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|  | **General Integrated Science Year 11**  **Unit 1** | | |
| **Term** | **2** | **Semester/Year** | **Semester 1 2017** |
| **Teacher** | **Mrs Morritt** | **Topic** | **Cells** |
| **Build a “Black-box” Model**  **In-class review of the function of cell organelles** | | | |
| ***Theme: Collaborative work to build a black-box model, poster and presentation***    This year we have studied the ecosystem and how energy flows and materials cycle.  Now you will explore how cells use both energy and materials to do work, stay alive and reproduce.  But before we do let’s build “black-box models” to explain how energy and materials can be transformed.    **Chemical Reaction: the dehydration of glucose**   |  |  |  | | --- | --- | --- | | Inputs | Black-Box | Outputs | | glucose |  |  |   **TASK:**  Students to work in pairs to design and build a black-box model that could do **ONE** of the following transformations:   * Transforms energy, for example chemical to heat * Makes copies of itself * Makes large molecules from small ones eg proteins from amino acids, glucose from CO2 and H2O * Makes small molecules from large ones eg CO2 and H2O from glucose * Gathers and packages materials * Brings raw materials into the site where they will be made into something else * Moves materials from where they are made to where they are needed | | | |
| **RESEARCH / DOCUMENTATION** Science workbook, concept sketches | | | |
| **MATERIALS:**  Variety of drawing media  Straws, plasticine, string, packing peanuts, plasticine, cardboard, plastic wrap, Al-foil  Link to our website; <http://integratedsciencegeneral11.weebly.com/cellular-reactions.html>  **PROCESSES:** Concept Drawings, Prototypes, writing of  **CRITERIA:** Build a 3-D model and explain how this functions to do the job described.  Include:   1. Name of the Model. 2. Use any of the available materials. 3. On A3 sized paper/card write an InfoGraphic description of how the black-box would work.    1. Describe and show the input materials and the output materials.    2. Describe and show the input energy and the output energy.    3. Explain where the input materials come from.    4. Explain where the output materials are used and what they are used for. 4. Present your design and poster in a five-minute session. | | | |
| **TIMELINE:**  **Period 1 -** Research and build the black-box and poster  **Period 2** - Five-minute presentation | | | |
| **PRESENTATION:**  A3sized InfoGraphic produced either by hand or with an Application  Model made from the materials provided. | | | |