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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:* Identify what batch production is.
* Identify some advantages and disadvantages of batch production.
* Describe batch production to enable future comparisons.
 | This 1 hour session is the 3rd of a unit of 10 lessons exploring scales of production, specifically one-off, batch, mass and continuous; this session introduces and begins to explore batch production in more detail. |
| **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 discuss and identify bath produced items from the ones they have been shown. |
| **3 Introduction**  | **6 Follow up session**  |
| 10 minutesStudents justify why they have selected from the items they have been shown and any others they can think of why an item may have been batch produced.A recap of the 4 scales of production (as specified one-off/jobbing production, batch production, mass production & continuous production) is given. | Students continue the batch manufacture of their charity key ring in the next lesson in the unit. |
|  **4 Activity** |  |
| 5 minutesStudents are given opportunity to be given written facts about the production type, using an appropriate method for the individual ability. This is broken into the basic advantages and disadvantages.15 minutesStudents produce a written description of batch production, including advantages and disadvantages of the method.5 minutesReview of production method, batch product - charity key ring is introduced, this will be produced by studens working in small groups to produce a small batch of pewter cast charity key rings.15 minutesDemonstration of how to produce small pewter cast keyring, 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.
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