5.1 Research Design and Data Collection

This section of the Research Gateway will provide you with information on the steps you should follow in order to actually do your project. This is arguably the most important part of your project because if you make mistakes with the way you carry out the project your research has the potential to be invalid and unreliable. The process to be followed can be broken into four steps. First, you need to define your research problem by reviewing the relevant existing literature on the topic and using this to generate research questions. Second, you will have to establish a plan to ensure that the investigation is carried out. This is the research design phase of your project and requires you to think about the type of research you are doing and the approach that you will take to it. At this stage you will also have to consider the ethics, reliability and validity of your project as these issues can seriously undermine your research. Third, you will need to consider how you are actually going to collect your data – what research instruments will you use? Finally, all of this will be reported in the Methodology section of your project.

By now you should realise that the research part of the project is the substantive portion of the work that you are required to do. Not only do you have to design your research, but you also have to carry it out and then report it. This is a complex process requiring you to make a number of key decisions about what you need to find out and how to find it. The resources provided in this section of the Gateway will help you to make these decisions. They provide information on:

- the principles of research design – the type of questions to be answered and the best way of answering these will determine the approach to be taken to the study;
- the type of study – there are general approaches to carrying out research that need to be considered when deciding how to collect data. The choice of which is appropriate is fundamental to the success of the research;
- methods of data collection – the methodological approaches referred to above tend to be associated with particular types of data collection methods. It is important to choose the right data collection method(s) as this will allow data to be collected that will meet the objectives of the research;
- methodological reporting – there is a need to explain to the reader how the results were obtained so that your research can be evaluated fully.

As always, use the Gateway resources appropriately. There are a substantial number of resources available in this section and it is important that you first, identify which are appropriate for your research and second, consider the data in the light of what your institution requires of you. You need to use these resources purposefully – to help you perform to your best in meeting the specific requirements of your own institution. Don’t forget that your institution will have expectations of you and your project. These override any information that you get from this Gateway. Bear in mind that you may be able to successfully complete your project without using the Gateway, but you are unlikely to succeed if you fail to take account of what your institution requires!
5.2 What the Methods links cover

This section connects you to several sources that can help you to design and carry out your research.

- There are a few sources that provide introductory material on research design. These highlight the way that research can be classified and provide initial ideas about the ways of answering research questions. These sources also cover the concepts of ethics, reliability and validity, all of which must be taken in to account in the design of your research.

- There are a few sources that discuss the difference between qualitative and quantitative research. Although you (or your supervisor) are likely to favour one approach over another, the debate over the value of each of these approaches is lengthy, ongoing and at times, tedious! It is, however, useful to know what the issues are as this will help you to be more informed about your choice of approach.

- There are several sources that deal with the design and data collection strategies of qualitative research. These provide information on how to design such studies and detailed examples of the type of techniques that can be used to collect data.

- Alternatively, there are also several sources that consider similar issues for quantitative research.

- There are a small number of sources that describe how a methodology section should be written. This section of your report should show the reader how the data was collected and how it was analysed. This is important because the method of data collection affects the results and knowing how data was collected allows the reader to draw conclusions about the validity and reliability of your research.
5.3 Using the Methods section

Local context:
- Find out what is required of you!
- Are there written guidelines on what is required?
- Can you look at examples produced by previous students?
- Do you now understand what you are aiming for? If not, can your supervisor clarify it for you?

Using the Gateway:
- We have provided a large number of sources and we suggest that you skim the contents and select those sources which are most relevant to your requirements. This section provides sources that deal with both qualitative and quantitative research and therefore not all will be useful.
- We suggest that you do not rely on one source, but make sure that you read a few. A particular turn of phrase used by one author may be what makes something ‘click’ for you so that you feel you have grasped a key point well. In addition, different sources will have different tips on how to make your research successful. Read all of them! This is the one part of your research where you shouldn’t be frightened about learning too much!
- Remember that this original source material was NOT written specifically for you. Local requirements overrule the Gateway everytime!
- Consult other sections of the Gateway as required – you will almost certainly need to. You will need to make sure that you have reviewed the literature correctly and will want to check out details regarding analysis as this may affect your choice of approach.

And finally -
You need to get this right! We are not saying this to frighten you, however, poor research practice makes the whole exercise pointless. This is because inappropriate design and data collection are likely to make the results of your research meaningless. Fortunately, this is the phase of the research where there is the most help. We have provided a number of sources for you to access, however, there are several others that you will come across when developing other sections of your project. There are also a huge number of written texts on this topic, so make use of these if necessary. In addition, it is likely that your supervisor will be most concerned with this phase of your research. This should ensure that you carry out ethical and valid research in a reliable manner.
5.4 Methods checklist

This checklist is based on the typical requirements for carrying out your research. Some of the questions relate to designing the research and some relate to the writing up of the research. Select the questions below that are most relevant, depending on the type of research that you intend to do and what your institution requires of you.

<table>
<thead>
<tr>
<th>Local Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>· do you need your supervisor’s permission to conduct the research?</td>
</tr>
<tr>
<td>· do you know how much detail you are required to give?</td>
</tr>
<tr>
<td>· have you complied with your institution’s ethical procedures?</td>
</tr>
<tr>
<td>· is there a word limit? If so, what is it?</td>
</tr>
<tr>
<td>· have you looked at previous examples?</td>
</tr>
<tr>
<td>· will your supervisor read a draft?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>· is the method you have chosen appropriate for the nature of your</td>
</tr>
<tr>
<td>research and your research objectives?</td>
</tr>
<tr>
<td>· did you have your supervisor’s approval of your research tools?</td>
</tr>
<tr>
<td>· have you explained the basic nature of your research – is it</td>
</tr>
<tr>
<td>exploratory, descriptive, or explanatory? Are your central questions</td>
</tr>
<tr>
<td>descriptive, relational or causal?</td>
</tr>
<tr>
<td>· have you justified your choice of methodological approach?</td>
</tr>
<tr>
<td>· have you explained, in detail, how the data was obtained?</td>
</tr>
<tr>
<td>· have you explained, in detail, how the data was analysed?</td>
</tr>
<tr>
<td>· have you discussed your choice of data collection techniques?</td>
</tr>
<tr>
<td>· have you discussed how your research instruments were developed?</td>
</tr>
<tr>
<td>· have you outlined the steps you took to ensure your research was</td>
</tr>
<tr>
<td>valid?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Writing</th>
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</thead>
<tbody>
<tr>
<td>· have you provided a convincing explanation of your research?</td>
</tr>
<tr>
<td>· have you proof read your methodology?</td>
</tr>
<tr>
<td>· have you included full reference details in a consistent and approved</td>
</tr>
<tr>
<td>form?</td>
</tr>
<tr>
<td>· have you laid it out clearly so that it looks quite nice??!!</td>
</tr>
</tbody>
</table>
## 5.5 Methods Resources

<table>
<thead>
<tr>
<th>Source</th>
<th>Content and use</th>
</tr>
</thead>
</table>
| 5.5.1: research design  
From Ryerson  
http://www.ryerson.ca/research/ | BECOME FAMILIAR WITH THIS SITE! A good explanation of the types of research and techniques you can use. This site covers both qualitative and quantitative methods and the links embedded in the site make it easy to move around. It also contains a bit on the ethics of research – a topic which is becoming increasing important! |
| 5.5.2: research design  
From Trochim  
http://www.socialresearchmethods.net/kb/design.htm | BOOKMARK THIS SITE! This link takes you to the home page which contains full contents listing that will allow you to go to the sections that are most appropriate to your research. We will send you to other sections, at other stages as the quantity of information available on this site is enormous. Its only weakness is that it is a little heavy going at times, but this is because it is dealing with tricky stuff! |
| 5.5.3: research methods  
From: Naropa  
http://www.naropa.edu/ | This is worth a read if you still aren’t sure about the type of research you can do. The front page links you to detailed descriptions of research methods. |
| 5.5.4: Glossary of research methods. From: WPI  
http://www.wpi.edu/Academics/GPP/Students/ch9.html | Visit this site! It provides clear definitions of research methodology and techniques. We found it VERY helpful! |
| 5.5.5: qualitative v quantitative I  
From the Educational Web  
http://edweb.sdsu.edu/Courses/Ed690DR/Class01/QvsQ.html | A brief explanation of the differences between the two approaches to research. It has a good activity to check that you understand the difference. |
| 5.5.6: qualitative v quantitative III  
From Donna McKereghan  
http://www.heacademy.ac.uk/assets/hlst/documents/research_gateway/quantitativevqualitative3.pdf | A straightforward explanation of the debate, with a good diagram. If you use it, remember to provide the reference! |
| 5.5.7: qualitative v quantitative IV  
From the University of Alberta  
http://www.ualberta.ca/dept/slis/cais/olson.htm | A theoretical discussion of the two approaches. Read this a) if you have read everything else and still don’t understand the difference or b) you are very interested in the debate. There are more straightforward sources! |
| 5.5.8: ethics  
From the BSA  
http://www.britsoc.co.uk/equality/Statement%20Ethical%20Practice | Guidelines on how to carry out ethical research. Quite a lot of rules, but it is essential you are familiar with these! |
| 5.5.9: qualitative research I  
From Don Ratcliff  
http://don.ratcliffs.net/qual/ | This site focuses on qualitative research and provides information on sampling, the role of the researcher and data collection. Parts of it are a little strangely written, however, it also provides links to more detailed information. |
| 5.5.10: qualitative research II  
From Ryerson  
http://www.ryerson.ca | This site, once again, explains the difference between qualitative and quantitative research and then links you to a number of qualitative research methods. The site provides more detail on a greater number of qualitative techniques than we have found elsewhere. It is also well written and clear. Need we say more?! |
| 5.5.11: qualitative research III  
From 'Trochim'  
http://www.socialresearchmethods.net/kb/qualdeb.htm | This part of the site once again covers the qualitative/quantitative debate and suggests questions you need to ask yourself in order to determine the approach you should take. It also discusses types of qualitative research and provides a brief explanation of the ways you can collect data. It deals with the validity of qualitative data and this, in itself, makes it worth visiting. |
| 5.5.12: qualitative research IV  
From UEA  
http://research.edu.uea.ac.uk/content/all?page=7 | This link takes you to a contents pages that allows you to access more information on qualitative research. Chapters 1-7 are probably the most relevant. Ignore the stuff on professional development – the site was established for professional researchers. |
| 5.5.13: focus groups  
From the Social Science Information Gateway  
http://www.mnav.com/qualitative_research.htm | Moving on the ‘nitty-gritty’ of doing research – this site provides access to a number of articles written on the use of focus groups in qualitative research. Some are well written, some aren’t – all of them are quite heavy going. However, if you need more information after reading the sites above, check this site out. |
| 5.5.14: interviewing I From Trochim  
http://www.socialresearchmethods.net/kb/interview.htm | Good straightforward advice on how to carry out interviews. Ignore the bit on training the interviewers, because you’ll be doing the work yourself! |
| 5.5.15: interviewing II From WPI  
http://www.wpi.edu/Academics/GPP/Students/ch11e.html | Brief and doesn’t say anything new if you have read the above sites. |
| 5.5.16: quantitative research  
From Ryerson  
http://www.ryerson.ca/~mjooppe/ResearchProcess/QuantitativeResearch.htm | This page no longer exists – although the Now it’s the turn of quantitative research! Once again, loads of details on the types of techniques, but also more than you ever wanted to know about sampling! Comprehensive and clear advice on how to construct a questionnaire – what are you waiting for?! |
5.5.17: survey methodology and design  
From WPI  
http://www.wpi.edu/Academics/GPP/Students/ch10.html  
All you ever wanted to know about designing and administering a survey! The site is a little strange to move around as it is broken into several small sections. But if you are doing surveys and you don’t read this – you are missing out!

5.5.18: survey research  
From Trochim  
http://www.socialresearchmethods.net/kb/survey.htm  
In case you didn’t quite get it after reading the WPI site, here also is all you ever wanted to know about Survey Research. You can’t know enough about this topic, so read this one too.

5.5.19: sampling  
From Trochim  
http://www.socialresearchmethods.net/kb/sampling.htm  
This link takes you to the sampling section of this site. This covers all aspects of sampling and if you weren’t sure after visiting the Ryerson site, you will be now. A little heavy going at times.

5.5.20: measurement  
From Trochim  
http://www.socialresearchmethods.net/kb/measure.htm  
This material covers levels of measurement and validity and therefore you MUST read this. It all gets a bit confusing after a while, but read the first bits and then go and talk to your supervisor.

5.5.21: reliability  
From Trochim  
http://www.socialresearchmethods.net/kb/reliable.htm  
Same problem as above – heavy going but essential. Seek advice!

5.5.22: scaling  
From Trochim  
http://www.socialresearchmethods.net/kb/scaling.htm  
This part of the site explains how to link qualitative concepts with quantitative measures. Confused?…if you are doing a questionnaire, you will have to do this. Have a read and then, once more, seek assistance if necessary.