**Application Form for Grades K – 10**

**Projects, presentations, materials and resources in Yukon schools**

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| Application for: Projects, Presentations $√$Resources, Materials \_\_\_\_\_ |
| Agency/Department: **Yukon College Kids Programs** Date of Submission: **February 1, 2019**Contact Name: **Dana Mills**Phone Number: **867-668-8819 / 867-332-1247**Email: **camps@yukoncollege.yk.ca** |
| Request initiated by: **Dana Mills, Youth STEM Outreach Coordinator, Yukon College** |
| Title of project, presentation, resource or material:**Coding in the Classroom**  |
| Grade | [Subject](https://curriculum.gov.bc.ca/curriculum) | Big Ideas | Curricular Competencies | Content |
| K | ADST & Mathematics | -Designs grow out of natural curiosity-Skills can be developed through play-Numbers represent quantities that can be decomposed into smaller parts. | **Understanding and solving**-Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving-Use materials, tools, and technologies in a safe manner in both physical and digital environments**Making**-Make a product using known procedures or through modelling of others-Use trial and error to make changes, solve problems, or incorporate new ideas from self or others | **Ways to make 5 including but not limited to:**- using concrete materials to show ways to make 5-perceptual subitizing (e.g., I see 5)-conceptual subitizing (e.g., I see 4 and 1)**Activity:**[Cubelets Open Play](https://docs.google.com/document/d/15Yj8jiWovqcCXOzcOLu2kru2LgW4qLUyaRGanF6aPq0/edit) |
| K | ADST & English Language Arts  | -Language and story can be a source of creativity and joy.-Skills can be developed through play. | **Comprehend and connect (reading, listening, viewing)**-Recognize the structure of story**Create and communicate (writing, speaking, representing)**-Explore oral storytelling processes**Ideating**- Add to others’ ideas**Sharing**- Reflect on their ability to work effectively both as individuals and collaboratively in a group | **Story including but not limited to:**-structure of story-literary elements and devices**Activity:**Use Code and Go Mouse/ Bee Bot to tell a story  |
| 1 | ADST & Science | -Designs grow out of natural curiosity-Skills can be developed through play-Living things have features and behaviours that help them survive in their environment. | **Questioning and predicting**-Demonstrate curiosity and a sense of wonder about the world**Communicating**-Communicate observations and ideas using oral or written language, drawing, or role-play**Making**-Make a product using known procedures or through modelling of others-Use trial and error to make changes, solve problems, or incorporate new ideas from self or others**Sharing**-Demonstrate their product, tell the story of designing and making their product, and explain how their product contributes to the individual, family, community, and/or environment | **Structural features of living things in the local environment including but not limited to:**-How do stems, roots, leaves, skeleton or no skeleton or exoskeleton, lots of legs, few legs, eyes, etc. help us understand organisms? **Activity:**[Robot Bodies and Human Bodies](https://docs.google.com/document/d/18Cl7M1l6JSLGPnqUcUt9CglCIAlEf4ypxe5tvgwCfCk/edit) **Activity:**[Design 3-4 Block Robots](https://docs.google.com/document/d/16Qyh0TxWvYtP_WkO__L_-gdkF9jNO5V-dj9jREmOShQ/edit)  |
| 1 | ADST & English Language Arts | - Playing with language helps us discover how language works- Language and story can be a source of creativity and joy | **Create and communicate (writing, speaking, representing)**-Recognize the structure of story**Create and communicate (writing, speaking, representing)**-Explore oral storytelling processes**Ideating**- Add to others’ ideas**Sharing**- Reflect on their ability to work effectively both as individuals and collaboratively in a group | **Story/text, including but not limited to:**-elements of story-functions and genres of stories and other texts-text features-literary elements and devices**Activity:**Use Code and Go Mouse/ Bee Bot to tell a story  |
| 2 | ADST & Arts Education  | -Designs grow out of natural curiosity-Skills can be developed through play-Inquiry through the arts creates opportunities for risk taking. | **Ideating**-Choose an idea to pursue.**Making** -Use trial and error to make changes, solve problems, or incorporate new ideas from self or others-Use materials, tools, and technologies in a safe manner in both physical and digital environments**Reasoning and reflecting**-Develop processes and technical skills in a variety of art forms to refine artistic abilities**Communicating and documenting**-Describe and respond to works of art**Exploring and creating**-Explore elements, processes, materials, movements, technologies, tools, and techniques of the arts | **Elements in the arts, including but not limited to:**-visual arts: elements of design: line, shape, texture, colour, form; principles of design: pattern, repetition, rhythm, contrast**Activity:**[Sphero Painting](https://edu.sphero.com/cwists/preview/97x)  |
| 2 | ADST & Science | -Designs grow out of natural curiosity-Skills can be developed through play-Forces influence the motion of an object. | **Questioning and predicting**-Demonstrate curiosity and a sense of wonder about the world**Communicating**-Communicate observations and ideas using oral or written language, drawing, or role-play**Making**-Make a product using known procedures or through modelling of others-Use trial and error to make changes, solve problems, or incorporate new ideas from self or others-Develop their skills and add new ones through play and collaborative work | **Types of forces including but not limited to:**-contact forces and at-a-distance force-balanced and unbalanced forces**Activity:**[Investigating Sense Cubelets](https://docs.google.com/document/d/1LYbnYlHN2Cqzekl_I5ibNJYr7fqwu2_e1wYNNXUNQVQ/edit)  |
| 3 | ADST & Mathematics  | -Designs grow out of natural curiosity-Skills can be developed through play-Standard units are used to describe, measure, and compare attributes of objects’ shapes. | **Making**-Use trial and error to make changes, solve problems, or incorporate new ideas from self or others-Develop their skills and add new ones through play and collaborative work**Reasoning and analyzing**-Estimate reasonably**Understanding and solving**-Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving | **Measurement, using standard units including but not limited to:**-linear measurements, using standard units (e.g., centimetre, metre, kilometre)-capacity measurements, using standard units (e.g., millilitre, litre)-Introduce concepts of perimeter, area, and circumference (the distance around); use of formula and pi to calculate not intended — the focus is on the concepts.**Activity:**[Sphero Colour Maze](https://edu.sphero.com/cwists/preview/110x) |
| 3 | ADST & Language Arts  | -Language and story can be a source of creativity and joy-Designs grow out of natural curiosity-Skills can be developed through play | **Create and communicate (writing, speaking, representing)**-Create stories and other texts to deepen awareness of self, family, and community**Comprehend and connect (reading, listening, viewing)**-Recognize how different texts reflect different purposes**Making**-Use trial and error to make changes, solve problems, or incorporate new ideas from self or others | **Story/text, including but not limited to:**-elements of story-functions and genres of stories and other texts-text features-literary elements and devices**Activity:**[Scratch Junior](https://www.scratchjr.org/pdfs/hoc/ScratchJr-Meet-and-Greet.pdf) – make characters interact  |
| 4 | ADST & Science | -Matter has mass, takes up space, and can change phase.-Designs can be improved with prototyping and testing | **Planning and conducting**-Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate**Applying and innovating**-Co-operatively design projects**Communicating**-Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate | **Phases of matter & the effect of temperature on particle movement including but not limited to:**-solids, liquids, and gases change with heating (e.g., boiling point, melting point [melting chocolate]) and cooling (e.g., freezing point [making ice cream]), and these physical changes are reversible **Activity:**[Phases of Matter with Sphero](https://edu.sphero.com/cwists/preview/120x)  |
| 4 | ADST & Mathematics | -Skills are developed through practice, effort, and action-Designs can be improved with prototyping and testing-Analyzing and interpreting experiments in data probability develops an understanding of chance. | **Understanding and solving**-Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving**Communicating and representing**-Communicate mathematical thinking in many ways**Sharing**-Demonstrate their product and describe their process**Testing**-Test the product-Gather peer feedback and inspiration-Make changes and test again, repeating until satisfied with the product | **Probability experiments, including but not limited to:**-predicting single outcomes (e.g., when you spin using one spinner and it lands on a single colour)-using spinners, rolling dice, pulling objects out of a bag-recording results using tallies**Activity:**[Microbit Rock Paper Scissors](https://makecode.microbit.org/#editor)  |
| 5 | ADST & Science | -Designs can be improved with prototyping and testing.-The choice of technology and tools depends on the task.-Multicellular organisms have organ systems that enable them to survive and interact within their environment. | **Questioning and predicting**-Demonstrate a sustained curiosity about a scientific topic or problem of personal interest-Make predictions about the findings of their inquiry**Ideating**-Generate potential ideas and add to others’ ideas**Defining**-Identify key features or user requirements**Prototyping** -Outline a general plan, identifying tools and materials-Construct a first version of the product, making changes to tools, materials, and procedures as needed | **Basic structures and functions of body systems including but not limited to:**-musculo-skeletal**Activity:**[Mircobit Inchworm](https://makecode.microbit.org/projects/inchworm/make) |
| 5 | ADST & Mathematics | -Closed shapes have area and perimeter that can be described, measured, and compared.-Designs can be improved with prototyping and testing. | **Reasoning and analyzing**-Use technology to explore mathematics**Understanding and solving**-Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving**Prototyping** -Construct a first version of the product, making changes to tools, materials, and procedures as needed | **Relationships between area and perimeter including but not limited to:**-measuring area of squares and rectangles, using tiles, geoboards, grid paper-investigating perimeter and area and how they are related to but not dependent on each other**Activity:**[Ozobot Perimeter Race](https://storage.googleapis.com/ozobot-lesson-library/perimeter-ozobot-race/great-ozobot-perimeter-race.pdf) |
| 6 | ADST & Arts Education | -Design can be responsive to identified needs.- Engaging in creative expression and experiences expands people’s sense of identity and community. | **Exploring and creating**- Create artistic works collaboratively and as an individual using ideas inspired by imagination, inquiry, experimentation, and purposeful play**Ideating**-Screen ideas against criteria and constraints-Choose an idea to pursue**Prototyping** -Construct a first version of the product or a prototype, as appropriate, making changes to tools, materials, and procedures as needed | **Manipulation of elements, principles, and design strategies to create mood and convey ideas in the arts, including but not limited to:**-visual arts: elements of design: Using line, shape, space, texture, colour of principles of design**Processes, materials, movements, technologies, tools, strategies, and techniques to support creative works:**-includes both manual and digital technologies (e.g., electronic media, production elements, information technology, sound equipment and recording technologies, etc.)**Activity:**Makeymakey Interactive Art Image result for makey makey interactive art piece |
| 6 | ADST & Science | -Design can be responsive to identified needs.-Newton’s three laws of motion describe the relationship between force and motion. | **Questioning and predicting**-Demonstrate a sustained curiosity about a scientific topic or problem of personal interest-Make predictions about the findings of their inquiry**Defining**-Choose a design opportunity**Ideating**-Screen ideas against criteria and constraints**Prototyping**-Construct a first version of the product or a prototype, as appropriate, making changes to tools, materials, and procedures as needed**Testing**-Make changes, troubleshoot, and test again | **Newton’s three laws of motion, including but not limited to:**-first law: objects will stay stopped or in constant motion until acted upon by an outside force-second law: only an unbalanced force causes acceleration-third law: every force has an equal and opposite reaction force**Activity:**[Ozobot Snowplow](https://storage.googleapis.com/ozobot-lesson-library/ozo-plow/ozo-plow.pdf) (modified)  |
| 7 | ADST & Arts Education | -Design can be responsive to identified needs.- Engaging in creative expression and experiences expands people’s sense of identity and community. | **Exploring and creating**- Create artistic works collaboratively and as an individual using ideas inspired by imagination, inquiry, experimentation, and purposeful play- Intentionally select and apply materials, movements, technologies, environments, tools, and techniques by combining and arranging artistic elements, processes, and principles in art making**Ideating**-Screen ideas against criteria and constraints-Choose an idea to pursue**Making**-Make a plan for production that includes key stages, and carry it out, making changes as needed | **Manipulation of elements, principles, and design strategies to create mood and convey ideas in the arts, including but not limited to:**-visual arts: elements of design: Using line, shape, space, texture, colour of principles of design**Processes, materials, movements, technologies, tools, strategies, and techniques to support creative works:**-includes both manual and digital technologies (e.g., electronic media, production elements, information technology, sound equipment and recording technologies, etc.)**Activity:**Makeymakey Interactive Art Image result for makey makey interactive art piece |
| 7 | ADST & Mathematics  | -Design can be responsive to identified needs-The constant ratio between the circumference and diameter of circles can be used to describe, measure, and compare spatial relationships. | **Reasoning and analyzing**-Use tools or technology to explore and create patterns and relationships, and test conjectures**Communicating and representing**-Explain and justify mathematical ideas and decisions**Understanding and solving**-Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving | **Circumference and area of circle, including but not limited to:**-constructing circles given radius, diameter, area, or circumference-finding relationships between radius, diameter, circumference, and area to develop C = π x d formula**Activity:**[Ozobot Second Timer](https://storage.googleapis.com/ozobot-lesson-library/second-timer/second-timer.pdf) |
| 8 | ADST & Arts Education | -Design can be responsive to identified needs.- Artists often challenge the status quo and open us to new perspectives and experiences.-Creative growth requires patience, readiness to take risks, and willingness to try new approaches. | **Exploring and creating**- Create artistic works collaboratively and as an individual using ideas inspired by imagination, inquiry, experimentation, and purposeful play- Intentionally select and apply materials, movements, technologies, environments, tools, and techniques by combining and arranging artistic elements, processes, and principles in art making**Communicating and documenting**-Take creative risks to express feelings, ideas, and experiences**Ideating**-Screen ideas against criteria and constraints**Making**-Choose an idea to pursue-Make a plan for production that includes key stages, and carry it out, making changes as needed | **Manipulation of elements, principles, and design strategies to create mood and convey ideas in the arts, including but not limited to:**-visual arts: elements of design: Using line, shape, space, texture, colour of principles of design**Processes, materials, movements, technologies, tools, strategies, and techniques to support creative works:**-includes both manual and digital technologies (e.g., electronic media, production elements, information technology, sound equipment and recording technologies, etc.)**Activity:**Makeymakey Interactive Art Image result for makey makey interactive art piece |
| How will this presentation, project, resource or material enhance Yukon schools?*Technology is all around us. Learning to code prepares youth for the world that we live in. Over* [*92%*](https://actua.ca/uploads/Actuas_Coding_the_Future_Survey_Report.pdf) *of students and parents believe that knowing how to use digital technology will be very or extremely important to their future careers. Giving students opportunities to use technology and learn coding at a young age can spark future interests. These workshops will foster creativity, collaboration and allow children become confident problem solvers.* *Bringing a workshop into the classroom will provide an interactive and engaging way for students to explore technology and coding. Workshops can be modified and adapted for the specific class’ ability levels and interest. We have enthusiastic, trained staff that are eager to deliver coding and technology workshops to youth.* *These workshops will help transform today’s youth from the consumers of technology to the producers of technology.*  |
| Please list and attach any professional review of this work. |
| Any additional information that you would like to supply should be provided on separate pages. |
| Forward application to the Project Approval Committee: curriculum@gov.yk.ca |
| Department Resource Committee Review Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Approved: Yes \_\_\_\_\_ No \_\_\_\_\_Reasons if application is declined:  |
| Approved for:  |
| Restrictions, if any:  |