Drone design Task

Students will design a drone solution for a given community (excluding the deployment of munitions). In that task, a group of students will need to create a working prototype of their solution as well as preparing a report and presentation covering the following

- o An introduction which identifies the perceived solution for a community
    - They need to describe what the solution is aiming to do
    - Why they see a need
    - How does the need solve the perceived issue
- o Identifying the requirements of the solution
- o How is the quadcopter being controlled?
    - What technology is required for this to happen
    - How does that technology work (include diagrams that you have drawn/produced)
- o What is the proposed solution
    - Include drawings
    - Photos of the journey
    - Screenshots of programming and the changes in code
    - iterations (previous prototypes)
    - Final solution
- o 1 paragraph What are the social considerations made (how does your project benefit the social structure of the community)? Does this provide jobs, cost savings for small business, extra or useful data, safety …..
- o What were the ethical considerations made for your project
- o What were the technical
- o Is this solution sustainable? If so how?

Learning Area Achievement Standard

The parts of the Learning Area Achievement Standard that is covered by this task

- Students explain how social, ethical, technical and sustainability considerations influence the design of innovative and enterprising solutions to meet a range of present and future needs.
- They explain how the features of technologies influence design and production decisions.
- They collect, authenticate and interpret data from a range of sources to assist in making informed judgements.
- Students generate and document in digital and non-digital form, design ideas for different audiences using appropriate technical terms, and graphical representation techniques including algorithms.
- They independently and safely plan, design, test, modify and create a range of digital solutions that meet intended purposes including user interfaces and the use of a programming language.
- They plan, document and effectively manage processes and resources to produce designed solutions for each of the prescribed technologies contexts.
- They develop criteria for success, including innovation and sustainability considerations, and use these to judge the suitability of their ideas, solutions and processes.
- Students explain a range of needs, opportunities or problems and define them in terms of functional requirements and constraints.
- They plan, document and effectively manage processes and resources to produce designed solutions for each of the prescribed technologies contexts.
- Students use appropriate protocols when collaborating, and creating and communicating ideas, information and solutions face-to-face and online.

The parts of the Learning Area Achievement Standard that is <u>not</u> covered by this task
- Students make choices between different types of networks for defined purposes.

Achievement Standard

The parts of the Learning Area Achievement Standard that is covered by this task
- Students plan and manage digital projects to create ~~interactive information~~.
- They define and **decompose** problems in terms of functional requirements and constraints.
- Students design user experiences and algorithms incorporating **branching** and iterations, and test, modify and implement digital solutions.
- They evaluate information systems and their solutions in terms of meeting needs, innovation and sustainability.
- They analyse and evaluate **data** from a range of sources to **model** and create solutions.
- They use appropriate protocols when communicating and collaborating online.

The parts of the Learning Achievement Standard that is <u>not</u> covered by this task

- students distinguish between different types of networks and defined purposes.
- They explain how text, image and audio **data** can be represented, secured and presented in digital systems.

Digital Technologies Knowledge and Understanding

- Investigate how data is transmitted and secured in wired, wireless and mobile networks, and how the specifications affect performance (ACTDIK023 - Scootle)

Digital Technologies Process and Productions

- Acquire data from a range of sources and evaluate authenticity, accuracy and timeliness (ACTDIP025 - Scootle)
- Analyse and visualise data using a range of software to create information, and use structured data to model objects or events (ACTDIP026 - Scootle)
- Define and decompose real-world problems taking into account functional requirements and economic, environmental, social, technical and usability constraints (ACTDIP027 - Scootle)
- Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors (ACTDIP029 - Scootle)
- Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language (ACTDIP030 - Scootle)
- Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability (ACTDIP031 - Scootle)
- Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account (ACTDIP032 - Scootle)

Content descriptors not met

- Investigate how digital systems represent text, image and audio data in binary (ACTDIK024 - Scootle)
- Design the user experience of a digital system, generating, evaluating and communicating alternative designs (ACTDIP028 - Scootle)
- Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors (ACTDIP029 - Scootle)