

TEACHER NOTES

This unit of work is separated into nine sections, each dealing with a different aspect of the industry. Teaching and learning activities have been devised to provide flexibility for teachers to adapt and incorporate into lesson plans, appropriate to the needs of their class and teaching timetables. The suggested time allowed for this unit is twelve (12) teaching hours, however, this time may be extended to allow students time to conduct more in-depth research.

UNIT OVERVIEW

Students begin by considering what they already know about the industry and raise areas of interest and enquiry, and set learning goals. This activity should be revisited at the end of the unit to allow students to evaluate their learning.

The concept of logistics is introduced and its relevance to students' lives is made explicit. Students identify themselves as consumers and consider how their own shopping experiences are determined and shaped by the logistics and supply chains that deliver their consumer items to the stores.

Students are then made aware of themselves as global consumers and are invited to examine how they are connected to manufacturers and primary producers located all over the world. By investigating what products and materials Australia imports and exports, students begin to appreciate the importance that the Transport, Logistics and Supply Chain Industry plays in connecting them to the rest of the world, supplying their consumer items and maintaining Australia's international trade.

Students then examine transport as the physical means by which people and resources are connected. Students consider how and what type of transport contributes to their lives. They analyse types and modes of transport, establishing the categories of passenger and freight transport across the four main modes of air, sea, road and rail. Students evaluate the possible advantages and disadvantages of these modes.

Taking chocolate as an example, students then investigate the concept of supply chains and work collaboratively to research and present findings on regional, interstate and international supply chains of raw ingredients. These are integrated to demonstrate the more complex, global supply chains of manufactured items.

Students are then asked to examine the geographical dangers of moving freight and passengers around the world, focussing on the issues relating to importing goods into Australia. They explore the need for customs and quarantine procedures; identifying specific threats and the precautions taken to protect Australia from contamination.

Supply chains consist not only of the materials and locations of production, manufacturing and storage but also the services that are required to ensure the efficient and safe movement of goods. Students are given the opportunity to research some of the key services used within the supply chain of chocolate, focussing on international sea freight. In the sections 'Key Services Involved In Importing Sea Freight' and 'The Importing Process', students identify the key roles and functions performed by those working in a port and supporting import activity. Students examine and describe the processes and communication comprising the interaction between these key services.

Finally, students examine the geographical features of Victoria that make the state an important location for business, manufacturing and associated freight transport, distribution and storage activities.

EXTENSIONS

As an extension to these activities, students can debate the ethical implications and responsibilities of international manufacturing and consumerism. For example:

- fair trade;
- reasonable working conditions and pay for factory workers; and
- implications of transporting goods on the environment (carbon footprint).

STUDENT MATERIALS AND RESOURCES

Student Materials have been provided for each section of the unit. These resources include stimuli for discussion, definitions, templates for graphic organisers, statistics, maps, research information, diagrams, a matching activity worksheet, sorting cards and web links for further research. Answers have been provided within the Teacher and Learning Activities where appropriate.

Web Resources

Web-based research and subsequent presentations are key skills developed in this unit. Specific web addresses are given for teachers and students to access appropriate information and resources. For web-based research activities, students are directed to the websites of industry government partnerships or government departments directly related to the industry, where they can find up to date data, statistics, maps, diagrams and information to assist them in their research.

BACKGROUND INFORMATION

What is Logistics and Supply Chains and Why Study Them?

Logistics is about delivering people or things to the right place, at the right time, in the right quantity and quality and at the right price, involving a complicated system of networks organising the movement of goods.

Logistics is the organisational link that allows people to utilise raw materials sourced from around the world, manufacture internationally and sell products on the global market. It is a key industry that supports and facilitates global trade: organising the transport that physically connects people, places and resources within supply chains that encompass the sourcing, manufacture, storage and distribution of goods. The study of the Transport, Logistics and Supply Chain Industry can therefore be linked to many areas of geographical study including the distribution of resources, settlement, manufacturing and globalisation.

Consumer Demands and Logistics

As consumers, students have experience of retail situations and thereby the results of effective or ineffective logistics and supply chains. The quality of shopping experiences is often determined by the availability of goods. This depends on the store's supply chain and particularly their storage and distribution systems. Stores must keep an inventory which records the location and quantity of stock on the shelves and in their warehouse. In order to maintain a ready supply, stores must forecast the demand for particular products and time their deliveries accordingly.

The use of barcodes allows stores to complete these tasks automatically. Scanning a barcode triggers a series of actions within the supply chain. The inventory is adjusted which will trigger an order from the warehouse if the level of stock reaches a predetermined level. Likewise, barcodes are scanned on items entering and leaving the warehouse, allowing the recorded information to trigger an order to suppliers when necessary.

Flexible storage and distribution systems are required to offer customers increased customer service. For example, sales assistants in stores are able to access electronic information detailing the content and whereabouts of stock to inform customers. Further services include ordering items to be delivered upon request to individual stores or customers' homes.

Global Consumers and Producers

Australia participates in global trade through the export and import markets: buying and selling both raw materials and manufactured goods. Both the import and export markets are crucial to Australia's economy and way of life. The everyday consumption of imported goods connects consumers to manufacturers and primary producers around the world. Consumer items manufactured in Australia may be comprised of components sourced entirely within Australia, overseas or a combination of the two. Likewise, imported consumer goods are likely to contain components or materials sourced from around the world.

In 2007, Australia's top five export trading partners were Japan, China, Republic of Korea, United States and New Zealand. Australia's top five import trading partners in the same year were China, United States, Japan, Singapore and Germany. (Source Jan 09: Department of Foreign Affairs and Trade: www.dfat.gov.au/geo/fs/aust.pdf)

Transport

Freight transport is the name given to transport designed to carry goods from place to place. Goods that are being transported are called freight or cargo. Passenger transport carries people from place to place. Both forms of transport can be categorised into one of the four main modes of transport: air, sea, road and rail.

The nature of the freight being transported determines the type and often the mode of transport used. Freight comes in many forms (e.g. loose, in cartons, or containerised). Raw material can be liquid, gas, solid, or granular and may require specific conditions. For example fresh produce requires refrigerated transport. Perishable produce severely restricts transportation time and would, therefore, dictate air as the appropriate mode for transport over long or overseas distances.

Time restrictions, source location, nature and form of freight, cost and environmental impact are all considerations when selecting transportation routes and modes. Each mode of transport has benefits and disadvantages. Rail is restricted in route but flexible in the volume of freight it can transport with the addition or removal of rail cars. Rail is more time efficient over long distances than road transport. Road transport offers great flexibility of route but has limited capacity. Air transport is the most time efficient but has significant cost and environmental impact. Sea transportation is cost effective and flexible in capacity but requires a significant time allowance.

Supply Chains

The supply chain is the network of producers, manufacturers, distributors and retailers who turn raw materials into finished goods and services delivered to consumers. The supply chain includes the planning, recording and communication needed to make the movement of goods between supply chain members efficient.

Each physical component of a manufactured item has its own supply chain as do the services required to transport, distribute and market the product. For example, the full supply chain of a wrapped chocolate bar would include primary producers of the chocolate ingredients and wrapping materials such as paper or foil; manufacturing processes at various stages of preparation for each raw material, transportation services connecting supplier of each component to the manufacture and then on to the retailer and other services including wrapper design, advertising, insurance and marketing.

Customs and Quarantine (Source: www.dfat.gov.au/facts/exporting_to_aust.html)

Australia's borders are protected by the Australian Customs and Border Protection Service. Goods entering Australia must be cleared by the Australian Customs Service. It provides listings of prohibited goods, which cannot be imported into Australia under any circumstances, and restricted goods, which require written permission for importation. Depending on the type and value of the goods or products, there may be costs involved including clearance fees, customs duty, goods and services tax and other taxes.

Managing the risk to Australia of unwanted pests and disease is essential for the conservation of the nation's plants, animals and agricultural industries. The Australian Quarantine and Inspection Service (AQIS) is responsible for managing this risk. All parties importing freight into Australia must comply with Australia's quarantine measures which are among the most stringent in the world.

Contamination can occur if unwanted pests or diseases enter Australian waters or environs. Pests and diseases can be transported into the country on or within freight, packaging, shipping vessels or aircraft.

Importers must inform AQIS if they intend to bring AQIS designated products into the country. Designated products include straw, timber, plant material and soils. Some products have been assessed as posing significant risk and are not allowed to enter Australia and would be detained and incinerated within authorised areas. Other products are only allowed into Australia on the granting of an import permit from AQIS. These must be inspected and, where appropriate, treated by AQIS for pests or diseases.

Specific pests on Australia's Most Unwanted list and posing a threat to Australia's plants, animals and agricultural industries include: (Source: www.daff.gov.au/aqis/quarantine/pests-diseases)

- Giant African Sea Snails
- Asian Gypsy Moth
- Khapra Beetle
- Burnt Pine Lingicorn
- Asian Long Horned Beetle
- Asian Tiger Mosquito
- Giant Honey Bee
- Formosan Termite

Key Services Involved In Importing Sea Freight

Sea ports and airports are important intermodal hubs in numerous supply chains and the location for many processes and services that need to be undertaken to move freight in and out of Australia. Ports are major employers and make considerable contributions to the local economy. Definitions and descriptions of key roles and services are provided within the Teaching and Learning Activities. Further information about these roles and services can be found at:

- www.supplychainvictoria.com.au/interactivetools/awareness/
- www.supplychainvictoria.com.au/interactivetools/careers/

Importing Process

Examination of the importing process shows how service providers and other parties must work together, share information and communicate effectively. The majority of service providers working in this process use Electronic Data Interchange (EDI) to send and record information along the supply chain. EDI is similar to sending an e-mail.

All containers used within the importing process are given a Serial Shipping Container Code (SSCC) to identify it. The SSCC has a barcode which acts like a licence plate on a car enabling the container and its contents to be identified. The container's SSCC is a reference key against which information and progress reports are recorded. At every stage of the import process, whenever the container is moved or taken charge of by a different service provider, the SSCC is scanned and its progress report updated. All services, including freight forwarders, AQIS, Customs, stevedores and transporters use the SSCC to identify and refer to the container.

Information transferred between service providers includes the departure and arrival times and dates of the shipment, the container's SSCC, the contents of the container and important dates like 'best before' dates of the freight.

Full information about the import and export process can be found at:
www.supplychainvictoria.com.au/interactivetools/awareness/

The Victorian Transport, Logistics & Supply Chain Industry

The Invest Victoria website provides a range of information detailing the geographic and demographic nature of Victoria that makes Victoria, and the Transport, Logistics and Supply Chain Industry, key to Australia's economy.

The State of Victoria is located in the south-east corner of Australia. Over 65% of Australia's population lives in the south-eastern states and contributes 70% of the nation's economic activity. Victoria itself is the most populated state and makes up 25% of the nation's economy. (Source: Figures obtained Jan 09 from www.investvictoria.com/aboutmelbourne)

Victoria's capital Melbourne is Australia's transport hub. It is in an ideal location for both national and international transport links as it is in the centre of Australia's economic triangle of activity. Melbourne has direct and well established transport links connecting Australia's major cities of Sydney, Brisbane, Adelaide, Hobart and Canberra and offers convenient access to Asia and the world export market. Victoria's import and export market benefits from operating within the same time zone as Asia, a rapidly growing investment zone and is able to trade effectively within both American and European business hours.

Victoria's two major international transport hubs, Melbourne International Airport and Port of Melbourne, benefit from offering 24 hour services. The Port of Melbourne is the largest container port in Australia, trading in high value freight. It provides access to over 300 ports around the world via 40 shipping lines.

Victoria is among the largest manufacturing centres in Australia. Furthermore, the farming and agricultural industries prevalent in the state make Victoria a productive food bowl. Both industries rely heavily on export. Victoria, and Melbourne in particular, is strategically well placed within Asia to reach export markets. From agricultural produce to manufacturing, resources, and the rapidly growing services sector, Victoria's strategic location gives it easy access to not only Asia but America, New Zealand and the Middle East. (Source: www.investvictoria.com/aboutmelbourne)

DIFFERENTIATION WITHIN TEACHING AND LEARNING STRATEGIES

This unit is heavily based on dialogic teaching where students are asked to share their experiences, ideas and opinions as part of class and group discussion and to orally present the results of their research. A range of teaching and learning strategies have been employed throughout the unit to appeal to different learning styles, stretch the more able students and support the less able students.

KWL Table

Students analyse prior knowledge, generate questions, set learning goals and evaluate learning through the completion of a KWL Table. This activity should be conducted at the beginning and end of the unit. The table asks students to list:

- what they already know;
- what they want to know; and
- what they have learned.

Think, Pair, Share

The use of a Think, Pair, Share strategy is often recommended in brainstorming activities. Here students are given time to reflect on their own views and knowledge and discuss this with a partner before being asked to feed back to the class.

Balloon Debates

Balloon debates, conducted in mixed ability groups, allow students to share, assimilate and analyse ideas orally. Every student is required to engage and play an active role in the debate although these can be selected according to ability and aptitude.

Jigsaw Research

In a Jigsaw students are given the opportunity to research, present, consolidate and synthesise information in mixed ability groups. Differentiation may be achieved by attributing defined roles within the group according to ability or aptitude. Information is disseminated visually through printed text and both visually and aurally through class presentations.

A Jigsaw has two components:

- specialist research: mixed ability groups work collaboratively to research and present finding on a specialist topic; and
- information synthesis: students form further mixed ability groups to include representatives from each specialist research group. Information from each specialist is imparted to complete an overview task.

Mixed Ability Research

All research tasks within the unit are intended to be conducted in mixed ability groups and working partners to stretch and support students of differing abilities.

Matching Activity

Students work in pairs to create definitions by matching descriptions with appropriate titles. Students use their research to inform their task. Research can be conducted through written text or video/audio media.

Sorting Round Activity

Where students are being asked to review and analyse a large amount of information, a sorting round activity has been used to vary the method of information dissemination and reduce the amount of written text students are required to read.

Students work in mixed ability groups to read and order information cards. Students take it in turns to read aloud the information on their card and explain their reasons for placing the card in the sequence. The group must agree on the final order.

Presentations

Throughout the unit, research should lead towards the completion of a task or class presentation. The exact nature and form these presentations take is at the discretion of the teacher and determined by the groups' research.