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Introduction

The VCE Geography *Advice for teachers* handbook provides curriculum and assessment advice for Units 1 to 4. It contains advice for developing a course with examples of teaching and learning activities and resources for each unit.

Assessment information is provided for school-based assessment in Units 3 and 4 and advice for teachers on how to construct assessment tasks with suggested performance descriptors and rubrics.

The course developed and delivered to students must be in accordance with the [*VCE Geography Study Design 2016–2021*](https://www.vcaa.vic.edu.au/Documents/vce/geography/GeographySD_2016.pdf)*.*

Administration

Advice on matters related to the administration of Victorian Certificate of Education (VCE) assessment is published annually in the [*VCE and VCAL Administrative Handbook*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx)*.* Updates to matters related to the administration of VCE assessment are published in the [*VCAA Bulletin*](https://www.vcaa.vic.edu.au/news-and-events/bulletins-and-updates/bulletin/Pages/index.aspx)*.*

VCE Geography study design examination specifications, past examination papers and corresponding examination reports can be accessed at: [www.vcaa.vic.edu.au/assessment/vce-assessment/past-examinations/Pages/Geography.aspx](http://www.vcaa.vic.edu.au/assessment/vce-assessment/past-examinations/Pages/Geography.aspx)

Graded Distributions for Graded Assessment can be accessed at [www.vcaa.vic.edu.au/administration/research-and-statistics/performance-senior-secondary/Pages/Index.aspx](https://www.vcaa.vic.edu.au/administration/research-and-statistics/performance-senior-secondary/Pages/Index.aspx)

Curriculum

Developing a course

A course outlines the nature and sequence of teaching and learning necessary for students to demonstrate achievement of the set of outcomes for a unit. The areas of study describe the learning context and the knowledge and skills required for the demonstration of each outcome.

Teachers must develop courses that include appropriate learning activities to enable students to develop the knowledge and skills identified in the outcomes in each unit.

Teachers need to take into account the area of study description in addition to the key knowledge and key skills, and the cross-study specifications.

They need to identify the nature and sequence of teaching and learning activities to appropriately cover the area of study and provide for different learning styles.

Examples of learning activities are provided in the 'Learning activities'.

These examples can be divided into four groups:

1. Those that focus on the development of geographical skills

2. Group work

3. Research

4. Those that focus on the use of spatial technologies

For each area of study two examples are provided for each group, with eight examples in total. Most of the suggested examples in one area of study can be adapted for use in other areas of study. A table that collates all the learning activity examples can be found in [Appendix 3](#Appendix3).

Cross-study specifications

Key geographical concepts

The key geographical concepts identified in the study design facilitate the organisation and understanding of the key knowledge underpinning the outcomes. They should be at the forefront when planning and developing a course. They can be used to:

* focus a question, whether it be in a discussion or a task
* guide an investigation
* organise and analyse information being examined, be it textual, photographic, statistical or mapped
* suggest an explanation
* compare case studies.

Geographical skills

Geographical skills identified in the study design outline what skills a student of geography should use in their collection, analysis, description and representation of data and information of geographic phenomena. The purpose of the geographical skills is to expand on the key skills that underpin each area of study that are related to the collection, analysis, description and representation of data and information. Students need to become familiar with these skills as they apply to Units 1 to 4. When incorporating these skills into the investigations the students undertake, there are a number of things to consider:

* Students need the opportunity to re-visit the skills a number of times and to experience and apply the same skill in a variety of contexts found in the areas of study.
* Many of the skills can be integrated into the one exercise/activity.
* Geographical skills need to be an integral part of the teaching and learning process.

Fieldwork requirements

Fieldwork is prescribed in Units 1 to 3. In Units 1 and 2 the selected fieldwork can address aspects of the key knowledge of both Areas of Study 1 and 2. In Unit 3, Area of Study 1 is specifically designed to be addressed by fieldwork. There is no requirement for fieldwork in Unit 4.

In designing fieldwork teachers must refer to the:

1. [Structure of the fieldwork report](http://www.vcaa.vic.edu.au/Documents/vce/geography/GeographySD_2016.pdf#page=13). Teachers need to ensure that students:
* understand the key requirements of the report and understand the development of the fieldwork topic
* are aware of and actively contribute to the design of the fieldwork methodology (both primary and secondary)
* have an open-ended framework for the presentation and analysis of results.
1. The fieldwork must draw upon and address the key knowledge and skills in the relevant areas of study. Note that:
* not all key knowledge and skills will be addressed by the fieldwork
* identification of key knowledge and skills to be addressed would vary according to their relevance to the particular fieldwork site selected.

Examples of possible fieldwork sites have been provided for [Unit 1](#Fieldwork1), [Unit 2](#Fieldwork2) and [Unit 3](#Fieldwork3). These are provided as stimulus to identify fieldwork options that are relevant, accessible and appropriate to students' particular circumstances.

Depending on the fieldwork site/topic selected and its location relative to the school, there are a number of ways in which the fieldwork can be carried out most effectively. For example:

* regularly visiting a fieldwork site nearby
* taking a full day trip to visit, investigate and collect data
* spending a number of days collecting data and information, which may then involve an overnight stay.

Performance descriptors are provided in Unit 3 for the assessment of the fieldwork SAC. They can also be applied with modification at Units 1 and 2.

For more information about the performance descriptors see ‘[Assessment advice](#Assessment)’.

Spatial technologies

The development and availability of spatial technologies has grown rapidly in recent years. These technologies include information that is geo-coded (‘spatial’ in nature), and those technologies (on and off-line) available to manipulate, interrogate, analyse and represent data geographically.

Some examples of the types of spatial technologies include:

* **Software and hardware:** GIS, GPS
* **Products:** Satellite imagery, Digital maps (eg. LandVic)
* **Internet:** Google Earth, Organisations with online GIS applications (e.g. Bureau of Meteorology, Australian Bureau of Statistics)
* **Smart Phone Apps:** plane and ship trackers, transport and mapping.

In VCE Geography, students study the role and application of spatial technologies by agencies such as government or business and they also learn to use spatial technologies themselves in their study.

Students can approach the use of spatial technologies by:

1. Examining how government, organisations and business are using them in their work. This may be an explicit requirement of an area of study as an opportunity may be provided through other key knowledge or key skills such as when evaluating the effectiveness of management strategies. In these cases the use of spatial technologies can be considered where relevant to the selected examples.

2. Utilising the products of spatial technologies in learning activities across the unit/s, in particular the production of maps, data and other information.

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| Unit |  |
| 1. Hazards and disasters  | * Study of the processes involved in hazard generation (CSIRO)
* Monitoring of potential hazards (responses) (NOAA)
* Assessment of the impacts of hazard events (NASA)
* Emergency response and recovery planning (Victorian CFA)
 |
| 2. Tourism | * Using GPS to track tourists’ spatial behaviours (tourism industry)
* Tracking tourist flows between and within countries
 |
| 3. Changing the land | * Satellite imagery over time used to study land cover change (ESA)
* Local government GIS departments monitoring and approving land use changes
 |
| 4. Human population – trends and issues | * [http://populationpyramid.net](http://populationpyramid.net/) A site presenting population pyramids for most countries, from 1950–2100; see resources list
* [www.gapminder.org](http://www.gapminder.org) A site where students can select data to analyse and represent in graphic or map form, over time
 |

Employability skills

The VCE Geography study provides students with the opportunity to engage in a range of learning activities. In addition to demonstrating their understanding and mastery of the content and skills specific to the study, students may also develop employability skills through their learning activities.

The nationally agreed employability skills are: Communication; Planning and organising; Teamwork; Problem solving; Self-management; Initiative and enterprise; Technology; and Learning.

The [table](#EmployabilitySkills) links those facets that may be understood and applied in a school or non-employment related setting, to the types of assessment commonly undertaken within the VCE study.

Resources

A list of [resources](http://www.vcaa.vic.edu.au/Pages/vce/studies/geography/geogindex.aspx) is published online on the VCAA website and is updated annually. The list includes teaching, learning and assessment resources, contact details for subject associations and professional organisations, teacher journals and periodicals, student events and teacher professional programs.

Assessment

Assessment is an integral part of teaching and learning. At the senior secondary level it:

* identifies opportunities for further learning
* describes student achievement
* articulates and maintains standards
* provides the basis for the award of a certificate.

As part of VCE studies, assessment tasks enable:

* the demonstration of the achievement of an outcome or set of outcomes for satisfactory completion of a unit
* judgment and reporting of a level of achievement for school-based assessments at Units 3 and 4.

The following are the principles that underpin all VCE assessment practices. These are extracted from the [VCAA *Principles and procedures for the development and review of VCE Studies*](https://www.vcaa.vic.edu.au/curriculum/vce/Pages/VCEPoliciesandGuidelines.aspx) published on the [VCAA website](https://www.vcaa.vic.edu.au/Pages/HomePage.aspx).

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| **VCE assessment will be valid** | This means that it will enable judgments to be made about demonstration of the outcomes and levels of achievement on assessment tasks fairly, in a balanced way and without adverse effects on the curriculum or for the education system. The overarching concept of validity is elaborated as follows. |
| **VCE assessment should be fair and reasonable** | Assessment should be acceptable to stakeholders including students, schools, government and the community. The system for assessing the progress and achievement of students must be accessible, effective, equitable, reasonable and transparent.The curriculum content to be assessed must be explicitly described to teachers in each study design and related VCAA documents. Assessment instruments should not assess learning that is outside the scope of a study design.Each assessment instrument (for example, examination, assignment, test, project, practical, oral, performance, portfolio, presentation or observational schedule) should give students clear instructions. It should be administered under conditions (degree of supervision, access to resources, notice and duration) that are substantially the same for all students undertaking that assessment.Authentication and school moderation of assessment and the processes of external review and statistical moderation are to ensure that assessment results are fair and comparable across the student cohort for that study. |

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| **VCE assessment should be equitable** | Assessment instruments should neither privilege nor disadvantage certain groups of students or exclude others on the basis of gender, culture, linguistic background, physical disability, socioeconomic status and geographical location.Assessment instruments should be designed so that, under the same or similar conditions, they provide consistent information about student performance. This may be the case when, for example, alternatives are offered at the same time for assessment of an outcome (which could be based on a choice of context) or at a different time due to a student’s absence. |
| **VCE assessment will be balanced** | The set of assessment instruments used in a VCE study will be designed to provide a range of opportunities for a student to demonstrate in different contexts and modes the knowledge, skills, understanding and capacities set out in the curriculum. This assessment will also provide the opportunity for students to demonstrate different levels of achievement specified by suitable criteria, descriptors, rubrics or marking schemes.Judgment about student level of achievement should be based on the results from a variety of practical and theoretical situations and contexts relevant to a study. Students may be required to respond in written, oral, performance, product, folio, multimedia or other suitable modes as applicable to the distinctive nature of a study or group of related studies. |
| **VCE assessment will be efficient** | The minimum number of assessments for teachers and assessors to make a robust judgment about each student’s progress and learning will be set out in the study design. Each assessment instrument must balance the demands of precision with those of efficiency. Assessment should not generate workload and/or stress that unduly diminish the performance of students under fair and reasonable circumstances. |

Scope of tasks

For Units 1–4 in all VCE studies assessment tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe.

Points to consider in developing an assessment task:

List the key knowledge and key skills.

1. Choose the assessment task where there is a range of options listed in the study design. It is possible for students in the same class to undertake different options; however, teachers must ensure that the tasks are comparable in scope and demand.
2. Identify the qualities and characteristics that you are looking for in a student response and design the criteria and a marking scheme.
3. Identify the nature and sequence of teaching and learning activities to cover the key knowledge and key skills outlined in the study design and provide for different learning styles.
4. Decide the most appropriate time to set the task. This decision is the result of several considerations including:
* the estimated time it will take to cover the key knowledge and key skills for the outcome
* the possible need to provide a practice, indicative task
* the likely length of time required for students to complete the task
* when tasks are being conducted in other studies and the workload implications for students.

Units 1 and 2

The student’s level of achievement in Units 1 and 2 is a matter for school decision. Assessments of levels of achievement for these units will not be reported to the VCAA. Schools may choose to report levels of achievement using grades, descriptive statements or other indicators.

In each VCE study at Units 1 and 2, teachers determine the assessment tasks to be used for each outcome in accordance with the study design.

Teachers should select a variety of assessment tasks for their program to reflect the key knowledge and key skills being assessed and to provide for different learning styles. Tasks do not have to be lengthy to make a decision about student demonstration of achievement of an outcome.

A number of options are provided in each study design to encourage use of a broad range of assessment activities. Teachers can exercise great flexibility when devising assessment tasks at this level, within the parameters of the study design.

Note that more than one assessment task can be used to assess satisfactory completion of each outcome in the units.

There is no requirement to teach the areas of study in the order in which they appear in the units in the study design.

Units 3 and 4

The VCAA supervises the assessment for levels of achievement of all students undertaking Units 3 and 4.

There are two main forms of school-based assessment: School-assessed Coursework (SAC) and in some studies, the School-assessed Task (SAT).

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| School–assessed Coursework | A SAC is selected from the prescribed list of assessment tasks designated for that outcome in the study design. A mark allocation is prescribed for each SAC. Teachers may develop their own marking schemes and rubrics or may use the [performance descriptors](file:///C%3A/Users/01437087/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.Outlook/AGN0ASRM/performance%20descriptors) The *VCE and VCAL Administrative Handbook* provides more detailed information about School-assessed Coursework. |
| School-assessed Task | A SAT is a mandated task prescribed in the study design. The SAT is assessed using prescribed assessment criteria and accompanying performance descriptors published annually on the relevant study page on the VCAA website. Notification of their publication is given in the February *VCAA Bulletin*. Teachers will provide to the VCAA a score against each criterion that represents an assessment of the student’s level of performance. Details of authentication requirements and administrative arrangements for School-assessed Tasks are published annually in the current year’s *VCE and VCAL Administrative Handbook*.  |

In VCE Geography the student’s level of achievement will be determined by School-assessed Coursework and an end-of-year examination. The VCAA will report the student’s level of performance as a grade from A+ to E or UG (ungraded) for each of three Graded Assessment components: Unit 3 School-assessed Coursework, Unit 4 School-assessed Coursework and the end-of-year examination.

In Units 3 and 4 school-based assessment provides the VCAA with two judgments:

S (satisfactory) or N (not satisfactory) for each outcome and for the unit; and levels of achievement determined through specified assessment tasks prescribed for each outcome.

School-assessed Coursework provides teachers with the opportunity to:

* select from the designated assessment task/s in the study design
* develop and administer their own assessment program for their students
* monitor the progress and work of their students
* provide important feedback to the student
* gather information about the teaching program.

Teachers should design an assessment task that is representative of the content (key knowledge and key skills underpinning the outcome) and allows students the opportunity to demonstrate the highest level of performance. It is important that students know what is expected of them in an assessment task. This means providing students with advice about the outcome’s key knowledge and key skills to be assessed. Students should know in advance how and when they are going to be assessed and the conditions under which they will be assessed.

Assessment tasks should be part of the teaching and learning program. For each assessment task students should be provided with the:

* type of assessment task as listed in the study design and approximate date for completion
* time allowed for the task
* allocation of marks
* nature of any materials they can utilise when completing the task
* information about the relationship between the task and learning activities should also be provided as appropriate

Following an assessment task:

* teachers can use the performance of their students to evaluate the teaching and learning program
* a topic may need to be carefully revised prior to the end of the unit to ensure students fully understand the key knowledge and key skills required in preparation for the examination
* feedback provides students with important advice about which aspect or aspects of the key knowledge they need to learn and in which key skills they need more practice.

Authentication

Teachers should have in place strategies for ensuring that work submitted for assessment is the student’s own. Where aspects of tasks for school-based assessment are completed outside class time teachers must monitor and record each student’s progress through to completion. This requires regular sightings of the work by the teacher and the keeping of records. The teacher may consider it appropriate to ask the student to demonstrate his/her understanding of the task at the time of submission of the work.

If any part of the work cannot be authenticated, then the matter should be dealt with as a breach of rules. To reduce the possibility of authentication problems arising, or being difficult to resolve, the following strategies are useful:

* Ensure that tasks are kept secure prior to administration, to avoid unauthorised release to students and compromising the assessment. They should not be sent by mail or electronically without due care.
* Ensure that a significant amount of classroom time is spent on the task so that the teacher is familiar with each student’s work and can regularly monitor and discuss aspects of the work with the student.
* Ensure that students document the specific development stages of work, starting with an early part of the task such as topic choice, list of resources and/or preliminary research.
* Filing of copies of each student’s work at given stages in its development.
* Regular rotation of topics from year to year to ensure that students are unable to use student work from the previous year.
* Where there is more than one class of a particular study in the school, the VCAA expects the school to apply internal moderation/cross-marking procedures to ensure consistency of assessment between teachers. Teachers are advised to apply the same approach to authentication and record-keeping, as cross-marking sometimes reveals possible breaches of authentication. Early liaison on topics, and sharing of draft student work between teachers, enables earlier identification of possible authentication problems and the implementation of appropriate action.
* Encourage students to acknowledge tutors, if they have them, and to discuss and show the work done with tutors. Ideally, liaison between the class teacher and the tutor can provide the maximum benefit for the student and ensure that the tutor is aware of the authentication requirements. Similar advice applies if students receive regular help from a family member.

Learning activities

Unit 1: Hazards and disasters

Students investigate two contrasting types of hazards.

For the two chosen hazard types, students need to focus their investigation around the interconnections between a hazard event, the place it occurs and the people it involves. They will need to be able to distinguish between a Hazard and a Hazard event, which can result in a disaster depending on its impact and interconnections.

In investigating each of these hazards, students should have frequent opportunities to utilise the key [geographical concepts](http://www.vcaa.vic.edu.au/Documents/vce/geography/GeographySD_2016.pdf#page=9) as a tool to explore the processes and interconnections that characterise them.

The study design specifies the [geographical skills](http://www.vcaa.vic.edu.au/Documents/vce/geography/GeographySD_2016.pdf#page=11) that students need to become familiar with across Units 1 to 4. Note which skills are applicable to this unit and then integrate these with the appropriate key skills for the particular area of study.

Spatial data and information is used in the study of the processes involved in a hazard event generation and its aftermath, including the monitoring of potential hazards (responses), assessment of the impacts of hazard events, mitigation efforts, emergency response and recovery planning.

The fieldwork examples provided in the table ‘[Sample fieldwork sites](#FieldworkSites)’ suggest a range of examples of hazards and possible fieldwork sites.

In the planning for this unit, teachers may use the hazard type investigated through fieldwork to address both Areas of Study 1 and 2. The investigation of the second hazard type can also address both Areas of Study 1 and 2 together.

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| **Area of Study 1: Characteristics of hazards** |
| **Outcome 1**: | **Examples of learning activities** |
| Analyse, describe and explain the nature of hazards and impacts of hazard events at a range of scales. | * produce maps to describe the distribution of the characteristics of an event
* undertake a statistical analysis and representation of key characteristics of an event (scale, frequency, impact)
* investigate the similarities and differences between the two hazard event/types being investigated by the class; undertake the investigation in four groups, and come together in two roundtable groups to synthesise investigations
* debate the topic 'The impacts of (selected hazard event, e.g. the Boxing day Tsunami) would have been similar even with early attempts at mitigation'
* individually research the role, contribution and effectiveness of spatial technologies in the identification, assessment of impacts and management of a specific hazard event
* investigate one type of hazard event in two contrasting locations; analyse and compare the ‘nature’ of the two events
* analyse before and after satellite imagery of a hazard event and describe the type and scale of the impacts on the area
* interrogate GIS data to identify the impacts of a hazard event; develop management priorities for the short, medium and long-term rehabilitation of the area
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| Students explore the similarities and differences between hazard types and develop an understanding of the common features of hazards.It is envisaged that this activity might take place after detailed study of the two hazard events. The activity allows students to revise, reflect upon and synthesise their understanding of the study of hazards.Role Descriptions: You will need to develop a ‘Sample Group/Role Card’ as you allocate group tasks.**Sample Group/Role Card:**

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| Group #1:Student #1, Student #2, Student # 3, Student #4, Student #5 |
| Global characteristicsHazard #1: Tsunami | Regional variationEvent #1: Indonesia – Boxing Day |
| Characteristics for Investigation:* physical causes of these hazard events
* geographic characteristics (location, scale, frequency, magnitude, sequence)
* contribution of human activities in initiating or compounding the hazard
* factors affecting risk level and impacts on people, places and environments
* positive and negative impacts on people and environments in the short and long term.
 |

Task Instructions: You will need to make an Instruction sheet with the task, stages and characteristics for investigation for the students.Process:* Introduce the task, its purpose and duration.
* Divide students into four groups of four to six students: two groups research the hazard event from one hazard type, and the other two groups research the remaining hazard event/type.

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| --- | --- | --- |
|  | Hazard #1 | Hazard #2 |
| Example | Group #1 | Group #2 | Group #3 | Group #4 |

Stage One: Group research* Group to consider the global and regional variation in the characteristics of these events.
* Group allocates one characteristic for investigation to each member. Each student considers their notes and references to identify any additional research required.
* Each student carries out any additional research and synthesises this with their notes and references to develop key points in response to their inquiry area.
* Group coordinates on how to present the results of their research in one format.
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| Stage Two: Roundtable corresponding groups – Same hazard* The two groups investigating the same hazard come together to compare and share the results of their investigation.

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| Roundtable corresponding groups | Same hazard |
| Group #1 – Group #2 |
| Group #3 – Group #4 |

* Through discussion they consider questions such as:
* What were the similarities of both reports?
* Can they settle any differences in each group’s reports (come to a consensus)?
* What new information can each group contribute to the overall summary report?
* By negotiation, they produce a combined consensus summary of their investigations.

Stage Three: Roundtable corresponding groups – Different hazard* Two ‘Roundtable Corresponding Groups’ are formed, each with a different hazard investigation group.

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| Roundtable corresponding groups | Different hazard |
| Group #1 – Group #3 |
| Group #2 – Group #4 |

* Members from both groups are nominated for each of the two hazards. They present the agreed summary of the characteristics of their hazard from stage 2.
* Students not presenting work in pairs (one from each of the hazard groups) are to identify and note the significant similarities and differences between the characteristics of each hazard.

Stage Four: Whole class synthesis* The whole class comes together for the final presentation and synthesis of the commonalities of hazard events.

Through discussion, the class reaches a consensus on the common characteristics of hazards (and hazard events) as shown by the two hazards they have examined. |

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| **Area of Study 2: Response to hazards and disasters** |
| **Outcome 2**: | **Examples of learning activities** |
| Analyse and explain the nature, purpose and effectiveness of a range of responses to selected hazards and disasters. | * produce ‘change over time’ maps to illustrate spatial responses to a specific hazard, and describe and analyse the resulting patterns
* examine a series of before and after images of a hazard event to identify the type and scale of responses evident, and make some judgment as to their effectiveness
* assume roles of the key stakeholders in a hazard event; individually, investigate their role and response to the event; come together in a ‘Post Event’ review to analyse what worked, what didn’t and what could be put in place in the future
* divide class into groups and allocate different hazards to each group; investigate the natural processes that unfold within an event; present findings to identify the similarities and differences
* research responses to a hazard event by contrasting information presented from three different sources (e.g. YouTube, government organisations, NGOs)
* research a particular hazard and identify those factors that distinguish it from being an ‘event’ rather than a ‘disaster’
* identify what and how spatial technologies contribute to our awareness of and preparedness for major hazard events
* use GPS to data-log criteria based evidence on management response to a potential hazard event; compare this to past evidence to evaluate the effectiveness of the responses
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| Students investigate and identify the variety of ways in which spatial technologies are contributing to our awareness and management of hazard events. The task should enable them to identify where spatial technologies may play a role in the preparation for and response to the hazards they focus on in their studies.**Process:**Introduce students to the task. They can work independently or in pairs. **Instructions:****Step 1:**Initiate a search using the following search terms: **‘spatial technologies’** and **‘hazards’.** If you want to be more specific, you could add the name of the particular hazard event/type.Figure 1 has examples of the useful type of sites your students may encounter.**Figure 1**

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| Pacific Disaster Centre[www.pdc.org/?from=/iweb/pdchome.html](http://www.pdc.org/?from=/iweb/pdchome.html) Geoscience Australia: Sentinel Hotspots<http://sentinel.ga.gov.au/#/announcement> NASA Earth Observatory<http://earthobservatory.nasa.gov/> University of Colorado at Boulder: Natural Hazards Center[www.colorado.edu/hazards/resources/web/technology.html](http://www.colorado.edu/hazards/resources/web/technology.html) European Space Agency*Use the terms ‘GIS hazards’ in the search facility, explore the ‘hits’*[www.esa.int/ESA](http://www.esa.int/ESA) |

**Step 2:**As students navigate the websites, they can complete a worksheet similar to the one below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Website name** |  |  |  |
| **URL** |  |  |  |
| What hazard/s is identifiable through this spatial technology? |  |  |  |
| Who is providing the data/ spatial technology? |  |  |  |
| What type of data is presented? What timeframes? |  |  |  |
| What area/s does the data cover? What is its geographic spread? |  |  |  |
| How does the spatial technology contribute to our understanding of hazard events? | Identification of potential hazards | Assessment of impacts of hazards | Management of hazards and hazard events |
|  |  |  |

Develop a shared Google document to build an extensive shared analysis of the role of spatial technologies in hazard identification and management. Students can upload their worksheets as they are completed. This also enables other students to add to or expand an entry that someone has already uploaded. |

Learning activities

Unit 2: Tourism

Through investigating the characteristics of tourism at a range of scales, students will be able to identify and examine the interconnections that exist between host and source destinations. When looking at the characteristics and interconnections of tourism, one focus for students in identifying these relationships is on the sustainable management of a viable tourism industry. By careful examination of contrasting examples across a range of scales students should be able to identify the appropriate management directions to ensure that both the host and source destinations are able to benefit from tourism. Another focus is the usefulness of spatial technologies for the tourism industry. Aspects of planning, management and development of the tourism industry can be considered, for example in the areas of transport and logistics, weather forecasting and provision of infrastructure.

The selection of contrasting examples for student investigation across the two areas of study is clearly indicated in the introduction and explicit in the description of the outcomes. Students must examine tourism as it occurs within Australia and one other location from around the world. There is latitude and suggested scope within the study design to examine contrasts within Australia and the other location selected. This is supported by the emphasis on a range of scales and interconnections.

The fieldwork examples provided in the table ‘[Sample fieldwork sites](#FieldworkSites)’ display a range of examples of hazards and possible fieldwork sites.

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| **Area of Study 1: Characteristics of tourism** |
| **Outcome 1**: | **Examples of learning activities** |
| Analyse, describe and explain the nature of tourism at a range of scales. | * develop comparative graphs to examine the seasonality of domestic and international tourists at a particular tourist destination
* create proportional flow maps indicating the source/s of tourists to a particular tourist destination
* divide class into groups and allocate a specific Australian tourist destination; each group prepares a ‘brief’ on the key characteristics of that destination, and undertakes a ‘SWOT’ analysis in summary
* groups investigate the same International tourist destination; each group prepares a marketing campaign that addresses the ‘factors’ of tourism as noted in the key knowledge
* investigate the changing nature of tourism over time, considering both destination and activity
* investigate the factors affecting change in tourist destination patterns
* use a GIS to analyse the seasonality of source data for contrasting destinations
* Investigate how the tourist industry uses spatial technologies and the internet to manage and oversee the industry (e.g. Trip Advisor)
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| Students create proportional flow maps indicating the source/s of tourists to a particular tourist destination.In constructing the map (involving selection and categorisation of data, and representation on the map), students will become familiar with locations and variations of tourist flows to the destination selected. This will support a comprehensive description and analysis of these flows. This exercise could be carried out using spatial technologies.**Data sources**: identify and locate appropriate sources of data related to the destination students are studying. These can be supplied to the students as web-links or the data can be further extracted and presented as an excel file or hard copy.Examples of the type of website and suitable data:Australian Government: Tourism Research Australia[www.tra.gov.au/documents/International\_Visitors\_in\_Australia\_June\_Qtr\_2013.pdf](http://www.tra.gov.au/documents/International_Visitors_in_Australia_June_Qtr_2013.pdf) Bali – Tourist Arrivals[www.balitourismboard.org/stat\_arrival.html](http://www.balitourismboard.org/stat_arrival.html)The data should indicate tourist source country and numbers of tourists by month of visitation, and over a series of years.**Blank maps:** The selection of scale for the blank map/s will depend on the destination and data. In most cases, one would be a world map and a second may be regional. **Instructions:**1. Select the data to be used.2. Decide on the presentation technique (proportional symbol ‘flow lines’, and the scale of the categories to represent the data).3. Construct map/s.4. Written analysis:a. Describe the ‘pattern of tourist flows’ shown on the map.b. What factors might explain these patterns?In addition to looking at total numbers of visitors over a year, greater depth of analysis of the data could break it down to look at finer characteristics, for example:* Change over time
* Seasonality
* Length of stay

The tasks could be divided among the class. Each ‘map type’ group could decide on the best map representation of their topic and written analysis. These could be reproduced for the other members of class. Each group could then provide a brief explanation/summary of their task to the rest of the class.As part of Area of Study 2, students can retain their maps and responses to consider the implications of the patterns they have analysed for the management of the tourist destination. |

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| **Area of Study 2: Impact of tourism** |
| **Outcome 2**: | **Examples of learning activities** |
| Analyse and explain the impacts of tourism on people, places and environments and evaluate the effectiveness of strategies for managing tourism. | * using appropriate software (e.g. Inspiration), develop separate SWOT analyses for the environmental, economic and socio-cultural impacts of tourism on a particular destination
* assess the management of a tourist destination by mapping the distribution of infrastructure (i.e. accommodation, transport) in relation to locations of attractions
* divide class into three groups; each investigate either the economic, environmental, socio-cultural impacts(or sustainability) of tourism at a particular destination; each group presents their findings; class identifies overlaps, contradictions and linkages of the three focuses
* identify key stakeholders in a tourism destination; in groups investigate management strategies from the perspective of each stakeholder; share findings and identify the most effective responses
* allocate a range of tourist destinations to the class; investigate and report back on the changed impacts on the destination/s that have resulted from planning and management
* examine images and statistics over time of a tourist destination, noting connections between them that help to identify the key impacts (environmental, economic and socio-cultural) on this tourist destination
* use satellite imagery to identify the scale, distribution and impact of tourist development in a particular tourist destination, over time
* investigate how spatial technologies are being or could be utilised in developing effective management strategies for a particular tourist destination
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| This activity is designed to familiarise students with the growing role of the contribution of spatial technologies to the management of various aspects of the tourism Industry. While the role of spatial technologies is not an explicit key knowledge point as in the first area of study, one approach to the examination of management strategies in this area of study is to investigate the use of spatial technologies. This learning activity can help to inform an evaluation of the effectiveness of management strategies. Process:There are three stages in the development of this activity:* beginning with ‘theory’ (the potential for spatial technologies in tourism management)
* to the ‘practice’ (examples of spatial technologies that can contribute to tourism management), and
* finally the ‘experience’ (examples of spatial technologies that are currently used or could be used in the management of the tourist destination being studied).

1. To investigate the ‘theory’ behind the potential for spatial technologies, students undertake an initial internet search using the search terms ‘GIS and Tourism’. This will help students answer the question: **‘Where, how and in what ways can GIS contribute to tourism management?**’ |

|  |  |  |  |  |  |  |  |  |  |  |
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| 2. Searching of various tourism topics will uncover the potential of spatial technologies in tourism management. Examples include:**Airlines** – search ‘airline routes GIS’; example ‘Open Flights’ <http://openflights.org/>**Traffic management** – search ‘traffic management using GIS’ (add ‘resort’); example ‘Transportation: GIS for intelligent transport system’ <http://geospatialworld.net/Magazine/MArticleView.aspx?aid=30598#sthash.lyLqCdOk.dpuf>**Weather patterns/forecasts** – search ‘weather and GIS’; example ‘Tropical Cyclone Forecast Track Maps’ [www.bom.gov.au/cyclone/about/warnings/gis.shtml](http://www.bom.gov.au/cyclone/about/warnings/gis.shtml)**Ski Resorts** – search ‘GIS resort management’; example ‘skiGIS’ [www.skigis.com/en](http://www.skigis.com/en)Other search topics might include: accommodation, public transport, roads, and railways.The task here is to discover which and how spatial technologies are being used to support the tourism industry, and to investigate their purpose and effectiveness. A short list of spatial technology use integral to tourism management can be created.3. The last step in this investigation is to see where and how GIS is being, or could be, used in the management of the specific tourist destination being studied.Students identify which spatial technologies are available and could contribute to the overall management and planning of the selected tourist destination now and in to the future.Develop a matrix of use/effectiveness, for example:

|  |  |  |
| --- | --- | --- |
| **Who/what/where** | **Description of spatial technology** | **Contribution to management of tourist destination** |
| Skimap.org<https://skimap.org/> |  |  |
| Monash University: Lakes Entrance Visualisation<http://sahultime.monash.edu.au/LakesEntrance> |  |  |
| The results from each student’s investigation could be collated together into one master reference document.Class discussion could identify and note:* the range of current roles of spatial technologies in tourism management
* future possibilities for spatial technologies in tourism management
* the relative effectiveness of different technologies and in what area of management.
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Learning activities and School-assessed Coursework (SAC)

Unit 3: Changing the land

The significance of changes to land cover and use has grown in conjunction with the spread and growth of people across the world and the consequent demand for resources. On a global scale students investigate three major processes of land cover change, their nature and impact, and people’s responses to these changes at local, national and global scales. At the local scale, students focus on the more immediate land use changes of a selected location.

The two types of land changes also operate in different time scales. Generally, land cover change takes place over significant lengths of time; in some cases it may not be recognised within a human lifespan. Land use change occurs over a relatively short period of time, within a few years, but easily within a human lifespan.

When looking across both areas of study at the characteristics and interconnections of changing the land, students should focus on recognising and understanding the function and contribution of the processes bringing about the changes. They need to be similarly aware of and questioning the role of people in contributing to, mitigating, and responding to these changes.

Spatial data and information is currently used in monitoring, measuring and managing changes in land use and cover. Numerous agencies (government and non-government) at local, national and global scales use spatial technologies to undertake their work and communicate their results.

The fieldwork examples provided in the table suggest a range of land use changes and possible fieldwork sites. The land use change selected must provide scope to examine its interconnection with the surrounding region.

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| **Area of Study 1: Land use change** |
| **Outcome 1**: | **Examples of learning activities** |
| Analyse, describe and explain land use change and assess its impacts. | * construct an overlay map of the selected area, indicating past and present land use characteristics
* produce an annotated photo montage illustrating the changed land use of a selected area
* adopt various roles involved with a current development (land use change); prepare arguments in support of their role/s and bring these to a mock community decision-making event
* hand out ‘data cards’ about a selected location of land use change; each ‘data card’ is interconnected with at least one to three other cards (with overlaps); in groups, discuss their ‘data’ and try to identify the interconnections; hold a class debrief in conclusion
* use aerial photographs, photographs, newspapers and maps to develop a geographic description of the original characteristics of the selected area prior to development
* analyse a prepared ‘case study data bank’ (video, reports, newspaper articles, maps etc.) to identify the possible consequences and impacts of land use changes for the selected area and surrounding region
* interrogate ‘Google Earth’ to identify changes in land use of the selected area, and its surrounding region
* obtain aerial photographs from Land Victoria to analyse the changes in land use of the selected area over time
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| Students adopt various roles involved with a current development (land use change). They prepare arguments in support of their role/s, and bring these to a simulated community decision-making event.Current development: The land use change being used in this activity is the proposed development of **Point Nepean National Park**. **Role descriptions:** Develop a brief description of each of the following roles to give to students. The description should cover:* Title of the participant
* Name of the individual
* A sentence outlining what their role is, who they are, what they do
* A brief statement of their general position on the proposed development

The roles include: (1) State Government Minister; (2) Developer; (3) Local Politician; (4) National Park Association Representative; (5) Local Business Owner; (6) Portsea Resident; (7) Environmental Activist.(Note: There are seven roles, so copies of the role cards will need to be prepared. Where there are more students in the class than seven, fourteen, twenty-one, the surplus can be additional representatives of roles (5) Local Business Owner and (6) Portsea Resident. Where there are twenty-one students there will be three representatives of each roles, and if more students than add to roles (6) and (7))Process:* Introduce the task, its purpose and duration.
* Distribute roles and organise role groups where there are more than seven students.
* Hand out instructions (see below) and worksheets.

**Instructions to students:**1. In your role groups (whether a single person or two or more) you need to quickly undertake some research and develop an understanding of:* Your role and the general position you follow
* The underlying issues surrounding this development
* Your role’s view of the ‘positive and negative impacts of the (potential) change on the environment, and economic and social conditions in the selected area and surrounding region’.

Once you are satisfied that you understand the above, you need to complete the following **Impact report** from your role’s perspective.**Impact report: Role:**

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| --- | --- | --- | --- |
| **Impacts****(on selected area and surrounding region)** | **Environment** | **Economic** | **Social** |
| **Positive** |  |  |  |
| **Negative** |  |  |  |

2. Form the required number of Decision-Making Groups (DMGs). The Group nominates a Chairperson to lead the decision-making process.(Where there are up to thirteen students = one group; fourteen to twenty students = two groups; twenty-one plus students = three groups.)The DMG needs to:* Recognise the different stakeholder positions over the problem.
* Resolve differences to the best of their ability, and reach a consensus resolution to the proposed land use change.
* Prepare a **Consensus report** (see below) on the decision reached.

**Consensus report**

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| **Description of resolution:** |
|  |
| **Justification of resolution:** |
|  |

3. Where there is more than one DMG, each will present their **Consensus report** to the rest of the class, who represent the community at a decision-making event. They need to report on:* How they went about addressing the issue to resolve the problem.
* What the resolution was.
* The justification (rationale) for their decision-making.
* Noting any dissenting viewpoints and the reasons behind these.
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| **Area of Study 2: Land cover change** |
| **Outcome 2**: | **Examples of learning activities** |
| Analyse, describe and explain processes that result in changes to land cover and discuss the impacts and responses resulting from these changes. | * produce a global distribution map for each of the major land cover changes using proportional symbols to indicate the percentage change over time
* create a matrix with impacts on one axis and responses on the other; complete a matrix for each location/process studied
* divide the class into three groups; each group is responsible for preparing a report on a different process; within each group, individual members are responsible for reporting on the processes: location, reasons, impacts, and response to the land cover changes
* in small groups, develop, define and justify five criteria to 'evaluate the effectiveness of responses' to a land cover change; share results with class and discuss; agree on a final set of five criteria
* research past and present distribution of land cover changes of a selected process; analyse and compare the reasons for such changes
* prepare a flow chart illustrating interconnections between road building and deforestation; sedentarisation and desertification; melting glaciers and farming activities
* investigate the role of spatial technologies in identifying the changes currently occurring and the development of responses to one of the major processes at a specific location
* locate satellite imagery to identify and analyse the rate and extent of deforestation in Indonesia or the Amazon
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| Students research past and present distribution of land cover changes of a selected process, and analyse and compare the reasons for such changes. This activity provides a basis for the subsequent study of the processes at a specific location.**Task worksheets:** Supply hardcopies of the Summary Report as detailed below (expand to A4) or make it available digitally.**Process:*** Introduce the task, its purpose and duration.
* Divide students into three groups, and allocate one process (deforestation, desertification and melting glaciers) per group to research.
* Hand out instructions and worksheets

**Instructions:**1. Divide the three research areas amongst the members of the group (ideally there will be two to three people working on each component). The five research areas include:* The nature of the major process of land cover change (what it is and how it works).
* The spatial distribution of the major process on a global scale that:

– was apparent around 8,000 years ago– was apparent around 20,000 years ago– is apparent currently.* The (possible) role and interconnection of natural processes and human activity in contributing to changes in the spatial distribution of the major process.

2. After one initial period on their research, the group reforms together to share what they have learnt so far, and discuss what they need to do to complete the task. Roles may change at this point.3. After another period of research, the group reforms to integrate the results of their research into a Summary Report (see table below) which includes:* a succinct description of the nature of the major process of land cover change (100–150 words)
* maps of the spatial distribution of the major process of land cover change over the three time periods
* a table (see below) outlining the possible causes for such changes (listed in order from most to least significant).

**Summary Report: Major process:**

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| **Nature of major process:** |
| *Maps of the spatial distribution of your major process of land cover change over the three time periods should be appended to the back of this summary report (A4 sheets).* |
| **Possible causes for changes in spatial distribution** |
| **Significance** | **Changes 20,000–8,000 years before present** | **Changes 8,000–present** |
| **Most** |  |  |
|  |  |  |
| **Least** |  |  |
| Natural processes and human activities possible role and interconnection in contributing to these changes |
|  |

(Note: Add rows as needed between Most to Least to fit the possible causes identified)Each group responsible for a major process of land use change will make a presentation to the other two groups. In the presentation they will:* distribute copies of their Summary Report
* all contribute to a discussion and explanation of the background to their report
* provide clarification and further details in response to questions from the other students.

The teacher could provide:* feedback on how each group (and individual members) worked through the process
* criteria to assess the group’s Summary Report and Presentation.

The students could provide peer feedback on the:* contributions of individual members of the group
* presentations and Summary Reports of the other groups.

*(Note: In both cases students develop and agree on the criteria upon starting out.)* |

[Unit 3 sample assessment task](#U3SampAT)

Learning activities and School-assessed Coursework (SAC)

Unit 4: Human population – trends and issues

In examining the geography of human populations, students begin by focusing on population dynamics, and then, in light of this, examine two significant population trends and the issues at play within them.

The common thread through these areas of study is the investigation of the interconnections between population dynamics and the processes and issues driving these significant trends. Students are asked to consider the factors contributing to the impact of these trends on the environment, people and countries being investigated. A central focus of Area of Study 1 is the relationship between birth and death rates and the influence of net migration rates. Through looking at mortality, population movements and other population characteristics, students develop an understanding of this relationship. In developing and refining this understanding, students are required to examine examples within and between countries. Students contextualise their understanding through examination of the Demographic Transition Model and Malthusian population theory. An understanding of global scale is supported by a consideration of the scale within and between countries.

Area of Study 2 requires the selection of the two countries – one with a growing population and the other with an ageing population.

In examining issues arising from the population trends, healthcare and social service needs must be covered in addition to at least two others.

Although students are clearly focusing their investigations on two countries, it must be remembered that the trends and issues reflected by these countries must be looked at in their world regional context.

There is no fieldwork report requirement within this unit.

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| **Area of Study 1: Population dynamics** |
| **Outcome 1**: | **Examples of learning activities** |
| Analyse, describe and explain population dynamics on a global scale. | * construct a series of graphs comparing changes in birth rate, death rate, infant mortality rate, fertility rate and life expectancy over the last 100 years for three countries with high, medium and low levels of economic development
* for three selected countries, construct population pyramids for three significant, comparative periods to illustrate changing population structures over time; describe and account for the changes
* convene a UN style 'Population Convention' to develop a ‘Global Population Policy’; divide into pairs and allocate a contrasting country; pairs investigate their country’s population characteristics and issues and represent them at the Convention
* groups investigate different population movements (e.g. post WWII European, post Apartheid South African, Mexican/USA, post Vietnam war, North African); they note the movements' causes and their contribution to population change in source and host nations
* research the relevance of Malthusian theory in explaining population growth and sustainability; evaluate the arguments and evidence in support of and against his ideas
* research and compare three contrasting countries' progression through the Demographic Transition Model in order to assess the Model’s relevance
* use www.gapminder.org to investigate the factors influencing changing population dynamics and population structures within and between countries
* collect data on population movements; input this into a GIS to develop flow maps to describe and analyse these movements
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| Students research the relevance of Malthusian theory in explaining population growth and sustainability, evaluating the arguments and evidence in support of and against his ideas.This activity enables students to re-visit the underlying assumptions behind Malthus’s theorem, while testing them in the reality of present-day population and food production trends. In doing so they will have the opportunity to critically evaluate Malthusian theory and develop a deeper understanding of a key factor in global population growth.* Prepare a worksheet outlining the steps in the investigation.
* Provide a resource list indicating:
* suggested ‘search’ terms (pre-checked by the teacher)
* initial websites that ensure students are able to get on board with the topic.

**Process:**This activity could be completed as group work or individually. **Instructions to students:**1. Revisit Malthus:* Which two indicators formed the basis of his ideas?
* What was his main contention?
* Which two variables could interrupt, deflect or slow down the pace of his contention (but not necessarily stop it from coming to fruition)?

2. Examine current views of Malthus. Search ‘Malthus theory present data trends’.* Identify criticisms or weaknesses recognised by more recent analysis of his ideas.
* Where and in what way do some of his ideas still have support?

3. Locate and identify suitable data:To assess the relevance of Malthus today locate global yearly data for ‘total population’ and ‘total food production’ over at least a twenty-year period. The website Global Population Data [www.geohive.com/earth/his\_history3.aspx](http://www.geohive.com/earth/his_history3.aspx) provides ready access to total global population over the period 1950–2100. The website FAOSTAT: World Food Production x Commodity <http://faostat.fao.org/site/339/default.aspx> also provides total yearly production for twenty of the world’s most important food and agricultural commodities over the period 1961–2012.These websites are suggested only as starting points. Part of the task is to locate better and more suitable data.4. Undertake various graphing exercises with the data:You will need to extract the appropriate data you have selected for a period of at least twenty years (to allow identification of a trend). The data for ‘food’ and ‘population’ will need to be plotted on the same graph.  |

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| 5. Describe the resultant patterns in terms of Malthus’s theory:* Describe the patterns resulting from your graph.
* To what extent do they conform to or differ from Malthus’s theory?
* What might explain or contribute to your analysis?

6. To what extent does your analysis support Malthus or his present-day critics?**Extension/variation:** This activity could be varied and extended. Different individuals or groups could carry out the same task: * Looking at different commodities, to see what variability exists.

Examining different countries to see which one conforms more or less to Malthus’s theory. |

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| **Area of Study 2: Population issues and challenges** |
| **Outcome 1**: | **Examples of learning activities** |
| Analyse, describe and explain the nature of significant population issues and challenges in selected locations and evaluate responses. | * develop maps to show the distribution of countries that have growing and ageing populations in order to identify the two countries for deeper investigation
* for two selected countries (one growing and one ageing), identify their major population trends from current data available online; download and import this data into Excel and develop table and graphs
* in groups, once the major issues and challenges facing the two countries have been identified, evaluate the effectiveness of strategies developed in response to one of these challenges per group; upload results to a shared Google doc
* in groups develop and deliver a five-minute conversation between two individuals (one from each country) on the theme, e.g. ‘We are managing OK, but …’; the conversation should revolve around changes, challenges and solutions
* investigate the interconnections between population dynamics and resulting issues and challenges for two countries; contrast the interconnections
* prepare a digital annotated visual display of the impacts of issues on people and places for one of the countries, noting their causes and where relevant, and how they have changed over time
* use a GIS to analyse the movements of people to and from, and within, a country; identify the structural changes arising as a result of these movements
* evaluate the extent to which spatial technologies contribute to a strategy developed in response to an identified challenge in the country being investigated
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| [**Detailed example**](file://VCAAFS01/Curriculum%24/VCE/Implementation/2015/Detailed%20example) |
| For two selected countries one with a growing population, one with an ageing, students identify their major population trends from current data available online. Download and import this data into Excel to develop a table and graphs.**Purpose:**This is an early activity in the investigation of two significant population trends that have developed in different parts of the world: a growing population of one country and an ageing population of another country. It enables students to identify the trends occurring in their major population characteristics. Students will refresh their skills at data handling and interpretation and gain a deeper understanding of the observed trends.**Task worksheet:** The task is undertaken individually. The teacher should develop a worksheet for students (see example below). The worksheet should identify the two countries being investigated, any other population characteristics to be included in the investigation, and any class specific instructions (times, dates, assessment, format, submission, and so on). A sample of further instructions to students is also shown below.A good resource for this task is the website: United Nations Department of Economic and Social Affairs: Population Division <http://esa.un.org/unpd/wpp/index.htm> **Prior to preparing the worksheet:**1. Identify the major population characteristics that students will investigate. These may include among others: Total Population, Population growth rate, Total Fertility Rate, Age specific data (under 15, over 60), Life expectancy, Birth rate. 2. Identify one country with a growing population, and one with an ageing population to be investigated.**Sample student instructions:**In this example students have been given two countries to investigate and major population characteristics to investigate. Their instructions begin with the sourcing of data. Using the United Nations Department of Economic and Social Affairs: Population Division online resource: 1. From the Home page navigate to the ‘Online database’.
2. In the Online database there are two areas where appropriate data is available under the windows ‘Population’ (a few basic indicators) and ‘Detailed Indicators’ (where most of the indicators are located).
3. You can select up to five chosen indicators at a time for your two countries to download at the same time.
4. Select the time period to be covered (1950 to 2015).
5. Download as CSV file and save with an appropriate name in appropriate file.
6. You then import the CSV file into a new Excel file.
7. Ensure that you check and validate the data and layout before proceeding further.
8. Select the data to be graphed and then paste it on a new worksheet. The data may still need to be reformatted (ordered, oriented, repositioned) to ease facilitating its representation in a suitable graph.
9. Once displayed in a suitable graphical representation, the representation may still require some level of customisation (key, title, scale, etc.) to meet appropriate geographic conventions.

Complete a written analysis of the data you have represented:1. For each graph: describe the pattern of change over 1950–2015 for each country.
2. For each country (one with a growing population and the other with an ageing population), summarise the changes taking place in its major population characteristics.
3. What do these changes suggest are the challenges that each country might be facing in the immediate and mid-term future?
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[Unit 4 sample assessment task](#U4SampAT)

Units 3 and 4 assessment tasks

There are three assessment tasks for Unit 3 and two assessment tasks for Unit 4. The task types are a fieldwork report, analysis of geographic data and structured questions. The [fieldwork report](http://www.vcaa.vic.edu.au/Documents/vce/geography/GeographySD_2016.pdf#page=13) structure is outlined in the study design.

Analysis of geographic data tasks and structured questions may both provide, with different emphasis:

* questions broken into smaller parts
* opportunities to demonstrate practical skills
* stimulus data and information (e.g. maps, statistics, photographs).

The emphasis in a data analysis will be on interpretation and analysis of stimulus data and information.

Overall assessment design

In the preparation of tasks and questions to assess the key knowledge and key skills, a number of factors need to be considered:

* A particular assessment task may cover one or more elements of an outcome but the assessment tasks as a whole should cover all elements of an outcome.
* The key skills do not have to be assessed independently of the key knowledge; they are integral to the design of the tasks.

A successful SAC:

* discriminates finely between different levels of student performance; this is a result of marks allocated to each question as well as cognitive demand
* allows multiple access points for students to demonstrate the highest level of knowledge and skill and is balanced overall in terms of cognitive demand
* provides equal level of difficulty between any options within questions
* weights each element of an outcome to reflect the expected breadth and depth within that element
* does not duplicate data and questions from previous years
* provides a spread of topics across questions, avoiding a very narrow focus.

A SAC must comply with the study design’s conditions of assessment. The SAC may have varying modes of presentation dependent upon factors such as the needs of the student cohort and access to appropriate technology. Examples of modes of assessment include test, multi-media/oral presentation, PowerPoint, One Note and other digital platforms.

The growth of digital and online platforms has opened up other avenues to explore how to deliver and receive a SAC. There are possibilities offered currently through the development of Google Docs (real time assessment) and various Cloud platforms.

An important consideration in developing and using technologies for the completion of a SAC is to ensure that student work can be authenticated.

Data and information provision

A common method for presenting data and information is in the form of a separate ‘data booklet’. In some circumstances such data can be also integrated within the question/answer booklet. Both these formats are appropriate, though the former provides greater flexibility, for example in easily allowing more than one question to refer to particular data.

In developing other modes of assessment the opportunity exists for the development of a digital repository for the data and information required for a SAC. This provides a number of opportunities to enhance the SAC process:

1. It can be turned ‘off and on’ as required, and readily up-dated at any time.

2. Dependent upon the mode of response to the SAC, students can:

* integrate aspects of the data or information within their response
* manipulate the data or information as part of their response.

3. It can be used to inform the feedback process upon assessment.

Student answers and responses

The more common format for providing the questions and collecting student responses is through the development and use of a ‘Question/Answer’ booklet. This has some advantages, including keeping the question/task at the forefront as students respond, enabling the provision of appropriate ‘space’ (e.g. lines) for the expected response, the inclusion of pro formas (for example, a framework for graphing or sketching) and blank maps.

There are also possibilities offered for the digital collection of responses to an assessment task, for example the use of Google docs and Cloud platforms. These could prove to be very effective ways of gathering student responses in real time, having immediate access to them in various locations, facilitating the assessment process, and providing new avenues for providing assessment feedback.

Question design considerations

In thinking about the appropriate question and in constructing its language and demands, there are a number of considerations to keep in mind.

In general, key skills should be blended with questions that explore key knowledge so that the key skill is assessed in a particular context. The cross-study specifications of key [geographical concepts and geographical skills](http://www.vcaa.vic.edu.au/Documents/vce/geography/GeographySD_2016.pdf#page=11) in the study design must also be considered.

There are three further aspects of question design that need to be carefully considered. These set the direction for the expected response and enable questions of differing levels of cognitive demand to be developed.

1. Directive terms

The question must clearly indicate what is required of the student. This is initially indicated by the use of appropriate terminology (directive terms).

|  |
| --- |
| **Examples of directive terms:***Account for; Analyse; Apply; Assess; Calculate; Categorise; Classify; Comment on; Compare; Consider; Construct; Define; Describe; Discuss; Distinguish between; Evaluate; Evaluate the relative importance; Examine; Explain; Explore; Identify; Interpret; Justify; Outline; Predict; Quantify; Rank; Suggest.* |

2. Subject terms

Within a question, the subject terms provide direction to the student towards the subject matter or content they should be looking at in developing their response.

Initially, the framing of the question will be around the student’s understanding of an aspect of the key knowledge and/or skills being assessed. That is, the substance of the question. The question should be designed to draw upon the key knowledge and skills in developing the response, and, in turn, student’s conceptual knowledge. Where data or information is provided as stimulus, it will contain the essence of the subject matter, and the question may use it to elicit a deeper response.

|  |
| --- |
| **Examples of subject terms:***Hazard type; impact of event; global distribution; responses to hazards; regional tourism; international tourist agreements; tourism investment; economic impacts of tourism; sustainable tourism; land use change; impacts of change; land use management; nature of deforestation; economic impacts of desertification; global response; population growth; structural change; strategies developed in response.* |

**3. Focus terms**

The focus terms indicate to the student the direction or parameters within which they are expected to respond to the question. They indicate the context within which the subject matter is to be considered and discussed. They should clearly indicate the parameters, limits or boundaries of the response required.

These terms are very important when constructing a question. They assist in effective discrimination between student responses, through the degree to which they address these terms.

|  |
| --- |
| **Examples of focus terms:***present; relevant examples; regional environment; four major works; historical development; threats; long-term solution; feedback effects; both human and natural; on-going dispute; nature, cause and extent; rural; major strengths and weaknesses; various; adequate supply; major; increasingly difficult; in relation to; both; specific regional issues; major reasons.* |

Linked questions

The development of linked questions is a way to gradually build a student’s response to a task. The sequential nature of the questions should build from concrete to complex responses, gradually increasing the cognitive demand. This is a useful technique to focus students on the task and build some depth in the response required.

In developing linked questions:

1. Make it clear in the instructions that the particular questions are linked so the student considers the implications of their response in the first part to the subsequent parts.

2. Avoid too many questions where an incorrect response to the first part of the question necessarily leads to an incorrect response to following parts.

Sequencing of cognitive demands

In building a series of questions/tasks it is important to allow for higher-order thinking by building from concrete to complex questions. There needs to be a balance of these across the SAC so the teacher can effectively discriminate between students’ performances.

The directive terms provide the first level for distinguishing between levels of thinking. The figure below indicates one way in which the teacher can audit their questions/tasks to identify if they have an appropriate balance of tasks to allow for higher-order thinking. Mark allocations to different orders of cognition should also be considered. If the majority of marks are allocated to lower order cognition, then it may be that very few questions discriminate between higher achieving students, which may reduce reliability of the assessment.

Distinguish

Identify

Describe

Explain

Evaluate

***Lower-order cognition***

***Higher-order cognition***

Distinguish

Identify

Describe

Explain

Evaluate

***Lower-order cognition***

***Higher-order cognition***

Higher cognitive demand can be achieved not only through the type of directive term selected, but also in the construction of the task where consideration is given to the:

* depth and complexity of the data used
* skill levels required to unpack and work with the data provided
* breadth and depth of knowledge required to adequately respond
* opportunity to apply and use the key geographic concepts.

Data and information

The selection of data and information is a crucial element in creating valid assessment tasks. An important part of this selection process is identifying the source of the data and assessing the veracity of its collection. This applies equally to written, textual and photographic data.

The type of data or information selected in support of a task or question is integral to the success of students in the completion of the task. The geographical skills give some indication of the variety of data and information that students are expected to have some familiarity with. In selecting the type of data/information to include within a particular assessment task, consider:

* Variety: Ensure that students experience a good range of different types of data formats and representations.
* Conventions: The presentation of any data and information in the SAC must follow accepted conventions at all times. Similarly, when students produce or process some data, they too must be expected to follow appropriate conventions.
* Challenge: For example, a piece of data / information that the students may not have seen, but still contains subject matter with which they are familiar.
* Sources, data and information should be accurate and up to date.

If the targeted data or information is extracted it is important to:

* Retain the integrity of the data or information to ensure its consistency and enable students to accurately interpret it in the context of the task.
* Ensure that appropriate conventions are displayed for whatever data representation is used. For example, clear and accurate use of key and scales on graphs; correct indications where text has been omitted or added.
* Appropriately source or reference the new representation.

If dividing the SAC into component parts, be careful to ensure that:

* All necessary steps are followed to satisfy any authentication issues that might arise in the manner you structure the components of the SAC.
* Students are unable to sight the subsequent component of the SAC before sitting it.
* There is some logical continuity between the two components.
* The key knowledge and key skill dot points previously identified in your planning are appropriately addressed across the two components.

Details about the SAC should be provided to students in writing some days prior to the SAC.

Unit 3 sample assessment task

Analysis of geographic data

The following provides an introduction to, and advice for, the development and writing of a taskfor ‘Analysis of geographic data’ stipulated for Unit 3 Outcome 2.

The key knowledge and key skills cover the processes and land cover at a global scale and at three selected locations.

The task could therefore be split into two components:

Part one: This might address selected key knowledge and skills related to ‘Global Land Cover’ (20 minutes)

Part two: This would be more extensive, addressing key knowledge and skills related to the three processes in the selected three locations (40 minutes)

Within this structure, activities should be chosen and designed knowing that those elements of the key knowledge and skills selected for assessment should cover the two elements of the outcome, which are:

* analysis, description and explanation of processes that result in changes to land cover
* discussion of the impact and responses resulting from these changes.

The cross-study specifications (key geographical concepts and geographical skills) should also be considered in the design of assessment activities.

Types of activities and questions

The task should have a number of different activities/questions and at various levels of depth or complexity. These could be drawn from any combination of the following type of activities:

* **Interpretive:** Activities that provide stimulus material (data, maps, text) within which students are required to identify features, recognise patterns, analyse processes, draw parallels and make conclusions.
* **Practical:** Where students are asked to work with the stimulus material, annotating features on a map or photograph, mapping and locating particular features, constructing a photo-sketch or cross-section, among similar tasks. The practical requirements should be informed by the [geographical skills](http://www.vcaa.vic.edu.au/Documents/vce/geography/GeographySD_2016.pdf#page=11) in the study design.
* **Transformative:** Activities requiring students to demonstrate their knowledge, skills and understanding through the manipulation and transformation of data or information from one form to another. In the process they are able to identify and recognise features of the data, manipulate and simplify/summarise key features of the data, and then represent this processed data in a new format. In a sense, they are synthesising new meaning from the data.
* **Written:** Written responses required of students, be they short or long responses, completion of (text) tables or matrices, annotations or concept maps. Where students are asked to, through some form of textual response, identify, describe, synthesise, analyse, and evaluate either the data presented or their knowledge of the topic gained through study.

Data and information

The type of task being created should be integrally linked to the type of data or Information the task is based around. At the same time a question should be developed and considered that can maximise the effectiveness of the data and provide opportunities for students to demonstrate their knowledge and skills to the highest level.

Again, a range of stimulus provides the opportunity for a diversity of tasks and differentiation of cognitive challenge. Types of suitable stimulus can include:

* **Statistical/numerical data:** From simple tables to matrices, line graphs to compound graphs, scattergrams to ternary graphs, the formats and possibilities are only limited by the content focus and the purpose of data use. From simple interpretive to transformative practical graph and map activities, the activities students can undertake with numerical data are various.
* **Maps:** The variety of maps is very extensive and can be used for the purposes of comparison and the identification of spatial associations, trends, and patterns. The attribute of scale adds depth and complexity to the use and interpretation of maps.
* **Images:** Images capture the detail of a location at a set point in time. They can provide the student viewer with details some maps and data cannot show. From absolute and relative location of features, they can also indicate relationships, processes, interactions, impacts and change. They present a qualitative view of the topic. Students can describe, interpret, hypothesise, draw inferences and create photo-sketches. Images can be used in conjunction with maps and other data to add complexity to the task. They can range from photographs, aerial photography and satellite images.
* **Text:** Textual material could include excerpts from formal reports, newspaper extracts, expert commentary, or current and historical information. When selecting text to include, consideration needs to be given to the:
* length, as this may be an inhibiter to students getting to the point they want to make
* language level accessibility for all students
* relationship of the text to other data and information provided with the question; the text should provide an extension of breadth or depth.

Using textual material enables students to identify, describe, interpret, categorise, analyse, and evaluate the content presented, in terms of the key knowledge and skills.

* **Blank maps graphs:** These and other pre-formatted diagrams to be completed by students provide the opportunity to display their understanding of the material being represented without the initial construction of the map/graph. It allows the student to be assessed on their knowledge and understanding of the material not on their ability to draw the map/graph (this can be achieved elsewhere). Students can represent known information, construct new representations of material provided or locate and annotate relevant information.

Unit 4 sample assessment task

The focus of Area of Study 2 is on two countries – one with an ageing population and one with a growing population – and the issues and challenges they face and the responses to these. Outcome 2 breaks the task into two components, which are:

* analyse, describe and explain the nature of significant population issues and challenges in selected locations
* evaluate responses.

This could be broken down into:

* Issues and challenges (60 minutes)
* Evaluation of responses (40 minutes)

Students will have studied a range of issues and challenges as indicated in the study design. The assessment task does not need to assess understanding of all issues and challenges but can assess a representative sample. It is appropriate to use some data or information as a basis for a question or activity within the framework of a structured question assessment task. If students are provided with a newer version of already studied data the activity should require them to process that information in a new way.

This activity allows students to demonstrate their understanding of an aspect of the area of study. For example, providing a photograph of a slum area (growing population) or an aged care facility (ageing population) and asking students to annotate the potential issues and challenges that can be seen within the photograph.

The key skills for this outcome require that students apply criteria for the evaluation of strategies. Students could select and define the criteria as part of the evaluation process, or the criteria could be provided to students. Appropriate criteria are ones that are, in the context of their usage:

* clearly identified – they should be named or given an appropriate label so they are easily recognised in later discussion
* defined – they should be clearly explained in the context to which they will be applied; this should indicate their relevance to the subject matter and their focus and limits of application
* justified – a statement should be included that supports their use and suitability for the task.

Criteria that are vague or lack specificity are poor tools to use in evaluating effectiveness of responses. The context of use will help to determine an appropriate number of criteria. The selection of too many becomes cumbersome and unwieldy. Too few, and they become generalised and lack focus on the topic.

Standardised lists of criteria such as S.H.E.E.P. (social, historical, economic, environmental and political) factors can fall into the ‘too broad’ category and lack specificity. They may require substantial refinement and consideration of other factors relevant to the task such as time periods. Students could examine government, business, and academic reports that use criteria to evaluate similar projects/issues in order to become familiar with a range of criteria that could be used in a variety of contexts.

Performance Descriptors

**Unit 3, Area of Study 1: Land use change**

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| --- |
| **Outcome 1 – Fieldwork** |
| **Performance Levels** | **Descriptor** | *Teacher Comment* |
| Very Limited | Limited  | Clear  | Well developed  | Sophisticated  | Definition of topic which includes a statement of the research question, the geographic context of the question, an hypothesis with its justification.  |  |
|  |   |  |   |  |
| Very Limited | Limited  | Clear | Well developed  | Thorough | Description of the primary data methodology, including a description of the techniques used and an explanation of their appropriateness to the research question. |  |
|   |  |   |  |  |
| Very Limited | Limited  | Satisfactory | Well developed  | Thorough | Description of the secondary data methodology, including description of the techniques used, and an explanation of their appropriateness to the research question. |  |
|   |   |   |   |  |
| Very Limited | Limited  | Appropriate | Detailed  | Sophisticated | Presentation of processed data and information displaying appropriate conventions and techniques to convey the meaning of the data and information, and correct sourcing. |  |
|  |   |    |  |   |
| Very Limited | Limited  | Satisfactory  | Well developed  |  Comprehensive | Analysis of the processed data and information identifying key features and describing patterns, and noting relationships between key features and patterns. |  |
|   |   |  |   |   |
| Very Limited | Limited  | Appropriate | Detailed  | Insightful | Conclusion that identifies the extent to which the analysis has answered the research question, noting any specific points to be learnt from the investigation. |  |
|   |   |   |   |   |
| Very Limited | Limited  | Satisfactory  | Well developed  |  Thorough | Evaluation that considers the relative effectiveness of the methodology implemented, its limitations and weaknesses and possibilities for any subsequent investigation. |  |
|   |   |  |   |   |
| Very Limited | Limited  | Satisfactory  | Very good  | Elaborate  | Fieldwork report structure and requirements, acknowledging sources throughout, correct and consistent referencing in bibliography, and acknowledging the contribution of other people. |  |
|   |   |   |   |   |
| **Assessment** | *Mark range* | *(1–10)* | *(11–20)* | *(21–30)* | *(31–40)* | *(41–50)* |

**Unit 3, Area of Study 1: Land use change**

|  |
| --- |
| **Outcome 1 – Structured questions** |
| **Performance Levels** | **Descriptor** | *Teacher Comment* |
| Very Limited | Limited | Clear | Well developed | Sophisticated | Identification and description of the geographic characteristics of the selected area, noting its location, current land use and other natural and human geographic characteristics. |  |
|  |   |  |   |  |
| Very Limited | Limited | Clear | Well developed | Comprehensive | Identification and description of the interconnection of the selected area with its surrounding region. |  |
|   |  |   |  |  |
| Very Limited | Limited | Clear | Well developed | Comprehensive | Identification, description and explanation of the processes leading to the land use change of the selected area, including the nature, scale and time sequence of change. |  |
|   |   |   |   |  |
| Very Limited | Limited | Appropriate | Detailed | Insightful | Explanation of the reason/s for the resulting land use change in the selected area, considering the influence of the geographical characteristics of the selected area and surrounding region.  |  |
|  |   |    |  |   |
| Very Limited | Limited | Appropriate | Detailed | Insightful | Explanation of the influence of individuals, organisations and planning strategies on the resulting land use change in the selected area. |  |
|   |   |  |   |   |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Explanation and assessment of the positive and negative impacts of the land use change on the environment, and economic and social conditions in the selected area and surrounding region. |  |
|    |    |   |    |   |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Interpretation and analysis of maps and other geographical data and information in the development of descriptions and explanations. |  |
|   |   |  |   |   |
| **Assessment** | *Mark range* | *(1–10)* | *(11–20)* | *(21–30)* | *(31–40)* | *(41–50)* |

NOTE: The two tasks for Unit 3 Outcome 1 together are assessed out of a score of 50. Scores should be adjusted accordingly.

**Unit 3, Area of Study 2: Land cover change**

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| --- |
| **Outcome 2 – Analysis of geographic data** |
| **Performance Levels** | **Descriptor** | *Teacher Comment* |
| Very Limited | Limited | Clear | Well developed | Sophisticated | Identification, description and comparison of the spatial distribution of the world’s land cover over time (presently, and that which was evident around 8,000 years ago and around 20,000 years ago). |  |
|  |  |  |  |  |
| Very Limited | Limited | Clear | Well developed | Comprehensive | Analysis of maps and other geographical data and information to develop descriptions of the distribution of each of the three processes on a global scale. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Comprehensive | Description and explanation of the nature and processes and causes of deforestation, desertification and melting glaciers and ice sheets.  |  |
|  |  |  |  |  |
| Very Limited | Limited | Appropriate | Detailed | Insightful | Description and explanation of the role and interconnection of natural processes and human activity in causing deforestation, desertification and melting glaciers and ice sheets. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Analysis of maps and other geographical data and information to develop descriptions of the selected locations within the global distribution of their relevant process. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Description and explanation of the reasons for current land cover changes at the selected locations. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Description and explanation of the significance of the impacts of these changes on the environment, economic activity and social conditions. |  |
|  |  |  |  |  |
| Very Limited | Limited | Appropriate | Detailed | Insightful | Application of appropriate criteria to evaluate the effectiveness of responses to the impacts of these land cover changes at local, national and global scales. |  |
|   |   |   |   |   |
| **Assessment** | *Mark ranges* | *(1–10)* | *(11–20)* | *(21–30)* | *(31–40)* | *(41–50)* |

**Unit 4, Area of Study 1: Population dynamics**

|  |
| --- |
| **Outcome 1 – Analysis of geographic data** |
| **Performance Levels** | **Descriptor** | *Teacher Comment* |
| Very Limited | Limited | Clear | Well developed | Sophisticated | Analysis of maps and other geographical data and information of world population distribution and characteristics to develop descriptions and explanations (of birth rate, death rate, infant mortality rate, fertility rate and life expectancy patterns). |  |
|  |  |  |  |  |
| Very Limited | Limited | Clear | Well developed | Comprehensive | Identification and description of patterns of world population growth since the 1700s and projected changes in the twenty-first century. |  |
|  |  |  |  |  |
| Very Limited | Limited | Some | Well developed | Comprehensive | Identification, description and analysis of the nature of population structures as a measure of population characteristics at a point in time and over time. |  |
|  |  |  |  |  |
| Very Limited | Limited | Appropriate | Detailed | Insightful | Assessment of the usefulness of the five stage Demographic Transition Model in interpreting population structures and other population characteristics. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Assessment of the relevance of Malthusian theory and its explanation of population growth and sustainability. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Identification, description and explanation of the main types and causes of population change since the 1950s. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Identification, description and explanation of the types and causes of population movements and their contribution to population change and sustainability. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Very good | Sophisticated | Explanation of the similarities and differences in population dynamics and population structures within and between countries with different economic and political conditions and social structures. |  |
|   |   |   |   |   |
| **Assessment** | *Mark range* | *(1–8)* | *(9–16)* | *(17–24)* | *(25–32)* | *(33–40)* |

**Unit 4, Area of Study 2: Population issues and challenges**

|  |
| --- |
| **Outcome 2 – Structured questions** |
| **Performance Levels** | **Descriptor** | *Teacher Comment* |
| Very Limited | Limited | Clear | Well developed | Sophisticated | Analysis of maps and other geographical data and information of the location and distribution of population trends to develop descriptions and explanations of resulting issues and challenges.  |  |
|  |  |  |  |  |
| Very Limited | Limited | Clear | Well developed | Comprehensive | Description and explanation of the nature of population issues and challenges in their world regional context. |  |
|  |  |  |  |  |
| Very Limited | Limited | Some | Well developed | Comprehensive | Description and explanation of the nature and significance of population movement as a contributing factor to structural change in population. |  |
|  |  |  |  |  |
| Very Limited | Limited | Appropriate | Detailed | Insightful | Description and explanation of the causes of issues and challenges to population. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Description and explanation of the economic, social, political and environmental factors contributing to the issues that impact on people and places. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Use of appropriate criteria to evaluate the effectiveness of strategies developed in response to issues, and the economic, social, political and environmental impacts of these strategies on people and places. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Well developed | Thorough | Comparison of the effectiveness of strategies developed in response to these issues. |  |
|  |  |  |  |  |
| Very Limited | Limited | Satisfactory | Very good | Sophisticated | Explanation of the role and effectiveness of spatial technologies for the development and implementation of strategies in response to population issues. |  |
|   |   |   |   |   |
| **Assessment** | *Mark range* | *(1–12)* | *(13–24)* | *(25–36)* | *(37–48)* | *(49–60)* |

Appendix 1: Sample teaching schedule

Units 1 and 2

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| --- |
| ***SEMESTER ONE – Term 1: Unit 1*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** |
| **Staff Return****No Students** | **Characteristics of Hazards** | **Fieldwork trip** | **Fieldwork data processing** | **Fieldwork report preparation** |
| **Unit 1 commences** |  | Practical folio exercises |  |  |  |  |  |
| ***SEMESTER ONE – Term 2: Unit 1*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** |
| **Fieldwork Report Finalisation** | **Response to Hazards and disasters** | Assessment period | Tourism introduction |
|  | Report due |  |  |  | Case study | Unit 2 commences  |
| ***SEMESTER TWO – Term 3: Unit 2*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** |
| Characteristics of tourism | Impact of tourism |
|  |  |  |  | Structured questions |  |  |  | Folio of exercises |
| ***SEMESTER TWO – Term 4: Unit 2*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** | **Week 11** |
| Fieldwork carried out | Processing of fieldwork data | Fieldwork analysis |  |  |  |  |
|  |  |  | Fieldwork report due Friday |  |  |  |  |

Units 3 and 4

|  |
| --- |
| ***SEMESTER ONE – Term 1: Unit 3*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** |
|  | Land use change | Fieldwork trip | Fieldwork data processing | Fieldwork report preparation |
| Unit 3 commences |  |  |  | Structured questions |  |  |  |  |
| ***SEMESTER ONE – Term 2: Unit 3*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** |
| Land cover change |  | Pop’n Intro |
| Fieldwork Report DUE |  |  |  |  |  |  | Analysis of geog. data |  | Unit 4 commences |
| ***SEMESTER TWO – Term 3: Unit 4*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** |
| Population dynamics | Population issues and challenges |  |
|  |  |  | Analysis of geog. data |  |  |  |  | Structured questions | REVISION |
| ***SEMESTER TWO – Term 4: Unit 4*** |
| **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** | **Week 10** | **Week 11** |
| Revision program |  |  |  |  |  |  |  |  |

Appendix 2: Sample fieldwork sites

Unit 1: Hazards and disasters

|  |  |
| --- | --- |
| Fieldwork | Unit 1: Hazards and disasters |
| **Examples** | **Possible fieldwork sites** |
| **Geological (or geophysical) hazards** | Geological (Volcanoes) | Western District of Victoria; New Zealand |
| Caves | Buchan Caves; Princess Margaret Caves |
| Gully erosion | Major farmland or hillside examples |
| Hydro-geological hazards | Great Ocean Road; Alpine resorts (roads) |
| **Hydro-meteorological (weather, climate, water) hazards** | Susceptibility to storm water flooding (streets and urban creeks) | Local urban area (Hawthorn; Gardiners Creek) |
| Potential flood effects down the full length of a creek or river (mapping extent and recovery) | Local creek or river |
| Hydrological (Estuary closure) | Most rivers along Victorian coast (Anglesea River; Painkalac Creek) |
| Threats and risks posed by sea level rise | Port Phillip Bay; most urban coastal towns and existing or proposed coastal developments |
| Hydro hazards (flooding, storm surges) | Lakes Entrance |
| Hydro-meteorological (bushfires) | Mt Stirling (2007); Grampians; Warrandyte |
| **Biological hazards** | Exotic species (plants and animals) invasion in a reserve or along a creek (dispersion, diffusion) | Local National Park (Sherbrook Forest); local grasslands (Western - spikey grass); Goulburn River (Carp); Western Victoria (fire ants) |
| Biological-meteorological (falling tree limbs) | Park, camping ground or walking trail |
| Invasion of introduced species | Lerderderg Gorge; Howqua Trail (blackberries) |
| Impact of exotic species on native biota | Hattah-Kulkyne NP; Phillip Island (foxes/rabbits) |
| **Technological hazards** | Risk management of power fuel distribution grids | Local industrial area  |
| Storage and treatment of hazardous goods | Coode Island  |
| Transport and storage of hazardous goods | Urban and rural examples (Agricultural inputs) |

Unit 2: Tourism

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| Fieldwork | Possible fieldwork sites |
| **Urban** | Federation Square |
| MCG: AFL season  |
| Formula 1 Australian Grand Prix  |
| Royal Botanic Gardens |
| Melbourne Star |
| Lygon Street, Chapel street, Chinatown |
| MCG: Cricket season |
| Major theatre production |
| Spring Carnival |
| Zoos Victoria |
| Yarra Bank precincts |
| Melbourne Convention Centre |
| Melbourne Exhibition Centre |
| Australian Open |
| **Rural** | Phillip Island |
| Sovereign Hill |
| Great Ocean Road  |
| Bells Beach – Rip Curl Easter Carnival  |
| Port Fairy Festival |
| Victorian Snow Resort (major event, e.g. interschool’s or intervarsity games) |
| Merrijig Rodeo |
| Rutherglen Wine Region |
| Yarra Valley |
| Zoos Victoria |
| Clunes Book Festival |
| Mt Arapiles (Rock climbing) |
| Mountain Bike events (You Yangs; Mt Beauty; Barjarg; Lysterfield) |

Unit 3: Changing the land

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| Fieldwork |  |
| **Examples of land use change** | **Possible fieldwork sites** |

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| Urban | Urban/Rural fringe – new suburban developments | Along the three main Melbourne growth corridors (Werribee; Whittlesea; Dandenong/ Cranbourne) |
| Industrial/commercial to urban transformation | Port Melbourne re-development; Defence Explosive Factory Maribyrnong; Docklands; Southbank; Richmond (Dimmys); Sienna (Mt Waverley) |
| Open Space transformation | Infrastructure provision; Eastern Golf Course; Doncaster park and ride |
| Compulsory acquisition of land | Regional rail network |
| Low to higher density urban change | University locales (Monash Caulfield; Deakin Burwood); shopping/ transport ‘nodes’ (Dandenong; Camberwell) |
| Encroachment on ‘green wedges’  | Dandenong Valley Municipal Park |
| Peri-urban land use change | Woodend; Wallan; Tynong |
| Water sensitive urban design | Richmond, Yarra |
| School closures/building | Albert Park, outer suburbs |
| **Rural** | Urban/Rural fringe – new suburban developments | New urban subdivisions bordering most rural centres |
| Open Space transformation | Major rural centres (Shepparton; Ballarat) |
| Conversion of farmland to plantation forestry | South-west and North-east Victoria |
| ‘Great Forests National Park’ proposal for the Victorian Central Highlands | Various locations within the proposal’s boundaries |
| Extensive to Intensive farming | Goulburn Valley (Dairying to hydroponic farming); Gippsland |
| Old growth forests – forest production | Areas currently available for logging. |
| Peri-urban land use change | Kialla (Shepparton); Buninyong (Ballarat) |
| Wind farms | Daylesford; Cape Bridgewater; Cape Nelson; Codrington |
| School closures/building | Various local rural sites |

Appendix 3: Sample learning activities table

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| Learning activities | Unit 1: Hazards and disasters | Unit 2: Tourism |
| **Outcome 1** | **Outcome 2** | **Outcome 1** | **Outcome 2** |
| Skills based (practical) | Produce maps to describe the distribution of the characteristics of an event | Produce change over time maps to illustrate spatial responses to a specific hazard, describe and analyse the resulting patterns | Develop comparative graphs to examine the seasonality of domestic and international tourists at a particular tourist destination | Using appropriate software (e.g. Inspiration), develop separate SWOT analyses for the environmental, economic and socio-cultural impacts of tourism on a particular destination |
| Statistical analysis and representation of key characteristics (scale, frequency, impact) | Examine a series of before and after images of a hazard event to identify the type and scale of responses evident, and make some judgment as to their effectiveness. | Create proportional flow maps indicating the source/s of tourists to a particular tourist destination | Assess the management of a tourist destination by mapping its infrastructures distribution (i.e. transport, accommodation) relative to locations of attractions |
| Group work | Divide class into eight groups, two groups investigate the characteristics of different cases of each of the four hazard types – roundtable feedback | Assume the roles of key stakeholders in a hazard event; investigate their role and response to the event; come together in a post event review to analyse what worked, what didn’t and what could be done in the future | Groups are allocated a specific Australian tourist destination; they prepare a brief on the key characteristics of that destination, and undertake a SWOT analysis in summary  | Three groups investigate either the economic, environmental, socio-cultural impacts (or sustainability) of tourism at a particular destination; each group presents their findings; the class identifies overlaps, contradictions and linkages of the three focuses |
| Debate the topic ‘The impacts of (selected hazard event, e.g. the Boxing day Tsunami) would have been little different even with early attempts at mitigation’. | Divide the class into groups and allocate different hazards and investigate the natural processes that unfold within an event; present findings to identify the similarities and differences | In groups investigate the same International tourist destination; prepare a marketing campaign that addresses the ‘factors’ of tourism as noted in the ‘key knowledge’ | Identify key stakeholders in a tourism destination; in groups investigate management strategies from the perspective of each stakeholder; share findings with the aim to identify the most effective responses |
| Research | Individually research the role, contribution and effectiveness of spatial technologies in the identification, assessment of impacts and management of a specific hazard event | Research responses to a hazard event by contrasting information presented from three different sources (e.g. YouTube, government organisations, NGO’s) | Investigate the changing nature of tourism over time, destination and activity | Allocate a range of tourist destinations among the class; individually investigate and report on the changed impacts of tourism that have resulted from planning and management |
| Investigate one type of hazard event in two contrasting locations; analyse and compare the ‘nature’ of the two events | Research a particular hazard, identifying those factors that distinguish it from being an ‘event’ to being a ‘disaster’ | Investigate the factors affecting change in tourist destination patterns | Examine images and statistics over time, noting connections between them that helps to identify the key impacts (environmental, economic and socio-cultural) for a specific tourist destination |

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| Learning activities | Unit 1: Hazards and disasters | Unit 2: Tourism |
| **Outcome 1** | **Outcome 2** | **Outcome 1** | **Outcome 2** |
| Spatial Technologies | Analysis of before and after satellite imagery of a hazard event to describe the type and scale of the impacts on the area | Identify what and how spatial technologies contribute to our awareness of and preparedness for major hazard events | Use a GIS to analyse the seasonality of source data for contrasting destinations | Use satellite imagery to identify the scale, distribution and impact of tourist development in a particular tourist destination, over time  |
| Interrogate GIS data to identify the impacts of a hazard event, and develop management priorities for the areas short- , medium- and long-term rehabilitation | Use GPS to data-log criteria based evidence on management response to a potential hazard event; compare this to past evidence to evaluate the effectiveness of the responses | Investigate how the tourist industry uses spatial technologies and the internet to manage and oversee the industry (e.g. Trip Advisor) | Investigate how spatial technologies are being (or could be) utilised and contribute to developing effective management strategies for a particular tourist destination |

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| Learning activities | Unit 3: Changing the land | Unit 4: Human population |
| **Outcome 1** | **Outcome 2** | **Outcome 1** | **Outcome 2** |
| Skills based (practical) | Construct an overlay map of the selected area, indicating past and present land use characteristics | Produce a global distribution map for each of the major land cover changes using proportional symbols to indicate the percentage change over time | Construct a series of graphs comparing changes in birth rate, death rate, infant mortality rate, fertility rate and life expectancy over the last 100 years for three countries with high, medium, and low levels of economic development | Develop maps to show the distribution of countries that have growing and ageing populations in order to identify the two countries for deeper investigation |
| Produce an annotated photo montage illustrating the changed land use of a selected area | Create a matrix with impacts on one axis and responses on the other; complete a matrix for each location/process studied | For three selected countries, construct population pyramids for three significant, comparative periods to illustrate changing population structures over time; describe and account for the observed changes | For two selected countries (one growing and one ageing), identify their major population trends from current data available online; download and import this data into Excel and develop a comparative table and graphs |
| Group work | Adopt various stakeholder roles involved with a current development (land use change); prepare arguments in support of their role/s, bringing these to a community decision-making event | Divide class into three groups; each prepares a report on a different process; within each group, individual members are responsible for reporting on the processes: location; reasons; impacts; and response to land cover changes | Convene a UN style ‘Population Convention’ to develop a ‘Global Population Policy’; divide class into pairs, allocate each pair contrasting countries; they investigate their country’s population characteristics and issues and represent them at the Convention | Having identified the major issues and challenges facing the two countries, in groups evaluate the effectiveness of strategies developed in response to one of these challenges; groups upload their results to a shared Google doc |
| Provide a ‘data card’ about a selected location of land use change. Each ‘data card’ is interconnected with at least 1–3 others (with overlaps). Students discuss their ‘data’ and try to identify the interconnections. Hold a class debrief  | In small groups, develop, define and justify criteria to ‘evaluate the effectiveness of responses’ to a land cover change. Results are shared with the class. Discussion should lead to a final agreed set of criteria. | In groups investigate different population movements (e.g. Post WWII European; Post-Apartheid South African; Mexican/USA; Post Vietnam war; North African; etc.). Note the movements ‘causes’ and ‘contribution’ to population change in source and host nations. | In groups develop and deliver a five minute conversation between two individuals (one from each country) on the theme, ‘We are managing OK, but …’. The conversation should revolve around changes, challenges and solutions. |

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| Learning activities | Unit 3: Changing the land | Unit 4: Human population |
| **Outcome 1** | **Outcome 2** | **Outcome 1** | **Outcome 2** |
| Research | Use aerial photographs, photographs, newspapers and maps to develop a geographic description of the original characteristics of the selected area prior to development | Research past and present distribution of land cover changes of a selected process, analyse and compare the reasons for such changes  | Research the ‘relevance of Malthusian theory in explaining population growth and sustainability’, evaluating the arguments and evidence in support and against his ideas | Investigate the ‘interconnections between population dynamics and resulting issues and challenges’ for the two cities. Contrast the interconnections |
| Analyse a prepared ‘case study data bank’ (video, reports, newspaper articles, maps etc.) to identify the possible consequences and impacts of land use changes for the selected area and surrounding region | Prepare a flow chart illustrating interconnection between: road building and deforestation; sedentarisation and desertification; melting glaciers and farming activities | Research, contrast and compare three contrasting country’s progression through the Demographic Transition Model, in order to assess the Model’s relevance | Prepare a digital Annotated Visual Display of ‘the impacts of issues’ on people and places for one of the cities, noting their causes and where relevant, how they have changed over time |
| Spatial Technologies | Interrogate ‘Google Earth’ to identify changes in landuse of the selected area, and its surrounding region | Investigate the role of spatial technologies in identifying the changes currently occurring and the development of responses to one of the major processes at a specific location | Use [www.gapminder.org/](http://www.gapminder.org/) to investigate the factors influencing changing ‘population dynamics and population structures within and between countries’ | Use a GIS to analyse the movements of people to and from, and within a country. Identify the structural changes arising as a result of these movements |
| Obtain aerial photography from Land Vic to analyse the changes in land use of the selected area over time | Locate satellite imagery to identify and analyse the rate and extent of deforestation in Indonesia or the Amazon. | Collect data on population movements, input this into a GIS to develop flow maps to describe and analyse these movements. | Evaluate the extent to which spatial technologies contribute to a strategy developed in response to an identified challenge in the country being investigated  |

Appendix 4: Employability skills

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| Assessment task | Employability skills: selected facets |
| **Fieldwork**  | **Communication** (sharing information) **Planning and organising** (collecting, analysing and organising information)**Teamwork** (working as an individual and as a member of a team) **Initiative and enterprise** (initiating innovative solutions)**Problem solving** (applying a range of strategies to problem solving)**Technology** (using information technology to organise and communicate meaning)**Learning** (managing own learning) |