

# e-MapScholar Virtual Placement Tutor Guide

## Case Study 1. Nant Carfan wind farm: visual impact analysis

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# 1. The Virtual Placement

## 1.1 What is a Virtual Placement?

E-MapScholar Virtual Placements provide real-life case studies that can be addressed using geo-information. To solve the problems presented in the case studies students must work in the context of a simulated virtual organisation. They use online resources, geo-information handling software and data provided via a web site. They develop work related skills such as data handling, problem solving, time management and effective communication and presentation of information.

The team working environment provides support and helps to motivate the learner. A placement tutor answers email sent to the virtual team, and assesses and supports work where necessary.

A Virtual Placement Case Study has four main components:

- a 'virtual organisation' to provide the context within which the problem is solved
- a real life problem which the student must solve
- a web site to provide instructions, resources and support
- a tutor to act as the virtual team and assess work where appropriate

The ways in which the student and tutor interact using the various components is illustrated in Figure 1.

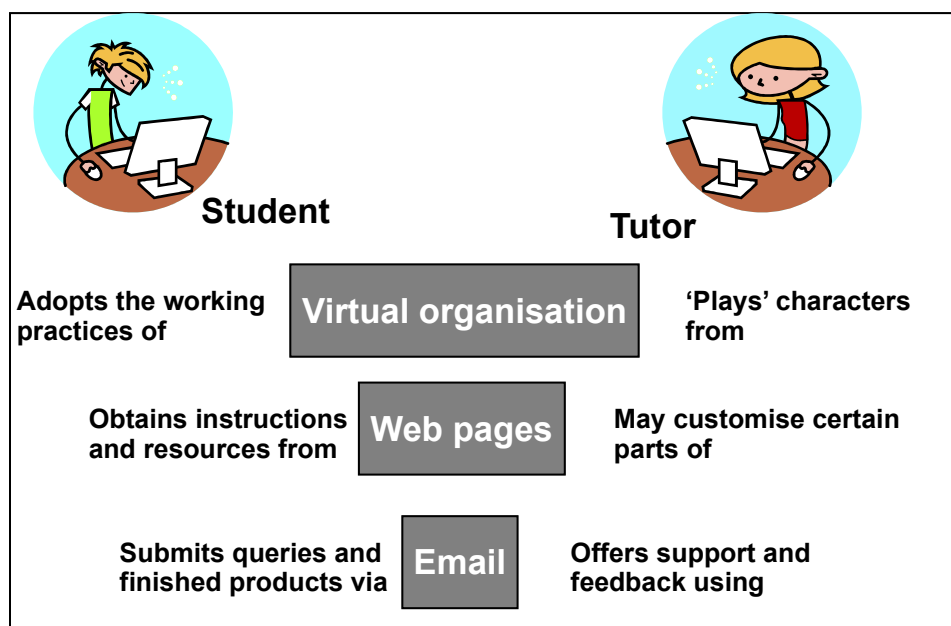


Figure 1: Interactions between student and tutor in the Virtual Placement

## 1.2 The virtual organisation

To undertake a Virtual Placement the student becomes a researcher for the Virtual Geo-Consultancy Company. This is a fictitious company whose staff are distributed around the world. They adopt a virtual team-working approach. Web pages within the placement provide further information about the company (figure 2).

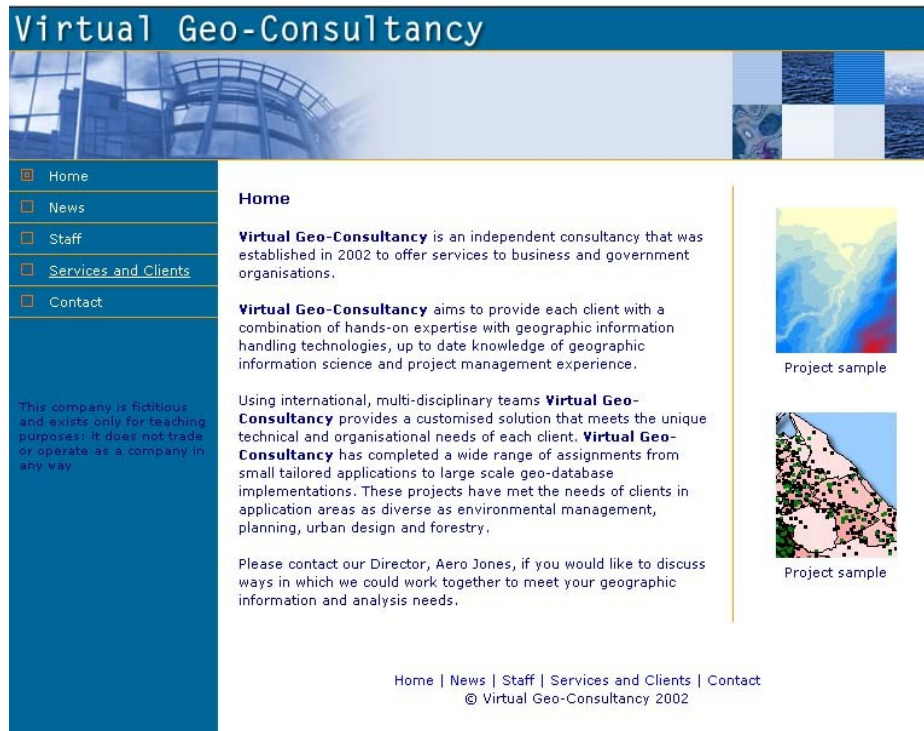


Figure 2: The Virtual Geo-Consultancy Company home page

The 'staff' of the Virtual Geo-Consultancy Company are:

- **Aero Jones, Director.** Responsibilities – Project leadership and management. Negotiation of contracts. Human resources and finances.
- **Darren Spice, Client and Community Liaison Officer.** Responsibilities – Public relations and marketing. Communications with clients and third parties
- **Pete Lee, Senior Spatial Analyst.** Responsibilities – Director of research. Systems analysis and implementation
- **Louisa Cage, GIS Technical Support.** Responsibilities – Maintenance and update of computer systems. Programming and data management.

Communication with the company staff is entirely by email, and during their placement students will receive emails automatically from staff members. These include welcome greetings, information about data sources and hints for undertaking analysis or research.

A Request Help button allow students to send email at any time to one of the characters from the Virtual Geo-Consultancy Company (figure 3).

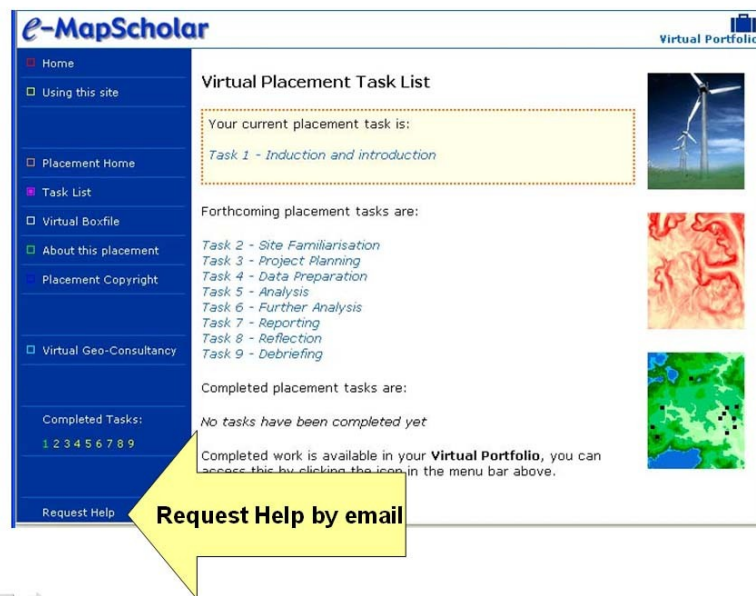


Figure 3: The Request Help button

### 1.3 The Web Site

The Virtual Placement is accessed from a web site that provides students with all the information they need to undertake the series of tasks for their chosen Case Study. Normally the tasks will involve the preparation of a substantive final report.

The web pages cover three main phases of work (Figure 4)

- **Placement induction** – introductory pages provide an overview of the web site, explain navigation and use of the pages and offer study hints and tips. The first task within the placement requires students to complete an 'induction checklist' to ensure that they are comfortable with the resources available and the way in which the placement should be used.
- **Case Study tasks** – the majority of tasks in the placement require subject related work – the exploration and synthesis of information, acquisition and analysis of data, or preparation of reports. Guidance on what is required is provided throughout.
- **Reflection and evaluation** – the final phase of the placement requires a reflective evaluation of the skills used and developed during the work, and of the Virtual Placement software and approach.

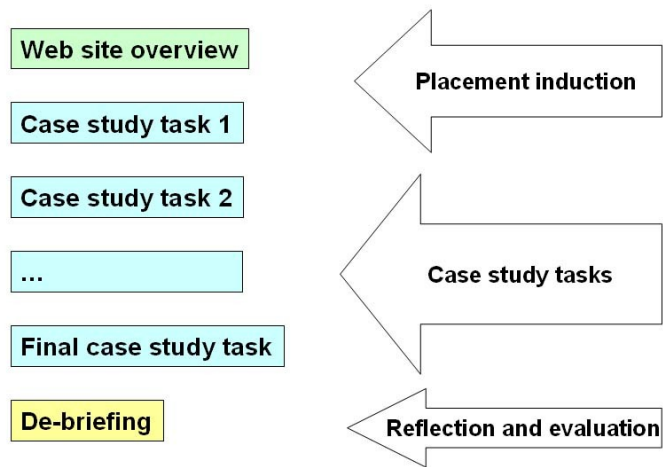


Figure 4: Virtual Placement phases of work

As they work through placement tasks students assemble a **virtual portfolio** of work. This virtual portfolio can be accessed from the web site (see Figure 5), although it is recommended that backup copies are also maintained.

A further feature of the site is a **virtual boxfile** (figure 5). This is customised for each placement to include details of online and paper based sources of information and help.

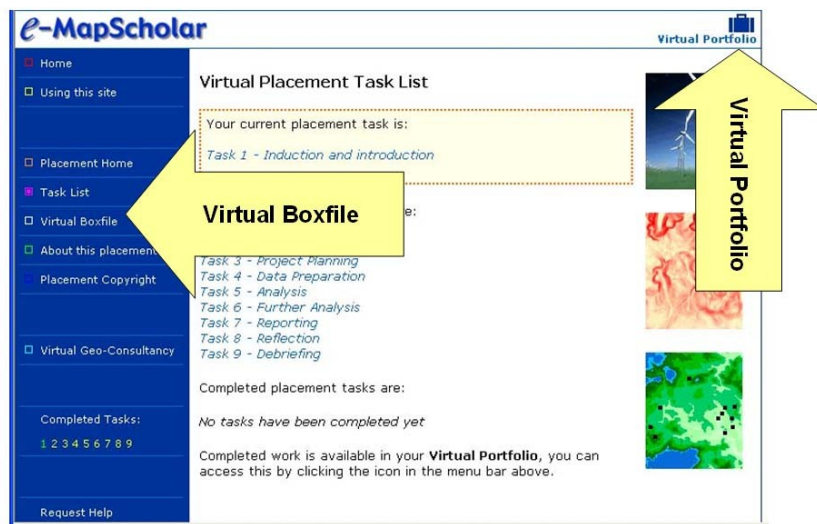


Figure 5: Accessing the Virtual Boxfile and Virtual Portfolio

## 1.4 Using the Virtual Placement

### 1.4.1 Technical aspects

The Virtual Placement is accessible over the Internet. It is hosted on a server at Edina. Different password and access restrictions will exist for each Case Study, depending on the nature of the data used. Where Ordnance Survey data are used, students will need to be registered users of Digimap and have an Athens password.

Students are required to log in to individual placements set up by their own tutor. Students from other courses or institutions will not be able to access a particular instance of the placement unless they have the appropriate password. The log in screen is shown in figure 6.

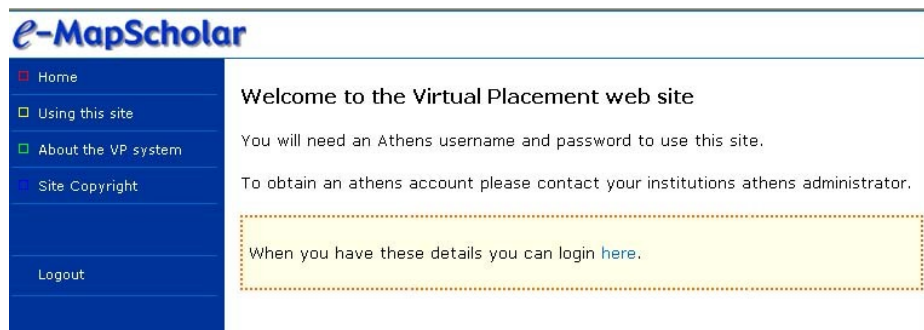


Figure 6: The Virtual Placement login screen

Students will require file space on a local PC to download data files and store results. They may also require access to GIS software, for example ArcGIS.

### 1.4.2 Implementation in an academic context

We foresee three ways of using the placement:

1. As a **stand alone placement experience** instead of the traditional work experience situation involving a student re-locating to a placement host. The Virtual Placement could be undertaken 'full time' in a concentrated block of time, or 'part time' using a day or more per week over a longer time period.
2. As a problem based learning exercise used **before or after a traditional work placement** to help prepare students for working in a real world situation, or to allow them to reflect on and further enhance skills developed outside their educational establishment.
3. As a problem based learning activity **within another module**. For example, the placement could be used as an individual or group activity in a course on GIS or geo-information handling, environmental management or renewable energy.

## ***1.5 Customising the placement***

The tutor has the ability to customise certain aspects of each Case Study to meet the demands of different courses with different time restrictions, assessment requirements and staffing availability. The aspects of the placement that can be customised are:

### 1. Release of tasks

You can elect to have all tasks available to students at the start of a project or to have each task released on a predetermined date.

### 2. Length and due date for assessments

Task instructions can be edited so that you set your own due date and length of product. For example you may wish students to produce a 3000 word report, where the Virtual Placement Case Study suggests a 2000 word report.

### 3. Content of Virtual Boxfile

You may wish to add or remove items from the Virtual Boxfile, particularly if you have specific paper based sources available for your own students.

### 4. Recipients of emails

By default all emails to staff from the Virtual Geo-Consultancy company will go to a single email address. However, if you have demonstrators or other staff who can assist you with the running of the placement you may wish to allocate different roles to different staff and email can be directed accordingly.

### 5. Contact with tutor

Traditional placements often involve progress meetings with tutors, and a post placement discussion. This could be added to the Virtual Placement with the student being informed by email of meeting requirements. The questionnaire produced in Phase 9 could be used to inform a post placement discussion.

### 6. The overall length of the placement

An estimated length is given for each placement. However, by extending some of the tasks, adding face to face meetings with tutors, etc. this can be extended to fit in with your own circumstances. Alternatively, reducing the size of tasks, or distributing tasks amongst members of a group could result in a shorter placement experience.

## 2 The Nant Carfan Virtual Case Study

### 2.1 The problem

The Nant Carfan visual impact analysis Case Study is based on a real proposal for a wind farm in Powys, Wales. It draws on documents produced during the planning stages of this wind farm development. Macaulay Land Use Research Institute, Aberdeen, undertook this work originally and have been partners for the development of the Virtual Placement Case Study.

At the end of the placement the student compares their own report with the 'real' report produced by Macaulay.

### 2.2 The tasks and products

The Case Study contains details of the tasks that the student must undertake and the products they must develop. For each task the student is provided with background information and specific task instructions. Figure 7 summarises the tasks and products required during the Nant Carfan Case Study and provides estimates for the amount of time required for each stage (although these will vary considerably from student to student). Figures 8 and 9 show sample pages for Task 3.

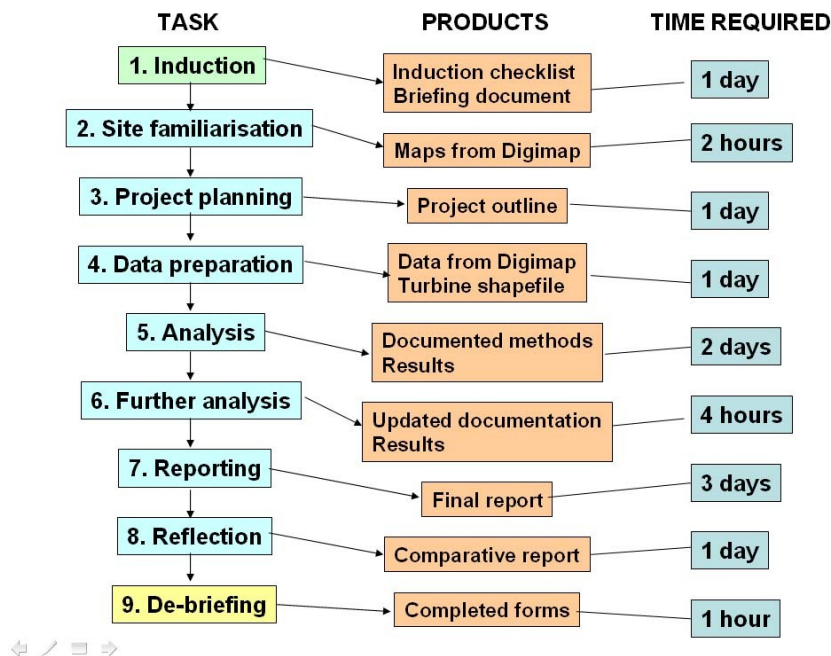


Figure 7: Nant Carfan Case Study structure

- [Home](#)
- [Using this site](#)
- [Placement Home](#)
- [Task List](#)
- [Virtual Boxfile](#)
- [About this placement](#)
- [Placement Copyright](#)
- [Virtual Geo-Consultancy](#)
- Completed Tasks:  
[1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#)
- [Request Help](#)
- [Logout](#)

### Virtual Placement Task 3

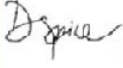
[« Back to Task List](#)


Good day Sarah Cornelius

I hope you're enjoying the project so far. I've got your next task for you. We need to provide the client with a project outline explaining how we intend to do the visibility analysis and listing the data we need. If the client approves the outline we can then go ahead and get started on the analysis.

Can you draft the project outline for me please? I've put some more details of what we need to include in the document and information about where you can get help [here](#).

Can you draft the project outline for me please? I've put some more details of what we need to include in the document and information about [where you can get help here](#).





[« Back to Task List](#)

Figure 8: Task 3 introduction for the Nant Carfan Case Study

- [Home](#)
- [Using this site](#)
- [Placement Home](#)
- [Task List](#)
- [Virtual Boxfile](#)
- [About this placement](#)
- [Placement Copyright](#)
- [Virtual Geo-Consultancy](#)
- Completed Tasks:  
[1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#)
- [Request Help](#)
- [Logout](#)

### Task 3 Instructions

[« Back to Task 3](#)

Our standard project outlines are usually about two sides of A4 paper. For this outline you should include brief details of:

1. *The methods to be used.* We'll need to undertake visibility analysis. Can you explain what this is in a couple of paragraphs please.
2. *The analysis to be carried out.* Could you make some suggestions for analysis that we can carry out. The most obvious one is to conduct an assessment of the visibility of each individual turbine and all the turbines together from land around the wind farm. Are there any other assessments you would recommend?
3. *The data needed for the analysis.* Please could you list the data sets you think we need and give a quick reason for including each one.
4. *The price of the data.* We have a licence for most of the OS data we need, but can you explore the [OS Web Site \[opens in a new window\]](#) and find out how much it would cost to buy the OS Landform PANORAMA DTM data and the 1:50,000 Colour Raster data for the whole of Wales. I think there is a Business Portfolio Price List that should help with this. We'll need to use the data on 2 terminals.
5. *Work plan.* A list of the main stages in the analysis. This should be a summary of the key steps in visibility analysis.
6. *Time.* Please include an estimate of the length of time you think you need to carry out the analysis.

You will need to refer to some literature sources for a bit of background on visibility and viewshed Analysis. Can I suggest you take a look in the [Virtual Boxfile](#) for this?

I think you'll need about a day to complete a draft, then can you [submit](#) the document to me for checking by 24/07/06 10:11 please so that I can make any edits before discussing it with the clients.

I appreciate your help with this - please don't hesitate to email me if you have any questions about what is required.

[« Go back to placement home page](#)

Figure 9: Task 3 instructions for the Nant Carfan Case Study

## 2.3 The automatic email messages

Email messages are sent out automatically by the placement when the student begins each new phase. These can be supplemented by messages sent from the tutor playing the different roles if they wish. The automatic messages send during the Nant Carfan Case Study are documented in Table 1.

Phase	Sender	Text
1	Darren	<p>Just a quick message to introduce myself – I'm Darren the Client and Community Liaison Officer, so I'll be working with you on the Nant Carfan project. The clients on this project are super to work with. They've been quick to provide any information that we need and very helpful with our queries, so if there is anything you need to know from them, please don't hesitate to ask me.</p> <p>Looking forward to working with you</p> <p>Darren</p>
1	Aero	<p>A quick thought – it might be useful to give an introduction to wind turbine technology in your briefing document. I'm not sure that all the others know what a nacelle is! Perhaps a diagram would be a good idea?</p> <p>Thanks</p> <p>Aero</p>
2	Louisa	<p>I just came across this web site which includes a bit of background information about the project area, and some nice photos. You might like to take a look to help you get a feel for what it's like there. Look up Llanbrynmair on the list of community councils.</p> <p><a href="http://community-councils.powys.org.uk">Http://community-councils.powys.org.uk</a></p> <p>I hope it's useful</p> <p>Louisa</p>
3	Aero	<p>I hope things are going OK. Sorry I've not been involved very much with your work – I have been busy with other projects over the last couple of weeks. I just wanted to make sure that you weren't facing any difficulties that I might be able to help with.</p> <p>I also wanted to make sure that you are finding all the resources you need, and getting appropriate help from the other members of the team.</p> <p>Please do feel free to contact me if you need any help.</p> <p>Thanks</p> <p>Aero</p>
4	Pete	<p>How's the data prep going?</p> <p>Once you've downloaded the data and got it into ArcGIS you might like to challenge yourself to produce a few maps to check whether everything looks OK (always a good idea as errors creep in everywhere!)</p> <p>What about producing an on-screen map of the turbine locations on top of the DEM?</p> <p>Or a map of the turbines and the roads?</p> <p>The second map would be particularly useful for checking against the maps you produced for Louisa to make sure that the turbines are in the right location.</p> <p>Pete</p>
5	Pete	<p>Are you having fun with the analysis?!</p> <p>Can you keep a note of anything which might be important as you go through the analysis? We need to be able to justify what we have done and repeat it if necessary, so it is worth keeping a note of things like:</p>

		<ul style="list-style-type: none"> <li>- any assumptions you have made</li> <li>- any quality issues associated with the data you are using</li> <li>- any errors that you think could be introduced into the analysis</li> <li>- anything you think has influenced your approach, or</li> <li>- anything you would do differently if you had to repeat the work.</li> </ul> <p>I always have a notebook at my side and keep a 'diary' when I'm working through a complicated analysis – just an idea you might want to try out for yourself.</p> <p>Pete</p>
6	Louisa	<p>I'm so sorry that the data set was wrong – I can't explain how the errors crept in. However, it could be worse, we once had a project where we spent ages puzzling over strange results – only to find out that the field worker responsible for collecting the data had keyed in all the grid references with the y coordinate first!</p> <p>I'll keep my fingers crossed that the rest of the analysis goes OK for you – but do let me know if you spot any errors or have any problems.</p> <p>Sorry again</p> <p>Louisa</p>
7	Aero	<p>I hope you're not finding the report writing too daunting. I know how difficult it can be to adopt a style and approach to a piece of work when you are not used to writing this way. It might be useful to have a look at some examples of reports, white papers and other documents to get a feel for what we are after. Don't read these all through in detail, but just take a quick look to give you some ideas for style and presentation.</p> <p>Try the British Wind Energy Association – they have reports on their website.</p> <p>Thanks</p> <p>Aero</p>
8		No emails
9		No emails

*Table 1: Automatic Emails send during the Nant Carfan Case Study*

## **2.4 Assessment of the Nant Carfan Case Study**

Whilst it would be useful for all students to receive feedback on all aspects of their work during the Virtual Placement, this is probably an unattainable ideal given constraints of time and resources. Figure 10 offers a suggested assessment strategy for the Nant Carfan Case Study – this can be adapted to suit your own needs and circumstances.

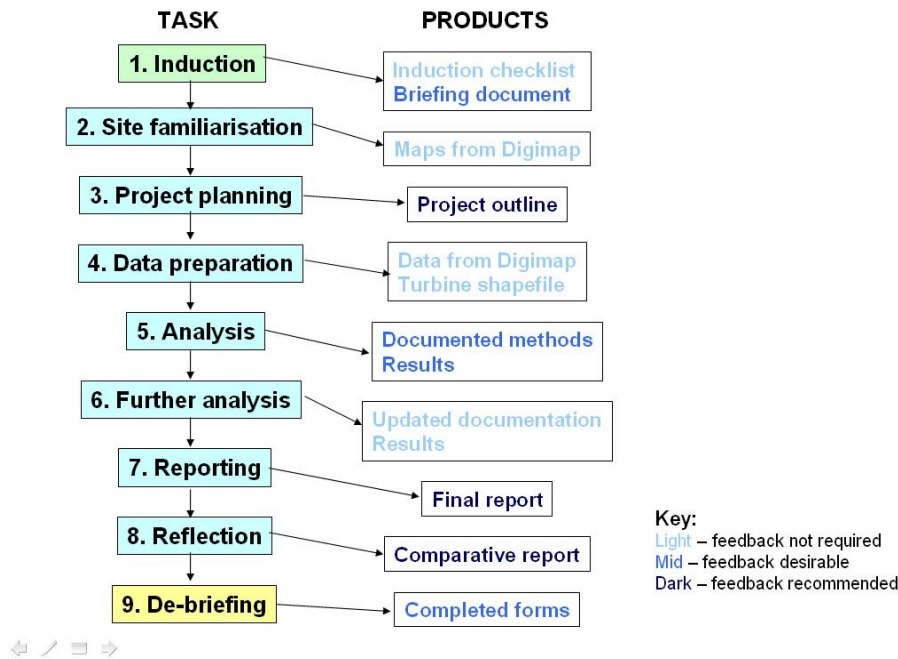


Figure 10: Suggested assessment strategy for the Nant Carfan Case Study

At a minimum it is suggested that the Task 3 project outline, Task 7 final report and Task 8 comparative report should be formally assessed and prompt feedback on these returned to the student. Site maps and presented results will be incorporated in the final report and do not need to be assessed separately if time is limited. Documented methods will be ‘assessed’ by the student themselves since they need to use these to repeat analyses for Task 6.

If more time is available students will benefit from additional comments on their briefing document, documentation of methods and presentation of results. Discussing the completed de-briefing questionnaires with individual students would also be valuable.

If time for assessment and feedback is not an issue, comment could be made on every product the student creates. This would create a ‘real life’ situation in which there is good communication between the placement student and members of the organisation in which he or she is working.

## 2.5 Preparing students for the Nant Carfan Case Study

It is recommended that students undertaking the Nant Carfan Case Study have some prior knowledge of geo-information issues and practical experience with ArcGIS.

This knowledge could be gained from another course, individual study or e-MapScholar learning resources. Relevant e-MapScholar learning resources (available from [http://emapscholar.edina.ac.uk/emap3/studentView?athens=/home/digilive/serverb/conf/athens\\_login.ini](http://emapscholar.edina.ac.uk/emap3/studentView?athens=/home/digilive/serverb/conf/athens_login.ini))

Understanding maps  
Structuring space: raster  
Introduction to Visualisation  
Conventional techniques in visualising relief

Experience with ArcGIS is necessary to understand the terminology and basic operation of the package. Grid files, shapefiles etc. are referred to within the placement, and some knowledge of these is necessary. At a minimum students should be able to:

- open and save an ArcGIS project
- add layers to a map
- navigate an onscreen map using pan and zoom functions
- interrogate a map using the Identify tool
- highlight an active layer
- open a theme table
- produce a cartographically acceptable output map (with title, legend etc.)
- use the ArcMap toolbox
- find Spatial Analyst operations

Students who lack the necessary ArcGIS skills could be directed to a number of sources, including the ESRI Virtual Campus, Ormsby et al. (2001) and ArcGIS help files.

### **3. Instructions for setting up and customising the Nant Carfan Case Study**

#### ***3.1 Technical Requirements***

The Virtual Placement can be accessed via the Internet from any location. Practical activities require the use of ArcGIS which should be installed or accessible from the student's PC.

Students will need hard disk space to save data sets and results. The data sets require 50Mb of space. A similar amount should be allocated on top of this for the storage of results.

#### ***3.2 Access for tutors and students***

The placement is accessed from the Virtual Placement website  
<http://edina.ac.uk/projects/virtualplacement/>

1. Enter Athens login details (note that Athens DA is not currently supported).

2. Enter your full name and a valid email address. This email address will be used for Virtual Placement emails.

#### Tutors

3. At this point, contact [edina@ed.ac.uk](mailto:edina@ed.ac.uk) to obtain tutor status
4. Login again and a tutor login page will appear
5. For a new placement select 'Add Placement'
6. For an existing placement select this from the list and then 'Manage Placement'

#### Students

1. Choose their tutor from the list
2. Select their placement
3. Enter the password provided by their tutor

### **3.3 Customisation**

Customisation is provided via the 'Manage Placement' option. Enter details as appropriate for your placement:

Name of Virtual Organisation

Website address

Start date, due date and length for each phase (you will need to be familiar with the placement to estimate these)

Email addresses for each of the roles (all email can be directed to one email account, or different addresses can be used for one or more roles depending on the number of tutors supporting use of the placement in your institution).

### **3.4 Feedback and Problems**

Your feedback on the Nant Carfan Case Study would be very welcome. We are particularly interested to hear about how you have integrated the placement into your teaching – as part of an existing module or a new module – and how you have customised the placement to meet your own requirements.

We would also be grateful if you could report any problems you have with the Virtual Placement to [edina@ed.ac.uk](mailto:edina@ed.ac.uk).

## **4. Getting involved with the development of Case Studies for the Virtual Placement**

Your suggestions for further Case Studies are very welcome. If you have an idea or a possible Case Study of your own that you would like to discuss further please contact [edina@ed.ac.uk](mailto:edina@ed.ac.uk).

Further information for potential case study authors is also provided on the Virtual Placement website <http://edina.ac.uk/projects/virtualplacement>.

## 1. Sources of further information

Placement handbooks are available for many higher education institutions and subject areas. A web search will locate current examples.

- Chalkley B (no date) Improving students' skills through work-based learning. Key Skills in Geography in Higher Education Guide. Further details available at <http://www2.glos.ac.uk/gdn/guides/dfeepubl.htm> (accessed 19 July 2006)
- Chalkley B and Harwood J (no date) Transferable skills and work based learning in Geography. Geography Discipline Network Guide.
- Couch I (1995) Work experience: an alternative or a companion to the dissertation? A Case Study. *Journal of Geography in Higher Education* 19(2)
- Jackson S (1995) Work-based learning for academic credit. *Journal of Geography in Higher Education* 19(2)
- Jones R, Healey M and Matthews H (1995) The thick sandwich: still on the menu. *Journal of Geography in Higher Education* 19(2)
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- Ormsby T, Napolean E, Burke R, Groessl C and Feaster L (2001) *Getting to know ArcGIS desktop*. ESRI Press, California
- QAA (1998-2001) Code of practice: placement learning <http://www.qaa.ac.uk/academicinfrastructure/codeOfPractice/default.asp> (accessed 19 July 2006)
- Shepherd I (1995) Small is beautiful: a 'short and thin' model for work experience. *Journal of Geography in Higher Education* 19(2)
- Watkin G (1995) Placement skills: applying Geographic skills in the workplace. In Jenkins A and Ward A (eds.) *Developing Skill-based Curricula through the Disciplines: case studies of good practice in Geography*. SEDA Paper 89 pp.41-49