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| **Scales of Production (Charity Keyrings)** | **AGE 14-16 (vocational ability)** |
| **Objectives**  | **Background**  |
| * To understand the scale of engineering production: batch.

Demonstrated by the following outcomes:* Produce a batch product.
 | This 1 hour session is the 5th of a unit of 10 lessons exploring scales of production, specifically one-off, batch, mass and continuous; this develops knowledge of batch production by producing a batch product. |
| **The Big Questions** | **Curriculum Links**  |
| * What are scales of production?
* What types of products are produced at each scale?
* Why is one production scale sometimes preferable?
 | Pearson BTEC Level 1/Level 2 First Award in EngineeringUnit 1: The Engineered WorldLearning aim A: Know about engineering processes used to produce modern engineered productsTopic A3: Scales of productionCharacteristics and advantages/disadvantages of the following scales of production used in engineering manufacture:● one-off/jobbing production● batch production● mass production● continuous production. |
| **Unit Summary** |  |
| * This unit of work is a series of 10 lessons to allow students to develop knowledge of scales of production mainly through focused practical tasks. Students produce various key ring products as a live brief to raise money for charity (Children in Need).
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| **(Title)** | **AGE 11-14** |

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| **1 Resources**  | **5 Plenary**  |
| * Scales of Production 3-5 - Batch production PowerPoint
* Scales of Production Student Workbook

Pewter casting equipment:* Moulds
* Heat source
* Ladle
* Heat proof gloves
* Pewter (bar or off cuts)
 | *5 minutes*As practical work has taken place students need to ensure:* All work is stored safely and is identifiable.
* All tools are returned to the correct places.
* The workshop is left appropriately clean and tidy.
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| **2 Starter**  |
| 5 minutesStudents prepare to carry out their batch manufacturing of their charity key-ring. They need to:* Ensure all items not required are stored safely (blazers, bags, etc)
* Put on PPE (apron, goggles)
* Collect their own work
* Select tools required
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| **3 Introduction**  | **6 Follow up session**  |
| 5 minutesFollow-up issues from previous session with any required demos for class / group / individuals. Recap of research task -students should produce an A4 sheet with details of products produced using batch methods. Details on what the item is, how it is manufactured, costs etc. can be added as well as images. | Students should pour a second batch of charity keyrings using their alternate moulds if already complete. |
|  **4 Activity** |  |
| Students are to produce charity keyring as specified, including:* Production of an MDF moulds (by hand or using CAD/CAM to replicate for number in batch).
* Heating of Pewter, reference to recycling of old pewter and use of off-cuts.
* Safe pouring of pewter.
* Disassembly of moulds.
* Hand finishing of each item within batch.

Students are to work on this activity in small groups, depending on availability of equipment they may be completing their research task(s). |