*Collaborative Project*

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Purpose

Apply your learning about iterative project development to create a digital solution through a collaborative project, providing evidence of your individual contributions.

# Assessment Description

Work in a group to identify and solve a problem that is relevant to your school and/or local community. As a group, collect and analyse data relevant to the problem, and draw conclusions to inform the design and creation of a digital solution. The digital solution can be a product, prototype or proof of concept.

You will need to identify one or more project clients from either the school or community and communicate with them at key stages of the project. You will need to collect and analyse some data to help draw conclusions and make predictions to inform the process of scoping and designing the solution. Investigate if there are any existing solutions to the problem.

Apply iterative project development techniques to scope, create, test and evaluate the proposed digital solution. The solution should be achievable.

Each group member must have an opportunity to demonstrate the whole range of performance standards for this task, as you will each be making an individual submission based on your contribution to the whole project.

One way to achieve this is to, as a group, decompose your project into functional sub-components. Each component must require their own iterative development to be completed. Then, divide the task of developing the sub-components equitably amongst the team members, focussing on their individual strengths. Bear in mind that some components may need to be built before others, so planning a timeline of your project is crucial. You may also need to assign some general roles (ie Project Manager to keep the group on task, Recorder Keeper to record minutes of meetings etc). You will need to keep records of each student’s contribution to the project and how you worked together as a group.

As a group you will present your solution to the potential client/s, in a “Shark Tank” sort of presentation. During this time you will also get feedback from your client/s.

# Assessment Conditions

You will need to, individually, create a 5min presentation (video) individually which includes the following:

* A description of the problem you identified (including any research) and your solution that your group came up with
* Flowchart, pseudocode or similar, to show how you have broken down the problem
* Project management milestones, iterative development activities and group allocations
* Your role in, and contribution to the group project
* Evaluation on the effectiveness of the final design.

You will also need to, individually, create a Technical Walkthrough, of up to 3 minutes in length, which features:

* A validation which briefly shows the solution working, an explanation of the key coding features that you have created as part of your group contribution, and highlights any innovative features

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| Learning Requirements  1. apply computational thinking skills, including abstraction, to approach, identify, deconstruct, and solve problems of interest  3. apply iterative project-development techniques to manage and evaluate proposed digital solutions to problems of interest  4. apply design and programming skills to create and document digital solutions  6. work individually and collaboratively to create and explain digital solutions.  Computational Thinking  CT1 Application of computational thinking concepts and techniques to identify and deconstruct problems of interest.  CT2 Use of abstraction to identify core concepts and ideas.  CT4 Application of skills and processes to develop solutions to problems of interest.  Development and Evaluation  DE1 Design and creation of digital solutions or a prototype.  DE3 Evaluation of the effectiveness of a digital solution or prototype.  DE4 Explanation, with supporting evidence, of own role in and contribution to projects. | |
| Comments:  Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Final Grade: |

Performance Standards

|  | Computational Thinking | Development and Evaluation | Research and Ethics |
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| A | Astute and creative application of computational thinking concepts and techniques to clearly identify and deconstruct problems of interest.  Insightful use of abstraction to identify core concepts and ideas.  In-depth analysis of relationships in data sets to draw insightful conclusions and make well-justified predictions.  Highly purposeful application of skills and processes to develop highly efficient and logical solutions to complex problems of interest. | Clear and consistent use of initiative in the design and creation of digital solution or prototype that includes innovative features.  Highly purposeful and strategic application of iterative development, testing, modification, and documentation of an innovative digital solution or prototype.  Insightful evaluation of the effectiveness of a digital solution or prototype.  Insightful explanation, supported by clear and highly convincing evidence of own role in and contribution to projects. | In-depth research and discussion of the ethical considerations in digital technologies. |
| B | Well-considered application of computational thinking concepts and techniques to identify and deconstruct problems of interest.  Some insights in the use of abstraction to identify core concepts and ideas.  Some depth in analysis of relationships in data sets to draw informed conclusions and make justified predictions.  Purposeful application of skills and processes to develop efficient and mostly logical solutions to some complex problems of interest. | Mostly consistent use of initiative in the design and creation of digital solution or prototype that includes one or more innovative features.  Mostly purposeful application of iterative development, testing, modification, and documentation of a digital solution or prototype, with some innovation.  Well-considered evaluation of the effectiveness of a digital solution or prototype.  Some depth in explanation, supported by clear and mostly convincing evidence of own role in and contribution to projects. | Some depth in research and discussion of the ethical considerations in digital technologies. |
| C | Application of computational thinking concepts and techniques to identify and deconstruct problems of interest.  Some use of abstraction to identify core concepts and ideas.  Description, with some analysis, of relationships in data sets to draw generally informed conclusions and make predictions, with some justification.  Application of skills and processes to develop generally efficient and logical solutions to problems of interest. | Some use of initiative in the design and creation of digital solution or prototype, which may include one or more innovative features.  Competent application of iterative development, testing, modification, and documentation of a digital solution or prototype, with one or more innovative features.  Description of the effectiveness of a digital solution or prototype, with evaluation of some features.  Explanation, supported by generally clear evidence, of own role in and contribution to projects. | Considered research and discussion of the ethical considerations in digital technologies. |
| D | Partial application of basic computational thinking concepts and techniques to identify and describe problems of interest.  Identification and description of some basic core concepts and/or ideas.  Identification and use of one or more simple relationships in data sets to draw a partial conclusion and/or make a prediction based on limited evidence.  Partial application of skills and processes to develop solutions to simple problems of interest. | Partial design and creation of digital solution or prototype.  Basic application of some iterative development, testing, modification, and/or documentation of a digital solution or prototype.  Partial description of the effectiveness of a digital solution or prototype.  Basic explanation of own role in and/or contribution to projects, with limited supporting evidence. | Basic research and discussion of one or more ethical considerations in digital technologies. |
| E | Attempted application of a limited number of basic computational thinking concepts or techniques to describe a problem of interest.  Attempted identification and description of a core concept or idea.  Attempted use of limited, simple data sets to draw a conclusion or make a prediction.  Attempted application of skills and processes to develop partial solutions to some simple problems of interest. | Attempted design and creation of digital solution or prototype.  Attempted application of simple iterative development, testing, modification, or documentation of a digital solution or prototype.  Limited description of a digital solution or prototype.  Limited description of own participation in projects. | Attempted research and discussion of ethical considerations in digital technologies. |

1. **As a group, determine the individual roles for each student in the group:**

Work out who will be the Project Manager, who will take minutes of meetings etc.

1. **As a group, choose a problem that is of interest to the group, school, or the community:**

Examples of interest areas for problems include (but are not limited to):

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| * Wearable technology * Robotics * Sports team fitness solution | * Multimedia educational game * Study planner application * Aquaculture |
| * Planning a community garden or green space | * Stock management for school canteen or uniform shop |

1. **Source and analyse relevant data:**

Source data that is relevant to the problem.

1. **Create a project plan**

As a group, create a project plan to:

* Decide if the solution is a working prototype, or proof of concept
* Determine the features to be included in your solution
* Define a timescale to create the solution based on the features of your project. Dates may change as the project progresses (except for the completion date). The project plan should include communication with the client/s throughout the development of the solution. Identify potential risks and note any strategies to minimise these risks.

1. **Create the digital solution or proof of concept**

As a group, use the project plan to create the digital solution or proof of concept.

* Develop and agree on a plan based on timescale and resources, communication strategies to be used, and key features of the project deliverables
* Develop detailed designs for each feature
* Develop each feature (code, pseudocode, flow charts or other)
* Each feature must be tested to ensure it is usable and before moving onto the next one
* Collaborate regularly to clarify, mend and add features based on your progress.

You must show evidence of how each group member has contributed to the overall project. You will need to show evidence of the following:

* How your group has assigned tasks to each member
* Discussions of features including clarifying points and amending and adding features based on these discussions
* Discussions of own contribution:
  + Participation and contribution – how involved were you in the group discussions, problem solving activities? To what extent did you share your thoughts and ideas?
  + Quality of your work – how did you ensure that your work was of high quality?
  + Time management – how well did you meet regular deadlines?
  + Flexibility – how did you respond to the needs of the group, to help get the task completed?
  + Working with others – how effectively did you respect the ideas and work of others in the group, and listen to and value their ideas and opinions
  + Self-reflection – what have you learnt from reflecting on the value of your contribution to and impact on the group?