

Introduction to research

Otago Polytechnic

Getting started

When your lecturer asks you to perform some "research" to support the arguments you are making for a class assignment, what comes to mind? If you're like most students, you can probably come up with a number of possible answers, most of which revolve around the use of different types of information and the sources in which they may be found, for example, "the Internet", "Google", "a search engine", "books", "articles", "statistics", and, if you're of the same generation as your instructor, "the library".

But how do you know where to start, which sources to consult, in which

order and when you've found enough information? Wouldn't it be great if there were a model or a process you could follow every time that would lead you to all the right answers? Unfortunately, no such model exists because, the truth is, every research assignment is different and the tools, techniques, and processes you need to use are also different.

Setting out to do research can be a little bit like setting out for a hike on a trail whose end is unknown to you, and which is laden with forks, branches, loops and dead ends. Just as a hiker can overcome some of the uncertainty with the knowledgeable use of tools (maps, compass, GPS), a researcher's knowledge of the "information terrain" and the tools used to navigate it (search engines, research databases, library catalogues, etc.) can help make the research process less overwhelming, if still not entirely predictable^[1].

In this introductory course we provide guidelines and support to get you started on your research journey.



Contemplating a research project -- its more about thinking than typing.

Overview



Objectives

In this introductory unit we describe the research process and corresponding activities for the following phases of a research project:

1. Inquiry -- What is the research question?
2. Collection (Information and data)
3. Analysis
4. Presentation of findings.

Getting started

What do you think about when you hear the term 'research'? Do you think about:

- scientists at work in the laboratory?
- the telemarketers who ring you up at dinner time?
- the opinion polls referred to on the television news?
- how the latest model from Holden gets designed?
- how Vodafone developed 3G technology?
- a group of people discussing their views on "designer babies"?

These are ALL examples of research.



Working in the lab.

What Makes a Good Research Topic?

Behind every great research assignment, whether it's a formal paper, an oral report or a multimedia presentation, is a good, well-defined topic. But how do you know whether or not your topic is a good one? Here are some general rules to follow^[2]:

1. If possible, choose a topic that interests you. There are few things more difficult than trying to write about something in which you have no or little interest
2. Be sure your topic is neither too broad nor too narrow for the scope of your research assignment, and that you have enough time to complete the study within the defined assignment.
3. Choose a topic which there is likely to be enough information you can consult (e.g. the library and/or the internet). Do some preliminary searches for potential sources before you choose a topic.



Activity

Written activity

- Write down at least two examples of a potential research topic that relates to your field of study and which interests you.

[1] Introductory text adapted from *The art of Analysis* by Joyce Leung, Trish Rosseel, Ross Tyner. Date: Unknown. Available online (<http://solr.bccampus.ca:8001/bcc/items/48ac6be3-4285-bd9f-9935-57863b2061a7/1/viewims.jsp?.hb=true&drm.s=true>) under Creative Commons Attribution-ShareAlike 2.0 (Canada) (<http://creativecommons.org/licenses/by-sa/2.0/ca/>) license.

[2] What makes a good research topic adapted from " *The art of Analysis* by Joyce Leung, Trish Rosseel, Ross Tyner. Date: Unknown. Available online (<http://solr.bccampus.ca:8001/bcc/items/48ac6be3-4285-bd9f-9935-57863b2061a7/1/viewims.jsp?.hb=true&drm.s=true>) under Creative Commons Attribution-ShareAlike 2.0 (Canada) (<http://creativecommons.org/licenses/by-sa/2.0/ca/>) license.

Defining research

What is Research? Research is defined in various ways, simply because research means different things to different people.



Reflection

- What does research mean for you?
- Why are you taking this course?
- Have you conducted any research projects before?
- What is the purpose of research?

Think about what research means for you and compare your ideas with the different definitions presented below.

We start with a general definition from Wikipedia.




Research

Research can be defined as the search for knowledge or as any systematic investigation to establish facts. The primary purpose for *applied research* (as opposed to *basic research*) is discovering, interpreting, and the development of methods and systems for the advancement of human knowledge on a wide variety of scientific matters of our world and the universe. Research can use the *scientific method*, but need not do so.

This article is licensed under the Creative Commons Attribution-ShareAlike license ^[1]. It uses material from the article "Research" Retrieved 11 September 2010



Definitions

- The New Zealand Qualifications Authority defines research as "an intellectually controlled investigation which leads to advances in knowledge through the discovery and codification of new information or the development of further understanding about existing information and practice." ( : **Need to insert a citation reference here.** --Wayne Mackintosh 04:43, 11 September 2010 (UTC))
- Systematic investigative process employed to increase or revise current knowledge by discovering new facts. It is divided into two general categories: (1) *Basic research* is inquiry aimed at increasing scientific knowledge, and (2) *Applied research* is effort aimed at using basic research for solving problems or developing new processes, products, or techniques ^[2].

Collis and Hussey (2003)^[3] summarise the purpose of research as follows:

- to review and synthesise existing knowledge
- to investigate some existing situation or problem
- to provide solutions to a problem
- to explore and analyse more general issues
- to construct or create a new procedure or system
- to explain a new phenomenon
- to generate new knowledge
- a combination of any of the above.



Activity

Identify the purpose of each research example you wrote down earlier. It is important to be clear about what the purpose of the research you want to undertake is as this will determine how you go about it.

[1] http://en.wikipedia.org/wiki/Wikipedia:Text_of_Creative_Commons_Attribution-ShareAlike_3.0_Unported_License

[2] [Businessdictionary.com](http://www.businessdictionary.com/definition/research.html), available online at <http://www.businessdictionary.com/definition/research.html>

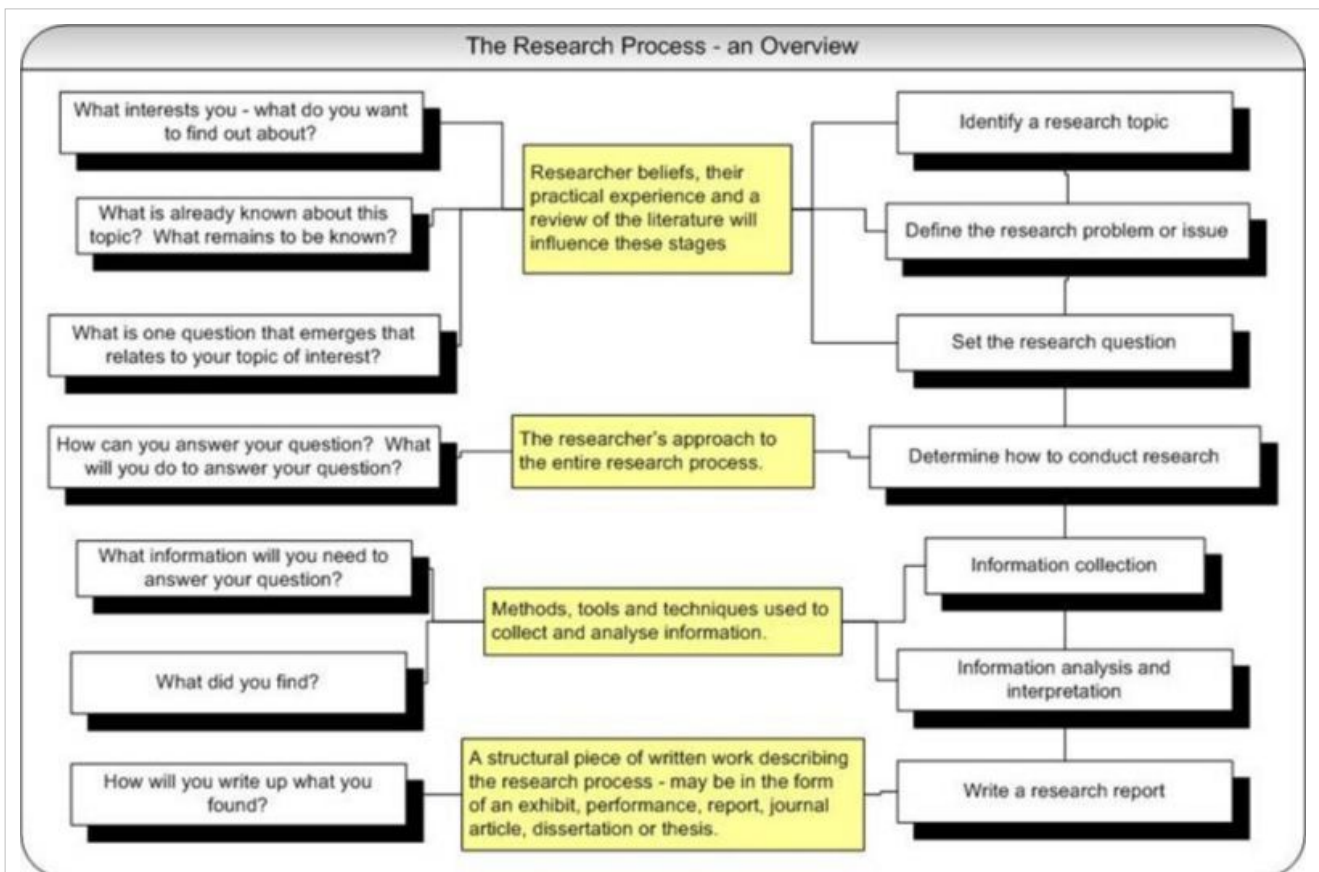
[3] Collis, J., & Hussey, R. (2003). *Business research: A practical guide for undergraduate and postgraduate students*. Basingstoke Hampshire, UK: Palgrave Macmillan.

The research process

How and where does research begin? It usually begins with an interest, idea, a view or theory on a particular topic. It may be a problem that needs to be solved, a question that needs to be answered, an issue that needs to be explored, or a theory that needs to be proved.

An Overview of the research process

The research process can be simplified using the diagram below. The left column uses simple language to explain the research process and the right column uses language more common in the research literature. Both columns explain the research process.



Source Otago Polytechnic 2006

What is the research process?

It is the systematic manner in which a researcher approaches their area of study to produce knowledge which the community will consider to be worthwhile within the field.

There are four principles stages in the research process that we will cover here:

- Inquiry
- Collection
- Organisation
- Presentation

The research question

The first step in the research process is to identify the topic of study. The most effective way to do this is to work with a research question.

How does a research question evolve?

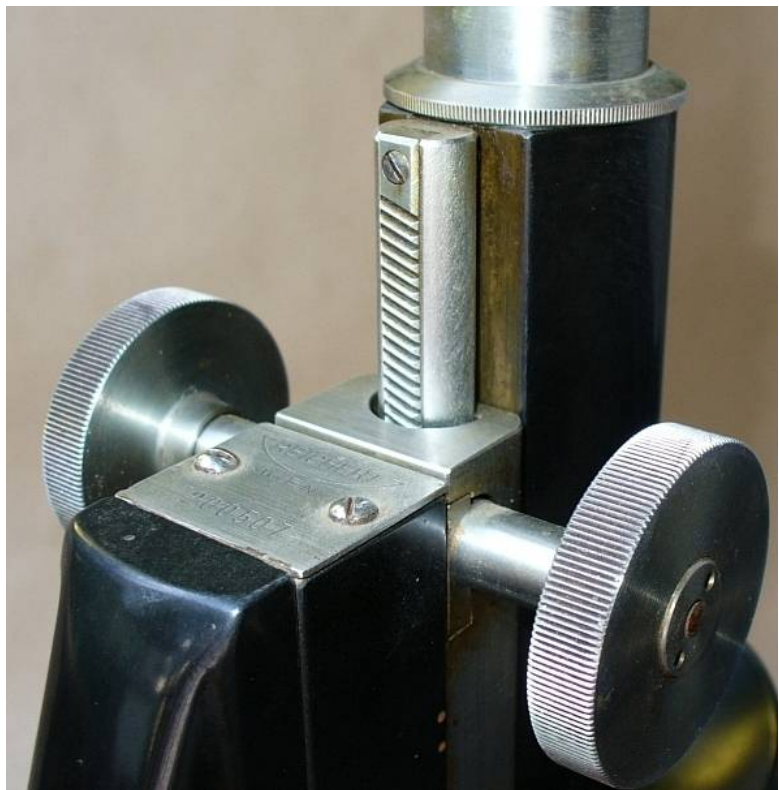
A researcher starts with an area of interest: a topic or subject. These areas may arise from confusion that the researcher has about a particular topic, from problems that need solving, or from simple intellectual curiosity. But topics and subjects are very broad, and the process of formulating a question is a way of narrowing and focussing the area of study until it becomes truly researchable.

Developing a good research question is an on-going and iterative process. As the researcher does the background work to understand the topic, the topic will modify and change until a searchable and meaningful question emerges that will then become the primary research focus.

A research question emerges and takes shape from the reading and enquiry that the researcher undertakes around your topic of interest. Steps in formulating a research question

1. Identify the general area of interest
2. Read and discuss the topic to build a deep knowledge base.
3. Reflect on what is already known about the topic, what remains to be explored, and what is of interest to the researcher.
4. Formulate an initial question.
5. Read, reflect and discuss the initial question further.
6. Refine the question and develop the research project

Developing a research question requires the researcher to engage with previous research and with other knowledgeable people in the discipline.



Getting your research project into focus



Reflection

Consider the following questions:

- How refined is the question(s) you wrote down earlier?
- In what ways do you think you can improve your research question(s)
- In your view, what are the requirements for a good research question?

Evaluating a research question

Good research questions are clear, easy to understand, focused, substantively relevant and important. They will start from general questions that become more refined as the researcher increases their familiarity with the subject.

Example of refining a research question

Consider the following example on a research topic relating to the effects of global warming and commercial crop production. We start with a general question and provide feedback on the refinement process.

- **First iteration:** *What are the effects of global warming on crop production?*

Feedback: Interesting and valid question, but very broad, and too big to handle within the constraints of a typical research study. For

example, does "effects" refer to growth, productivity, the size of the fruit or physical attributes of the crop?

- **Second iteration:** *How does global warming affect post-harvest production of crops?*

Feedback: The effect is now scoped, but what types of crops: fruit, forestry, grain?

- **Third iteration:** *How does global warming affect post-harvest production of cereal crops?*

Feedback: The crop is now scoped, as is the effect. However, the location of such a study is still vast. "Cereal" could be rice in Thailand, wheat in Canada or spelt in New Zealand.

- **Fourth iteration:** *How does global warming affect post-harvest production of cereal crops in New Zealand?*

Feedback: This is much more specific and well-defined as a research question which will allow a focused search for information and study design. Depending on scope and time, the researcher may still want to narrow this down to a specific cereal crop.



Activity

Using the question you developed previously, answer the following questions:

- Is the question clear and easy to understand?
- Does it cover a well-defined area of your subject?
- Has it already been answered by other researchers?
- What makes it interesting and worthy of research?
- is its scope well-defined and achievable?
- Does it interest you?

References

[1] <http://www.flickr.com/photos/54603144@N00/456668792>

Finding information

You've selected, defined and narrowed your research topic. Now you're ready to start searching. But where? Will you have to go to the library and paw through the musty old books or can you sit at your computer and type some keywords into Google and let the computer do the rest? As is the case with so many seemingly simple questions, the answer to this one is "either, both, neither, or somewhere in between."^[1]



Where do I find information?

Finding information - The literature search

In order to undertake research, one has to be familiar with what scholars reverently refer to as "the literature." "The literature" is the body of scholarly work which focuses on the topic of interest to the individual researcher. When people refer to a "lit review" they are making reference to an essay, report or academic journal article which reviews the body of work on the topic they are developing.

Information types

The type of information you need depends on the course in which you are enrolled, your research topic, and the nature of your assignment. Once you have determined the types of information you need, you will be better able to select the information sources that are most likely to contain that information. If you have any doubt about the type of information you need, be sure to talk to your instructor and/or a reference librarian.



Reflection

Consider the following questions regarding information types:

1. Is the information required for your research project scholarly, popular, or both?
2. In which general discipline(s) (e.g. Sociology, Psychology, Biology, History, etc.) is your research topic situated?
3. Do you require current information, historical information, or both?
4. Does your topic have a geographical focus, e.g. are you interested only in a New Zealand, geographical or international treatment of your subject?
5. Do you need an overview of your subject, very specific details about a certain aspect of your subject, a combination or something in between the two?
6. Do you need primary sources or artefacts? Primary sources include statistics, research reports, letters, diaries, and minutes of meetings. Artefacts are secondary sources - usually books and periodical articles. Or do you require both?

Having answers to these questions will help you when consulting a subject reference librarian and help you to target the most appropriate sources of information relevant to your research topic.^[2]

Sources of information

Internet web searches and libraries (both public and research libraries) are good places to source information for your literature search.

Searching the web

If you're like most people, you probably search the Web on a regular basis and you probably have a favourite search engine that you use every time, or almost every time you search. You may not know that different search engines often provide different results and support different types of searches. This section provides a brief description of some of the most important search engines and their features.

Altavista ^[3], Ask ^[4], Google ^[5], Live Search ^[6] and Yahoo ^[7] are just five of the many general search engines available for searching the Web. These search engines have a lot in common, but also have unique characteristics that you may want to explore.

Common functionality

All five of these search engines provide customised searching capabilities, including the ability to:

- retrieve documents that contain all words entered, regardless of their order or their location in the document, e.g. a search for climate change retrieves not only documents that contain the phrase "climate change" but also documents that happen to include the word climate and the word change
- support Boolean logic by combining terms using 'and', 'or' and 'not', or by using '+' to include a word or '-' to exclude a word
- allow users to limit their search by:
 - domain/site (i.e. search only for documents in .edu or search only for documents at www.tyee.ca)
 - words in a title (search only for documents in which your search terms appear in the document title, not the entire text of the document.)
 - date
 - file type
 - language
- require the use of quotation marks to search for an exact phrase, e.g. "Okanagan valley"
- allow users to search for images and news.

Typically these features are indicated by a link to "advanced search" features on the respective website.

Specialized Search Engines

Google Scholar ^[8]

Google Scholar searches for scholarly literature (journal articles, conference papers, books, reports, etc.) across all academic disciplines. Search features are similar to those available in Google but searches may also be limited by author, publication (e.g. the journal Natural), and subject area.

Scirus ^[9]



Like Google Scholar, Scirus searches for scholarly information. Unlike Google Scholar, Scirus restricts itself to scientific, technical, and medical information. Scirus searches for information from selected scientific websites and from journals that are part of ScienceDirect, the online journal service of the scientific publisher Elsevier, which also owns Scirus. If your library



licenses some or all of the journals available from ScienceDirect, you may find Scirus a useful tool for linking directly to articles while simultaneously searching the "open web". As is the case with Google Scholar, many libraries have inserted their own links into Scirus search results to point users to copies of the articles. If neither of these conditions applies to you, you may find it easier to use a research database^[10].

Libraries

Historically, libraries had mostly books, encyclopaedias and other reference material - the information sources at the end of the information timeline. In the 21st century many libraries now contain a wider range of information sources including CDs, DVDs, artefacts, newspapers, magazines, librarians, computers and access to the World Wide Web. We can distinguish between:

- The *Physical Library*. Typically these are found at learning centres, with reference librarians available to help you locate information.
- The *Virtual Library*. A virtual library can be described as information resources or information services which can be accessed without actually going into the library building, using the Internet and other digital information management systems. Virtual libraries can be accessed within a physical library or remotely from an internet café or home.

While you can't walk between the library stacks, or physically smell and touch a book by computer, a virtual library may contain many sources of information that are available on the shelves. What's more, with computer technology, many of the services that used to be printed are more efficient and easier to access and use in digital, or electronic form. Some of the resources available in a virtual library include catalogues, indexes, journals and reference material. Potentially all sources of information from the information timeline could be available in a virtual library. An academic virtual library can be used to locate information from the web (present information) and scholarly journals (published literature). Many libraries at education institutions hold subscriptions to electronic databases which can be accessed by registered students

Increasingly, there are a growing number of Open Access Journals^[11]. These are "virtual libraries" which provide open access to full digital texts without the need for institutions or individuals to pay subscriptions for access to the databases.



Web Resources

- Google Scholar: Visit <http://scholar.google.com>^[8]. This is a search engine specifically designed to search scholarly literature.
- The literature review^[12], Deakin University.
- Literature review tutorial^[13], Central Queensland.
- How to search the Internet^[14]
- Basics of web searching^[15]
- Basics of boolean searches^[16]

[1] Introductory paragraph adapted from " *The art of Analysis* by Joyce Leung, Trish Rosseel, Ross Tyner. Date: Unknown. Available online (<http://solr.bccampus.ca:8001/bcc/items/48ac6be3-4285-bd9f-9935-57863b2061a7/1/viewims.jsp?.hb=true&drm.s=true>) under Creative Commons Attribution-ShareAlike 2.0 (Canada) (<http://creativecommons.org/licenses/by-sa/2.0/ca/>) license.

- [2] Section on information types adapted from " *The art of Analysis* by Joyce Leung, Trish Rosseel, Ross Tyner. Date: Unknown. Available online (<http://solr.bccampus.ca:8001/bcc/items/48ac6be3-4285-bd9f-9935-57863b2061a7/1/viewims.jsp?.hb=true&drm.s=true>) under Creative Commons Attribution-ShareAlike 2.0 (Canada) (<http://creativecommons.org/licenses/by-sa/2.0/ca/>) license.
- [3] <http://www.altavista.com/>
- [4] <http://www.ask.com/>
- [5] <http://www.google.ca/>
- [6] <http://search.live.com/>
- [7] <http://www.yahoo.ca/>
- [8] <http://scholar.google.com/>
- [9] <http://www.scirus.com/>
- [10] Information on searching the web and specialised searches adapted from " *The art of Analysis* by Joyce Leung, Trish Rosseel, Ross Tyner. Date: Unknown. Available online (<http://solr.bccampus.ca:8001/bcc/items/48ac6be3-4285-bd9f-9935-57863b2061a7/1/viewims.jsp?.hb=true&drm.s=true>) under Creative Commons Attribution-ShareAlike 2.0 (Canada) (<http://creativecommons.org/licenses/by-sa/2.0/ca/>) license.
- [11] <http://www.doaj.org/>
- [12] <http://www.deakin.edu.au/library/findout/research/litrev.php>
- [13] <http://libguides.library.cqu.edu.au/litreview>
- [14] <http://www.pandia.com/goalgetter/>
- [15] <http://www.internettutorials.net/world-of-search-engines.asp>
- [16] <http://www.internettutorials.net/boolean.asp>

Research methods

Developing a research plan: The research method

Now that you have selected and refined your research topic, you will need to write up a plan documenting how you will carry out your research including the approaches and methods you plan to use when answering your research questions. Your research plan documents the steps you will take to answer your research question(s). These steps are called the research method.

Different disciplines take different approaches to validating and creating knowledge. Even within a discipline, there may be a range of ways of doing



Charting my research plan

research. The reason for the variation is related both to the history of the fields, and the nature of the topics which are the focus of the various disciplines.

The research approach, methodology, and methods must be suited to the nature of the question you seek to answer.

Many research text books divide research approaches into two categories: qualitative and quantitative. However, these labels exclude many forms of research. Researchers have a wide array of research approaches to choose from going beyond these categories. These approaches will determine the methods used to answer the research question.

This course does not cover the different research methods in substantive detail, but provides a few introductory pointers to get you started on thinking about your research method.

Methodology and research material

Methodology refers to the codified set or practises implemented by a discipline to approach problems and seek answers. It determines what type of material will be suitable for each research question.

The research approach will determine the plan of action and data collection methods for the researcher. Some approaches include:

- *Experiments*. This is an approach where the researcher manipulates and controls certain variables to understand cause and effect. Generally, one or more variables are manipulated to determine their effect on a dependent variable. The experimental design frequently includes a control group where the subjects in this group are left untreated or unexposed to the procedure or intervention being researched (read more ^[1]).
- *Ethnography*. This is an approach used in the social sciences to gather data on human societies, cultures etc. Data collection is often done through participant observation, interviews, questionnaires, etc. and aims to describe the nature of those who are studied through writing^[2].
- *Surveys* use a variety of methods to document data from individual subjects.
- *Historical*. The historical research approach attempts to explain a phenomenon in relation to time (i.e. past, present and future.)
- *Case Studies*. This is also a popular approach used in the social sciences and is based on an in-depth investigation of a single individual, group, organisation or event.



Activity

Taking your research question

- What approach is suited best suited to your research question?
- What type of information do you want to generate?

There are many different ways of gathering research data which will be considered in trying to answer your research question. Typically these are dictated by the chosen methodology. Methods are the practices included in a discipline's methodology, and could also be thought of as the steps considered acceptable to reach a certain objective.

Ways of gathering data

Surveys use:

- Questionnaire
- Interview
- Document analysis
- Mailed questionnaire
- Telephone interview
- Content analysis

Experiments use

- Controlled experiment
- Randomised controlled trial

Ethnography uses

- Observation
- Interview
- Artifact analysis
- Participant observation
- Open-ended interviews



- Interpretation of visuals

Case Studies use

- material from a case or cases
- can be from a variety of sources

Sampling

Sampling concerns who to include as subjects, participants, informants or other sources of information. The sampling approach is dependent on the method used for the research project. In the case of quantitative research studies involving statistical analysis, we recommend that you consult a statistician or researcher well versed in research design. Most education institutions provide access to these services for their learners. Once the data has been collected, it is often too late to correct mistakes in the research design or sampling methods chosen. Get advice before you start collecting data.

Cultural considerations

When researchers work with human beings, they have a responsibility to respect the individuals with whom they are working. This responsibility includes respecting the social and cultural sensitivity of the particular population to which the individuals belong.

Ethically-sound research considers the culture of the participants, or the subject of study as an important component ensuring that the research is safe. Consider for example this interesting discussion of ethical and cultural considerations in the study of non-tree forest products ^[3].

Ethical and legal considerations

Ethics is an important consideration in all forms of research. From archival to clinical research, researchers must be concerned with ensuring that their work is morally right. There are several key ethical considerations of research, primarily the issue of confidentiality. Confidentiality refers to limiting access to specific data, often by using codes to identify the original source or person. Anonymity however means that names and unique identifiers are never attached to the data, or known to the researcher.

In addition to confidentiality there are several other human rights that must be protected when humans are part of the research process. These include:

- Freedom from harm
- Full disclosure
- Respect for people
- Informed consent
- Minimisation of harm

Many researchers, in particular those using humans or animals in their research, must obtain ethical approval from an ethics committee prior to collecting information. The procedures for obtaining ethical approval are similar from one environment to another.

The Nuremberg Code ^[4] was paramount in setting the standard of ethical considerations for human research and we recommend that you consult this resource.



Activity

Writing up your research plan

You are now at the point where you can compile your first draft of a research plan. A research plan is a living document and typically a few revisions and iterations will be required as your project progresses. The research plan should answer the following questions:

- What do you intend to do?
- Why is the work important?
- What has already been done?
- How are you going to do the work?

To get started, you can consult this research plan framework ^[5] and write up a research plan under the following headings:

1. Specific aims (what you intend to do - the research question)
2. Background (Why the research is important)
3. Preliminary Studies and Progress Reports (What has already been done (derived from the literature survey))
4. Research Design and Methods (How you will do the work)

Organisation of research materials

Analysis is the part of the research process where the researcher subjects the facts obtained thus far to critical evaluation and/or organisation.

This analysis will use a method which aligns with the research approach and nature of the material the researcher has collected. The researcher will normally provide an explanation for the type of analysis they have chosen to use so that the readers of the study can themselves critically assess the soundness of the results of the study. Examples of analysis types of research materials

Experiential

- Narrative
- Grounded theory
- Conversation analysis

Numerical

- Descriptive statistics
- Inferential statistics

Textual

- Content analysis
- Literary criticism



Web Resources

- Experimental research design ^[1]
- Ethnographic research ^[6]
- Case study as research method ^[7]
- Survey research ^[8]

[1] <http://www.experiment-resources.com/experimental-research.html>

[2] <http://en.wikipedia.org/wiki/Ethnography>

[3] <http://web2.uvcs.uvic.ca/courses/ntfp/commerce/index.htm>

[4] <http://www.cirp.org/library/ethics/nuremberg>

[5] <http://www.ahrq.gov/fund/esstplan.htm>

[6] <http://faculty.chass.ncsu.edu/garson/PA765/ethno.htm>

[7] <http://www.ischool.utexas.edu/~ssoy/usesusers/l391d1b.htm>

[8] <http://www.socialresearchmethods.net/kb/survey.php>

Presentation

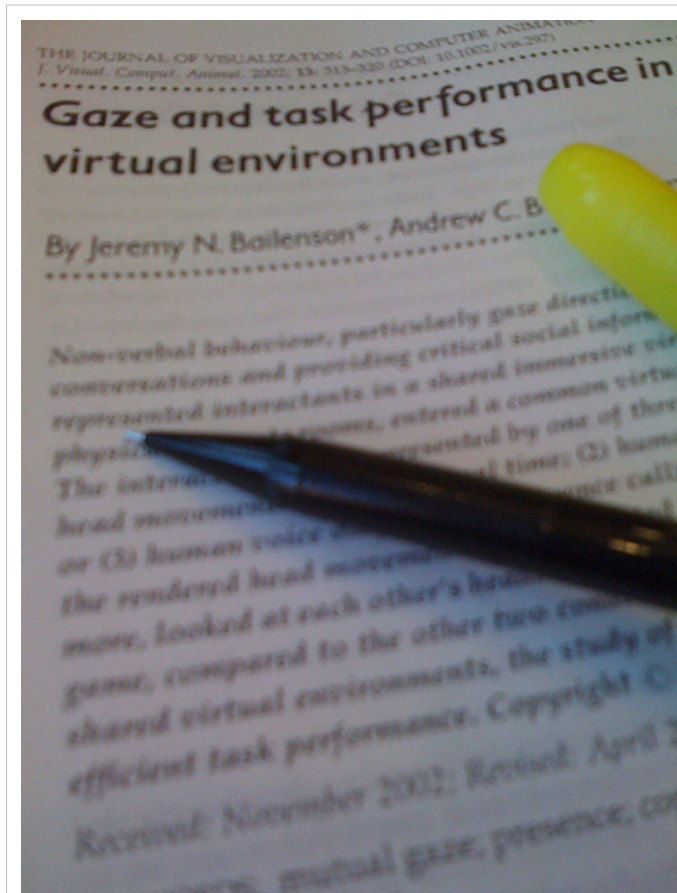
Presentation of research findings

Once the information is analysed it needs to be presented in some way to inform others, particularly those in your field. The purpose of the presentation is to share new knowledge with people likely to be interested or affected by the findings. Research studies help to provide the foundation for knowledge to advance, and for people with related interests to expand their understanding of the topic.

Journals are the traditional way of presenting research information. But it is not the only way. Posters, conference presentations, exhibits and performances are other forms of research presentation.

Furthermore, research material can be presented virtually, or on-line, or by traditional means. In some cases, it can be simultaneously presented in a hard paper, and on-line journal

The directory on open access journals ^[11] is an example of the opportunities available both to present findings and to seek quality information to inform your research.

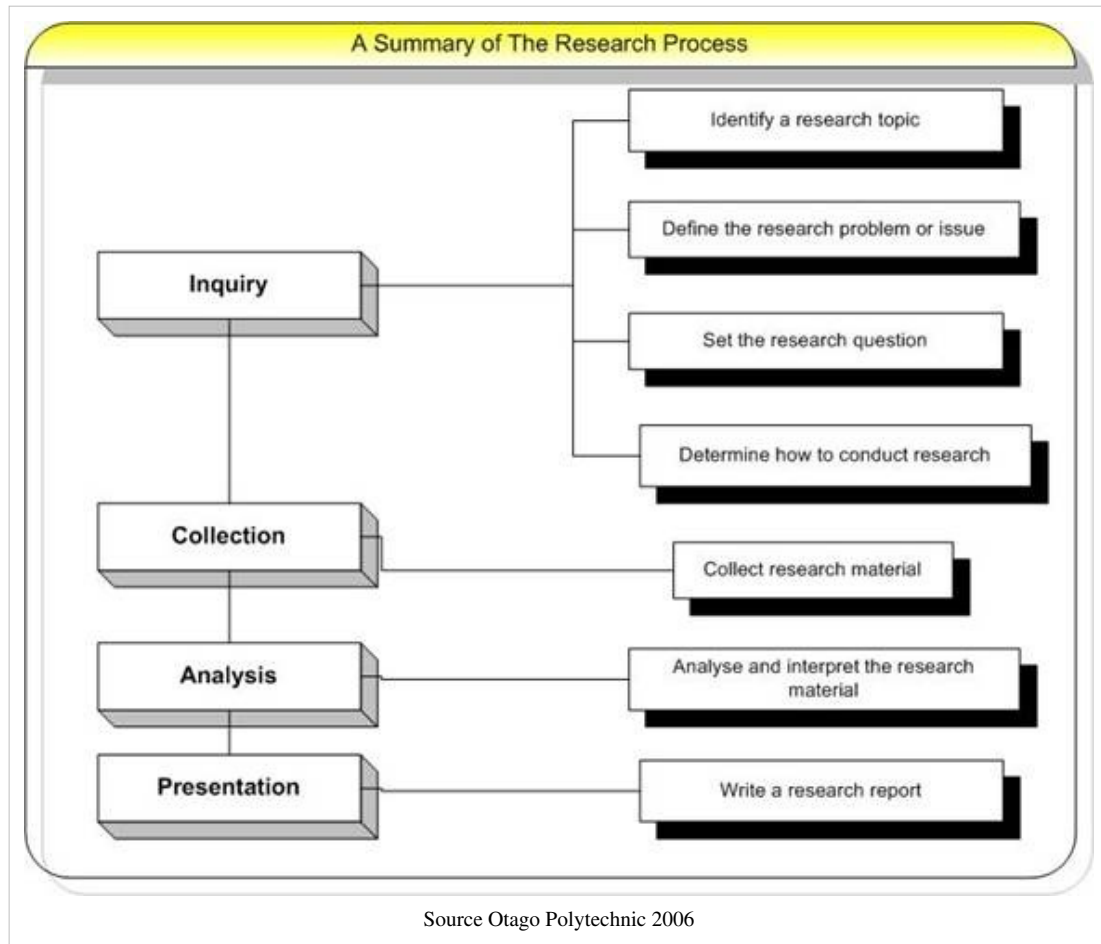


Publishing your research

Summary

Summary of the research process

The research process is one which requires a rigorous, ethical, sensitive and insightful approach to knowledge. While this unit demonstrates the great range of considerations that a researcher must keep in mind, this table summarises the process in a simple manner.



Web Resources

[A useful Wikieducator resource on Research ^[1]] By PJ Nyanjui Kenya Institute of Education

WikiHow ^[2] The wikihow pages

How to get started in Research ^[3] - Ohio State University

So you have to do a research project. ^[4] This site is designed for Junior High Students - It has some great points

References

Collis, J., & Hussey, R. (2003). *Business research: A practical guide for undergraduate and postgraduate students*. Basingstoke Hampshire, UK: Palgrave Macmillan.
<http://wikieducator.org/Research>

References

- [1] <http://www.wikieducator.org/Research>
- [2] <http://www.wikihow.com/Get-Started-With-a-Research-Project>
- [3] <http://liblearn.osu.edu/tutor/les6>
- [4] http://www.ri.net/schools/East_Greenwich/research.html

Article Sources and Contributors

Getting started *Source:* <http://wikieducator.org/index.php?oldid=608198> *Contributors:* HeatherDay, Mackiwg, Robin Day

Defining research *Source:* <http://wikieducator.org/index.php?oldid=608199> *Contributors:* HeatherDay, Mackiwg, Robin Day

The research process *Source:* <http://wikieducator.org/index.php?oldid=608194> *Contributors:* HeatherDay, Mackiwg, Robin Day

The research question *Source:* <http://wikieducator.org/index.php?oldid=608195> *Contributors:* HeatherDay, Mackiwg, Robin Day

Evaluating a research question *Source:* <http://wikieducator.org/index.php?oldid=608172> *Contributors:* HeatherDay, Mackiwg, Robin Day

Finding information *Source:* <http://wikieducator.org/index.php?oldid=608388> *Contributors:* HeatherDay, Mackiwg, Robin Day

Research methods *Source:* <http://wikieducator.org/index.php?oldid=608433> *Contributors:* HeatherDay, Mackiwg, Robin Day

Presentation *Source:* <http://wikieducator.org/index.php?oldid=608436> *Contributors:* HeatherDay, Mackiwg, Robin Day

Summary *Source:* <http://wikieducator.org/index.php?oldid=607868> *Contributors:* HeatherDay, Mackiwg, Robin Day

Image Sources, Licenses and Contributors

Image:Working-desk.jpg *Source:* <http://wikieducator.org/index.php?title=File:Working-desk.jpg> *License:* Creative Commons Attribution 3.0 *Contributors:* The Shopping Sherpa

image:icon_objectives.jpg *Source:* http://wikieducator.org/index.php?title=File:Icon_objectives.jpg *License:* unknown *Contributors:* BrentSimpson, Charmcastillo, ICT-RIEM 2008-09, Mackiwg, Myron, Nelliemuller, Ontymaroks

Image:Pipetten.JPG *Source:* <http://wikieducator.org/index.php?title=File:Pipetten.JPG> *License:* Public Domain *Contributors:* Luigi Chiesa, Newbie, 2 anonymous edits

image:icon_activity.jpg *Source:* http://wikieducator.org/index.php?title=File:Icon_activity.jpg *License:* unknown *Contributors:* BrentSimpson, Dobell, Mackiwg, Ontymaroks, Sammy, Singhkamal, Udsingh

image:icon_reflection.gif *Source:* http://wikieducator.org/index.php?title=File:Icon_reflection.gif *License:* unknown *Contributors:* Mackiwg

Image:Wikipedia svg logo-en.svg *Source:* http://wikieducator.org/index.php?title=File:Wikipedia_svg_logo-en.svg *License:* GNU Free Documentation License *Contributors:* User:Otourly

image:icon_define.gif *Source:* http://wikieducator.org/index.php?title=File:Icon_define.gif *License:* unknown *Contributors:* Anil Prasad, Mackiwg

image:comment.gif *Source:* <http://wikieducator.org/index.php?title=File:Comment.gif> *License:* unknown *Contributors:* Mackiwg

Image:The Research Process.jpg *Source:* http://wikieducator.org/index.php?title=File:The_Research_Process.jpg *License:* unknown *Contributors:* Mackiwg, Robin Day

image:Foglec.jpg *Source:* <http://wikieducator.org/index.php?title=File:Foglec.jpg> *License:* Creative Commons Attribution-Sharealike 3.0 *Contributors:* User:Tamasflex

Image:456668792 8cfe14a689.jpg *Source:* http://wikieducator.org/index.php?title=File:456668792_8cfe14a689.jpg *License:* Creative Commons Attribution-Sharealike 3.0 *Contributors:* bigbold

Image:Tapping a pencil.jpg *Source:* http://wikieducator.org/index.php?title=File:Tapping_a_pencil.jpg *License:* Creative Commons Attribution-Sharealike 3.0 *Contributors:* Mackiwg

image:Google scholar.png *Source:* http://wikieducator.org/index.php?title=File:Google_scholar.png *License:* unknown *Contributors:* User:Mackiwg

image:Scirus_screenshot.png *Source:* http://wikieducator.org/index.php?title=File:Scirus_screenshot.png *License:* unknown *Contributors:* User:Mackiwg

image:icon_inter.gif *Source:* http://wikieducator.org/index.php?title=File:Icon_inter.gif *License:* unknown *Contributors:* BrentSimpson, J vidals, Maslow

image:Mapping my plan.jpg *Source:* http://wikieducator.org/index.php?title=File:Mapping_my_plan.jpg *License:* Creative Commons Attribution-Sharealike 3.0 *Contributors:* Jinho.Jung

Image:Take note.jpg *Source:* http://wikieducator.org/index.php?title=File:Take_note.jpg *License:* Creative Commons Attribution-Sharealike 3.0 *Contributors:* Danielle Scott

image:Published research article.jpg *Source:* http://wikieducator.org/index.php?title=File:Published_research_article.jpg *License:* Creative Commons Attribution 3.0 *Contributors:* Mackiwg

Image:Summary of the research process.jpg *Source:* http://wikieducator.org/index.php?title=File:Summary_of_the_research_process.jpg *License:* unknown *Contributors:* Robin Day

License

Creative Commons Attribution Share-Alike License
<http://creativecommons.org/licenses/by-sa/3.0/>
