

The Food 4 Thought - Geography inquiry sequences have been developed in partnership with the Geography Teachers' Association of Victoria specifically for Yr 9 Geography students to engage with Unit 1: Biomes and food security, and to address geographical inquiry and skills competencies, as outlined in the Australian Curriculum.

The relevant Geography content descriptions for Year 9, Unit 1 are outlined below, alongside how the learning activities in this resource support the teaching of the Australian Curriculum.

Geographical Knowledge and Understanding	Food 4 Thought – Geography’s relevance
The human alteration of biomes to produce food, industrial materials and fibres, and the environmental effects of these alterations (ACHGK061)	Food 4 Thought – Geography focuses on the role of climate change and competing land uses in altering biomes that are used in food production.
The challenges to food production, including land and water degradation, shortage of fresh water, competing land uses, and climate change, for Australia and other areas of the world (ACHGK063)	All of Food 4 Thought - Geography can be used to explore the challenges of food production including land degradation but with a specific emphasis on climate change and competing land uses.
The capacity of the world’s environments to sustainably feed the projected future population to achieve food security for Australia and the world (ACHGK064)	As a global organisation Oxfam mobilises the power of people against poverty. Food 4 Thought – Geography shows how Oxfam provides people with the skills and resources to help them create their own solutions to food insecurity and poverty.
Geographical Inquiry and Skills	Food 4 Thought – Geography’s relevance
Develop geographically significant questions and plan an inquiry that identifies and applies appropriate geographical methodologies and concepts (ACHGS063)	Oxfam supports its position on significant issues by providing statistical data and global case studies.
Collect, select, record and organize relevant geographical data and information, using ethical protocols, from a range of appropriate primary and secondary sources (ACHGS064)	Food 4 Thought’s resources are both primary sources in the form of graphs, maps and tables as well as secondary sources that are the stories told in the case studies.
Evaluate sources for their reliability, bias and usefulness, and represent multi-variable data in a range of appropriate forms, for example, scatter plots, tables, field sketches and annotated diagrams, with and without use of digital and spatial technologies (ACHGS065)	Oxfam research documents provide a range of data formats including thematic maps and interactive maps, charts, infographics, scatter plots, graphs, tables, photo essays and anecdotal stories.
Represent the spatial distribution of geographical phenomena by constructing special purpose maps that conform to cartographic conventions, using spatial technologies as appropriate (ACHGS066)	Oxfam research data can be mapped to show the interconnection of ideas.
Evaluate multi-variable data and other geographical information using qualitative and quantitative methods, and digital and spatial technologies as appropriate, to make generalisations and inferences, propose explanations for patterns, trends, relationships and anomalies, and predict outcomes (ACHGS067)	Food 4 Thought provides a range of anecdotal stories either as text, videos or photo essays to convey the qualitative nature of the issue of food security. Quantitative data reinforces each story and is found in the research documents.
Apply geographical concepts to synthesise information from various sources and draw conclusions based on the analysis of data and information, taking into account alternative points of view (ACHGS068)	Throughout Food 4 Thought, the geographic concepts of scale, place, interconnection, change, environment, space and sustainability are used.
Present findings, arguments and explanations in a range of appropriate communication forms selected for their effectiveness and to suit audience and purpose; using relevant geographical terminology and digital technologies as appropriate (ACHGS070)	Food 4 Thought is presented online using a range of presentation formats to show findings, present arguments and communicate ideas. Included in these formats are videos, photo essays, interviews, interactive maps and the ability to interact through supporting Oxfam’s campaigns.
Reflect on and evaluate the findings of the inquiry to propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic, and social considerations; and explain the predicted outcomes and consequences of their proposal (ACHGS071)	Oxfam encourages individuals to create change on an international, national, local and individual level. Food 4 Thought – Geography gives students an opportunity to explore how they can create positive change to improve food security.

Australian Curriculum source: <http://www.australiancurriculum.edu.au/humanities-and-social-sciences/geography/Curriculum/F-10?layout=1#level9>

INTRODUCTION

Access to food is a basic human right and social justice issue. Land and water are critical to food production. People should at all times have access to food in sufficient quantity and quality to have a healthy and active life. In an attempt to achieve this, 1.5 billion men and women farmers work on 404 million small-scale farms of less than two hectares* (about the size of two rugby fields or five soccer fields). In 2008, access to food was affected by global food price spikes that brought about changes in the ways food-producing companies sought out and utilised the agricultural regions of the world. New terminology such as land grabs and agro-ecology began to be used. Non-government organisations like Oxfam Australia advocate for the rights of, and work with, small-scale farmers to help ensure their food security.

*Source: http://ec.europa.eu/agriculture/consultations/family-farming/contributions/ifoam-2_en.pdf

AIM

The aim of this resource is to provide teachers with an inquiry-based teaching approach that focusses on the role of the environment in providing food, and the economic and political circumstances required to ensure food security for all people into the future.

CURRICULUM LINKS – AUSTRALIAN CURRICULUM: GEOGRAPHY

Unit 1: Biomes and food security

A table demonstrating links between the curriculum and learning activities is also supplied.

Geographical Knowledge and Understanding

- The human alteration of biomes to produce food, industrial materials and fibres, and the environmental effects of these alterations (ACHGK061)
- The challenges to food production, including land and water degradation, shortage of fresh water, competing land uses, and climate change, for Australia and other areas of the world (ACHGK063)
- The capacity of the world's environments to sustainably feed the projected future population to achieve food security for Australia and the world (ACHGK064)

Geographical Inquiry and Skills

Observing, questioning and planning

- Develop geographically significant questions and plan an inquiry that identifies and applies appropriate geographical methodologies and concepts (ACHGS063)

Collecting, recording, evaluating and representing

- Collect, select, record and organize relevant geographical data and information, using ethical protocols, from a range of appropriate primary and secondary sources (ACHGS064)
- Evaluate sources for their reliability, bias and usefulness, and represent multi-variable data in a range of appropriate forms, for example, scatter plots, tables, field sketches and annotated diagrams, with and without use of digital and spatial technologies (ACHGS065)
- Represent the spatial distribution of geographical phenomena by constructing special purpose maps that conform to cartographic conventions, using spatial technologies as appropriate (ACHGS066)

Interpreting, analysing and concluding

- Evaluate multi-variable data and other geographical information using qualitative and quantitative methods, and digital and spatial technologies as appropriate, to make generalisations and inferences, propose explanations for patterns, trends, relationships and anomalies, and predict outcomes (ACHGS067)
- Apply geographical concepts to synthesise information from various sources and draw conclusions based on the analysis of data and information, taking into account alternative points of view (ACHGS068)

Communicating

- Present findings, arguments and explanations in a range of appropriate communication forms selected for their effectiveness and to suit audience and purpose; using relevant geographical terminology and digital technologies as appropriate (ACHGS070)

Reflecting and responding

- Reflect on and evaluate the findings of the inquiry to propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic and social considerations; and explain the predicted outcomes and consequences of their proposal (ACHGS071)

Inquiry sequence

- How have people altered biomes to grow food? [ACHGK061]
- What are some of the challenges to food production? [ACHGK063]
- How can food security be achieved in the future? [ACHGK064]
- What action can be taken to improve food security? [ACHGS071]

Suggested time: Approximately 23 lessons

Resources required

- Internet access
- Whiteboard or overhead projector
- Paper, pens, coloured pencils
- Blank outline map of the world
- Atlases

PART A: HOW HAVE PEOPLE ALTERED BIOMES TO GROW FOOD?

Time: 5 lessons.

Geographical concepts: Environment, change, interconnection.

Aim: To identify and describe the major terrestrial global biomes, their spatial distribution and the human alterations of biomes which allow food production, including the environmental effects of these alterations.

Introduction

Biomes are major terrestrial (land) vegetation communities such as tropical forests, grasslands or deserts. Similar biomes, but with different species of plants and animals, are found around the world in similar climatic zones. Oceanic biomes also exist.

Climatic conditions, topography and soils influence the characteristics of terrestrial biomes. When people can rely on biomes to produce nutritious, safe and sufficient food for a fit and healthy life, then the region can be said to be food secure. Food insecurity occurs when this situation cannot be reached or retained.

Activity 1: How are biomes used for food production?

To develop an understanding of student background in this topic two options are provided.

- Set up a KWLH organiser. Oxfam has created a template that can be found here: https://www.oxfam.org.au/wp-content/uploads/2015/01/Oxfam-Schools-Program_KWLH-Organiser.pdf
 - K — Students recall and list what they KNOW about a topic
 - W — Students determine what they WANT to learn
 - L — Students identify and reflect upon what they have LEARNT at the end of the topic
 - H — Students reflect on HOW they have learnt and what they have learnt.

Set the topic as “Global food production and food security”. Students should divide a page into four columns with the headings K-W-L-H and begin this study topic by completing the first two columns, returning to complete the other columns at the end of the study. Alternatively, use the template below.

AND/OR

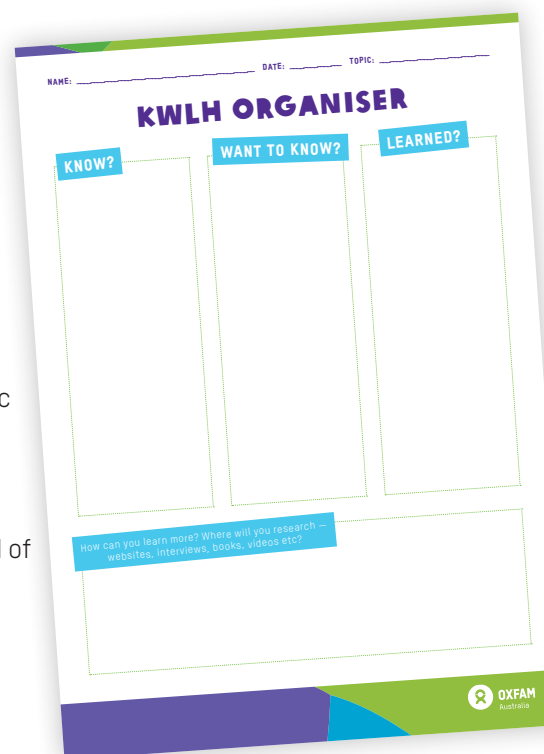
- Worksheet 1: Fast facts about global food production and food security**
Use this thought provoker to show students the facts about food production and have them answer the key question.

Activity 2: How are biomes altered for food production?

This activity maps the major terrestrial biomes and compares their global distribution to that of land used in agriculture. It uses two interactive maps — one to look at how human development of agricultural systems changes biomes; the other to evaluate each country’s food security.

Worksheet 2: Which biomes are able to produce food?

Students could use PowerPoint or [Wovslider](#) to assist in the production of the photo essay in the Extension activity. Pictures used should be taken from Creative Commons sources in all cases.



PART B: WHAT ARE SOME OF THE CHALLENGES TO FOOD PRODUCTION?

Time: 11 lessons.

Geographical concepts: Place, interconnection, sustainability, environment, scale.

Aim: To show how parts of our food system are broken as a result of climate change and land grabs by commercial food-producing companies to change farming practices.

Introduction: What's wrong with our food system?

Use the infographic here: <http://awesome.good.is/transparency/web/1204/what-s-wrong-with-our-food-system/flash.html> to introduce students to some of the challenges to food production and feeding the population. This can be shown on an Interactive White Board (IWB) or students can look at it on their own devices. Students should be encouraged to respond to the question "What's wrong with our food system?" by completing a PMI (Plus, Minus, Interesting) as a group activity either on the blackboard, by using sticky labels or using a digital display.

A PMI template for this activity can be found at: https://www.oxfam.org.au/wp-content/uploads/2015/01/Oxfam-Schools-Program_PMI.pdf

Activity 1: Major challenges to food production

This activity considers two of the main challenges to food production — climate change and land grabs. Each challenge is addressed through completing separate worksheets.

Worksheet 3: Major challenges to food production — climate change

This worksheet assumes an understanding of climate change and does not look at the issue itself, but rather at implications for the growing of food. Teachers should ensure students have some understanding of climate change prior to completing this exercise.

Chapter 7 of the March 2014 Intergovernmental Panel on Climate Change (IPCC) report www.ipcc.ch/report/ar5/wg2/ is titled "Food security and food production systems". This makes excellent background reading for this unit. The graphics at the end of the chapter may interest teachers.

In question 2, on the worksheet a diamond ranking activity is used. Oxfam provides students with a template here: https://www.oxfam.org.au/wp-content/uploads/2015/01/Oxfam-Schools-Program_Diamond-Ranking-Chart.pdf Students will need to discard one factor from the list — they may like to choose this at the beginning or after some discussion during the activity.

In the highest part of the diamond ranking, students should place the idea that they think is the factor that most impacts on what people eat. In the lowest part of the ranking, students choose the least important factor. On the second line, they should place the next two most important factors, and so on until all the factors have been ranked. Now students compare their diamond ranking with another person and try to come to an agreed diamond ranking — they may need to justify and compromise so the final diamond ranking reflects both their ideas.

Note that the Oxfam link used in question 3 www.oxfam.org.au/explore/climate-change/what-oxfam-is-doing/faces-of-climate-change/ allows teachers to print the text for each film clip — go to the end of each film clip to do this. This video of climate adaptation work in Timor Leste, also illustrates another recent example of work being done to assist communities adapt to climate change: http://youtu.be/Q3_oZ-hUI5U

Worksheet 4: Major challenges to food production — competing for land use

Teachers will find that this site <http://newint.org/features/2013/05/01/land-grabs-the-facts-infographic/> provides a brief introduction to the issues involved in land grabs. Show this to your class and discuss the issues.

Introduce the topic to students with an animation: 'An animated guide to land grabs' at <http://youtu.be/5GL5400QthE>. Also show the class "Does your sugar lead to land grabs?" at <http://youtu.be/JstI8LrTLFg>. Use these as a basis for a discussion to clarify the meaning of land grabs.

For Question 3, teachers will need to provide a blank map of the world with country borders marked (Oxfam has provided one here: https://www.oxfam.org.au/wp-content/uploads/2015/01/Oxfam-Schools-Program_Cloropleth-Map.pdf and also have access to atlases.

A choropleth map is a map drawn to display statistical data spatially (see this YouTube video at <http://www.youtube.com/watch?v=rXwD-pP16U8>). It requires one colour to be used in a range of no more than six shades depending on the categories determined for the key. Use the table “Distribution of land grabbed for agricultural production in Africa” in Worksheet 4, and group the area “grabbed” into no more than six distinct categories.

Help the students to create these categories of data to map — there should be no more than six categories/colours. The lightest shade is applied to low values and the darkest shade to high values. A key should be placed within the borders of the world map. Students then need to colour each country according to the key. This is an excellent technique for showing distribution, density and scale of land grabs. Don't forget that the map should be completed with BOLTSS — Border, Orientation, Legend (key), Title, Scale, and Source of data mapped.

Question 5 asks students to draw a flow diagram. A template can be found at: https://www.oxfam.org.au/wp-content/uploads/2015/01/Oxfam-Schools-Program_Flow-Chart.pdf

Further education resources for Year 9 and 10 students on land grabs and Oxfam Australia's *Banking on Shaky Ground* report can be found at: <https://www.oxfam.org.au/act/resources-for-teachers/banking-on-shaky-ground/>

PART C: HOW CAN FOOD SECURITY BE ACHIEVED IN THE FUTURE?

Time: 6 lessons.

Geographical concepts: Place, interconnection, sustainability, environment, scale.

Aim: To show students that food security can become a reality for many people, especially those in developing countries. By 2050, it is hoped that the statistic of one in eight people that go to bed hungry each day can be significantly reduced or eliminated.

Introduction

Five methods of increasing food production and food security for the future are shown here — fair trade, local food security reserves, agro-ecology, initiatives by and for small-scale farmers and reducing food wastage.

Worksheet 5: How can food security be achieved in the future?

This fact sheet www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/Factsheet_SMALLHOLDERS.pdf provides an overview of the role of small-scale farming in attaining food security and as such is valuable background reading.

PART D: WHAT CAN WE DO TO IMPROVE FOOD SECURITY?

Time: 1 lesson.

Geographical concepts: Place, interconnection, sustainability, environment, scale.

Aim: To show students that it is possible to have a voice on issues and that individual concerns, when united, are very effective.

Introduction

It is important for students to feel empowered and that they can make a difference. This section highlights a number of Oxfam initiatives that give people a voice about farming practices, food production and food security.

Worksheet 6: What can we do to improve food security?

From the list of initiatives shown in Worksheet 6 the class may decide that it, or the school, should be more actively involved and take part in action to make a difference.

Note: Teachers that began this unit of study with a K-W-L-H should return to this organiser and asks students to complete the remaining two columns.

References

- Blogs on food security can be accessed at www.oxfam.org.au/tag/food-security/

