.2A3 Generate ideas and/or build upon existing ideas to innovate.</p> <p>KS 1.2A2 Iteratively test throughout the design process to ensure that a solution meets the requirements.</p> <p>KS 1.2B1 Investigate the types of interactions between users and a proposed solution.</p> <p>KS 1.3A2 Choose appropriate computational practices when solving a problem.</p>	Build A Body App Outline of App Plan	<p>LO 1.1A Describe and analyze moments within a problem-solving process where persistence, iteration, and the positive aspect of failure played an important role in gaining understanding about a problem or unexpected observation.</p> <p>LO 1.1B Demonstrate creativity and courage to take risks in proposing designs.</p> <p>LO 1.2A Apply an iterative process to solve a problem or create an opportunity that can be justified.</p>
Project 8	Looking at repetitive steps in algorithms	KS 1.3A Apply computational thinking to solve problems.	Keep Me In the Loop	LO 2.3A Develop and apply abstractions.

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		<p>KS 2.2A Identify what has been made more general by an abstraction and identify what details have been hidden or removed.</p>		
Project 9	Reducing redundancy in code	<p>KS 2.3A3 Define and use procedures that hide the complexity of a task and can be reused to solve a similar task.</p>	Programming with Procedures/ Charades Game	
Project 10	Incorporating created lists into the app.	<p>KS 1.3A2 Choose appropriate computational practices when solving a problem.</p> <p>KS 2.1A2 Collect, process, and interpret data to gain insight on a problem and draw conclusions.</p> <p>KS 2.1B3 Store, access, and update data stored in a list (temporary data).</p> <p>KS 2.2A5 Create simple algorithms that involve variables, conditionals, operators, or logic.</p> <p>KS 2.2A6 Create algorithms to perform repetitive or reusable tasks.</p> <p>KS 2.2A3 Analyze, break down, and explain the logic of an algorithm.</p> <p>KS 2.3A2 Identify what has been made more general by an abstraction and identify what details have been hidden or removed.</p> <p>KS 2.3A3 Define and use procedures that hide the complexity of a task and can be reused to solve similar tasks.</p> <p>KS 2.4A1 Identify and describe the high-level structures of a program, such as user-interface components, data components, event handlers, and procedures.</p> <p>KS 2.4A2 Describe the appropriate code blocks and conventions used in the programming language.</p>	Playing with Lists - Extension of Charades Game	LO 2.1A Collect, process, and analyze real or simulated data.

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Project 11	Being able to input data into the app and saving it to analyze the data.	<p>KS 2.1A1 Understand that computers enable rapid processing of information.</p> <p>KS 2.1A2 Collect, process, and interpret data to gain insight on a problem and draw conclusions.</p>	Disease Tracker App Planning Questions	LO 2.1A Collect, process, and analyze real or simulated data
Project 12	Programming the app to Collecting data and organize the data.	<p>KS 2.1A1 Understand that computers enable rapid processing of information.</p> <p>KS 2.1A2 Collect, process, and interpret data to gain insight on a problem and draw conclusions.</p>	Fitness Challenge App Planning Questions	LO 2.1A Collect, process, and analyze real or simulated data
Project 13	Using the design process, develop and App that solves a real world issue.	<p>KS 1.1B1 Develop solutions employing non traditional techniques; novel combinations of artifacts, tools, techniques; and exploration or personal curiosities throughout a creative process.</p> <p>KS1.2A1 Identify a problem and justify the pursuit of a solution to the problem.</p> <p>KS 1.2B1 Investigate the types of interactions between users and a proposed solution.</p> <p>KS 1.2B2 Describe the importance of involving prospective users early and often during the design process.</p> <p>KS 1.2B3 Recognize that understanding human interaction with a solution can improve the design and extend the abilities of humans.</p> <p>KS 3.4A1 Describe property rights of digital media and software to facilitate sharing and avoid infringement.</p>	Creation of App Plan outline for App	<p>LO 1.1B Demonstrate creativity and courage to take risks in proposing designs.</p> <p>LO 1.2B Apply user-centered design principles when creating a solution.</p> <p>LO 3.4B Consider accessibility and equity when designing products, creating solutions, and collaborating with others.</p> <p>LO 3.5B Describe the role, connections between disciplines, and impact of engineering, biomedical science,</p>

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		<p>KS 3.4B1 Describe and give examples of universal design strategies that increase accessibility to appropriate resources.</p> <p>KS 3.5B1 Demonstrate personal responsibility and initiative for independent learning, keeping in mind that technology and processes will always evolve.</p>		and/or computer science on society.