# Lesson 17 – Autonomous Drones

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| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * Looking at the rise of autonomous vehicles in today’s society * Be able to apply the concepts of decomposition and abstraction to a real world scenario | * Identify the practical uses of autonomous vehicles * Produce a table of examples * Create a recovery helicopter suitable to protect a Lego Minifig |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Learners will enjoy the practical workshops of building and testing. * Learners may be familiar with home/consumer drone technology and may want to show and tell | **Expected Progress:**   * Learners identify a range of uses for drones   **Good Progress:**   * Learners create a recovery vehicle and identify the best/most suitable materials   **Exceptional Progress:**   * Learners attempt the Stretch Task |
| Links to KS3 Programme of Study | |
| * undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users | |
| Key Concepts | Key Words |
| * Autonomous vehicles | * Drone * Lift * Pitch |
| Differentiation | Resources |
| Some Learners will struggle with the concept that heavier materials may be stronger and create greater lift. | * Lesson 17 ppt * Lesson 17 Activity Sheets * PC * Internet access for research * Template and build instructions * Materials for building eg Paper, Card, Straw, Paperclips, elastic bands, balsa, wooden stirrers, corks * Minifigures |
| Lesson Flow | |
| * Introduce the Learning Objectives * Introduce the concept of drones, find out what the Learner’s feelings are about the use of drones * Discuss the technology available that can be used in modern drones * Discuss how drones use embedded systems. Look at how they fly and are controlled, again linking this back to the lesson on remote control * Give Learners the build instructions and basic template along with a range of materials. Get them to build the recovery helicopter and then experiment with different materials. The longer it takes to get the Minifig down the better * Encourage Learners to attempt the Stretch Tasks (additional worksheet and materials needed) though this could be done as a design process only * Stress to learners that decomposition is a key element of computer science which involves breaking down the overall problem into a number of sub problems. Learners should also consider how abstraction could be applied to the challenge – what unnecessary details could be removed to make it easier to focus on the core problem? | |
| Making | |
| * Mini paper/card helicopters | |