



Geography: Alcoa Kitts Green – Teacher Guide

Context

Alcoa, a manufacturer of aluminium products, is a multinational employing 60,000 people in 30 countries. It is a good example of how successful manufacturing operations add value. The Birmingham factory achieves this by converting ingots of aluminium into quality aerospace components adding specific proportions of different metals to the aluminium to change its properties, and rolling the ingots into sheets and plates. Its customers, like Airbus, use the sheets of aluminium to make planes, and other forms of commercial transport. The sheets are also used in the packaging industry, to make cans and foil, and within the construction industry.

To compete, Alcoa minimises its waste and energy costs and maximises quality by investing in the latest technology and in its employees. It is heavily into recycling, and manufactures on a large scale, generating economies of scale and lowering unit costs.

The Birmingham factory specialises in milling whilst other parts of the company source the main raw material, bauxite, and process it to create aluminium ingots. This production chain shows where specialisation takes place at each stage of the manufacturing process.

Objectives

The virtual field trip to Alcoa Kitts Green and the associated learning activities can be used to support the following learning objectives:

- To investigate the influence of site and location for manufacturing.
- To know about the production or supply chain from raw materials to customers and the production process.
- To understand how a multinational business adds value to products in an efficient way.
- To develop an understanding of a range of jobs related to manufacturing.
- To understand the different pathways to a career in manufacturing and to relate this to their own career choices.
- To explore the importance of corporate social responsibility to a range of stakeholders.

(GCSE Geography/Human Geography/Manufacturing processes and adding value; Behaviour and impact of transnationals or multinationals and global interdependence)

Learning activities

Students could:

- Work in pairs or small groups to list as many products as they can which are made from aluminium components. Share findings to produce a class list.



- Find the site and location of Alcoa’s Birmingham factory at Kitts Green using an online map. Mark it on the world map. Find another Alcoa factory located somewhere else in the world and suggest reasons for that location. As a class, collect findings about other Alcoa locations, marking these on the map.

(Supporting resources: Where does Alcoa operate? worksheet)

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- Consider the different parts of the production and supply chain for turning bauxite into manufactured aluminium sheets for Airbus UK in Bristol, and complete the diagram on the *Supply chain* PowerPoint. Using the videos and further internet research, explain why turning bauxite into the ingots is a global process. Describe the process of hot milling and rolling a slab, and find out what Airbus UK do with the aluminium sheets.

(Supporting resources: Supply chain PowerPoint)

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- As a class, decide who the stakeholders are for Alcoa in Kitts Green. Discuss why Alcoa gives its employees time to support the local community, and identify the costs and benefits of the company’s support in the community. Is corporate social responsibility worth it?
- Find out how Alcoa, as a multinational, is working towards reducing its footprint in terms of environmental impact. Identify the stakeholders who would benefit from Alcoa reducing its impact in these areas.
- Careers activity: Make a list of all the jobs mentioned in the virtual field trip, then add some of the skills required for each job and comment on the training needed in order to do it.
- Careers activity: Use the *To be my future self cards*, and identify nine cards they think fit themselves. They should organise these into a diamond with the most important at the top. They can then use the *Job card questions* sheet and answer each of the questions or explain the statements. Finally, they can share their answers with another student.

(Supporting resources: To be my future self cards; Job card questions)

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Key questions

- What makes Alcoa a multinational or transnational company?
- Where does Alcoa operate and why?
- What is the production or supply chain from raw material to finished aluminium product?
- How does Alcoa Kitts Green add value to the aluminium ingots it is supplied with?
- Is corporate social responsibility worth it?

Keywords

Keyword	Definition
added value	The difference between the selling price of a product or service and the cost of inputs such as materials and components.



apprenticeship	A paid job with training. Apprentices earn while they learn and often gain a recognised qualification at the end of the apprenticeship.
competitive advantage	An advantage over competitors that is enjoyed by a firm or country, such as cheaper costs, more highly skilled workers or better technology.
career pathway	A chosen route through education into jobs. Following a particular pathway involves making key decisions about one's education and training. It is helpful to have an end goal or ambition in mind.
corporate social responsibility	The idea that companies should take responsibility for the impact their activities have on customers, suppliers, employees, communities and the environment.
economies of scale	The savings you can make when levels of output increase, thereby bringing down the cost of production per unit.
employability skills	Essential skills that are required by employees in order to perform their tasks well. They are often transferrable between jobs.
ingot	An oblong block of metal cast in a convenient form for shaping and storing.
interdependence	When people or countries depend on each other.
job description	A description of the purpose, tasks, duties and responsibilities of a job.
job satisfaction	Describes how content or happy you are with your job.
mass-produced	When large numbers of a standard product are made using automated processes.
milling	A process by which metals can be shaped.
minerals	Minerals are chemicals in rock form that can be extracted and processed to create useful materials. Examples are gold, copper, nickel, cobalt and platinum ores, all of which can be crushed and heated to extract metal.
multinationals	Companies with business interests in several countries.
on the job training	Training that takes place while you are working. It is often skills based.



ore	Rocks that contain metals. The metals can be extracted by crushing the rock and heating (smelting) until the metal melts and separates from the other elements in the rock.
production chain	The steps or stages needed to transform raw materials into a finished saleable product. Each stage adds more value.
quality control	A series of processes and checks carried out to ensure that a product meets set standards.
recycling	The conversion of the component materials of rubbish into reusable materials to reduce waste.
specialisation	When a person or company focuses its activities on a narrow area in which they become expert.
stakeholders	People or organisations with an interest in the success of a business, or who are potentially affected by its actions.
sustainable manufacturing	The processing and manufacture of resources in a way that minimises the negative environmental impact.
waste management	What we do with waste products in order to minimise the damage to the environment.