

BRIEF GUIDELINES FOR INITIATING A POSTGRADUATE RESEARCH PROJECT.

You need to conduct research (i.e. lab or field work) that must be original and based on a research question agreed upon with your supervisor. Your research must contribute original and new knowledge to your field of study as seen by other scientists anywhere in the world.

KNOWING WHAT OTHER SCIENTISTS HAVE PUBLISHED ON YOUR SUBJECT: DEFINING THE CUTTING EDGE



Postgraduate research must contribute to the advancement of science at the international level. The international relevance of your research means that you need to have a thorough knowledge of what is being written about within your particular topic. A very large part of a researcher's time is simply reading, and making notes of the points of view of different authors. This requires that you are acquainted with the scientific and professional journals as well as the books that deal with your particular study topic. This knowledge enables you to define the cutting edge in your discipline. What is a cutting edge? It is the latest findings and the questions thereupon written about in professional journals and being discussed at professional meetings in your area of research. You need to be able to explain this "cutting edge" to your supervisors.

The perspective of the cutting edge relates to work done all over the world. Think of countries that are similar to South Africa in some ways, e.g. Brazil/Argentina, India or East Africa. Alternatively look at those countries in which your particular discipline has developed the fastest, or countries where most of the world-wide experts work. Think of other scientists who work on a similar problem, even though the country, situation or animal/plant species being studied may differ from yours. A list of world-wide experts in your particular discipline should emerge from your reading of the world-wide literature. In order to achieve this, you need to do extensive reading of journals, books and conference proceedings. One cannot start a research project without knowing what the rest of the world thinks about the problem area that you are interested in. The library of the University has an exhaustive collection of literature that will allow you to get access to the materials that you require. Many articles are also available on-line, but please note that only officially published papers (i.e. which underwent a process of review by an editorial committee) are acceptable as undisputable references.

DEFINING A RESEARCH PROJECT THAT RELATES DIRECTLY TO THE CUTTING EDGE

The next step is to think of a research topic that will contribute to the cutting edge that has been defined above. You need to be able to answer the question: "How will my research contribute to the world-wide cutting edge?". Regardless of whether your project is

observational or experimental, you need to be able to explain how you are going to add to the cutting edge. The first step for doing this is defining the AIMS of your research project.

Your aims should:

1. Relate directly to the cutting edge of your discipline.
2. You need to be able to evaluate afterwards whether you have reached your aims or not.
3. be of such magnitude that you can complete the work within a reasonable amount of time (1-2 years for a Masters degree; 2-4 years for a PhD).

One of the easier ways to define the aims of a research project is to define one or more specific hypotheses that you want to test with your work. The hypotheses should:

1. stem directly from the state of the cutting edge that you have defined.
2. be directly testable.

The aims of your projects must deal purely with a better scientific understanding of the world around us. The scientific community is not interested in whether your work is directly useful to your employer or your funding agency. The results may be useful, but often they are not directly applicable, yet they contribute to our understanding of your field of study. Therefore the scientific standing of your research aims is the only criterion for deciding their worth in a university environment. A project title such as "A management plan for the reduction of air pollutants" does not have research merit unless it contributes new insights in to the management of air pollutants.

DECIDE HOW TO ACHIEVE YOUR AIMS.

Having defined specific aims for your research, you need to decide how you are going to achieve these, i.e. what your methods will be. This requires that you have decided on an appropriate way of collecting the relevant information and how you will process this information in order to arrive at a logical conclusion about the aims that you wish to achieve.

WRITING A SHORT RESEARCH PROPOSAL

A research proposal is a document that explains why your research is relevant to the rest of the world and how you will achieve your research aims. A common way of organising a research proposal is:

Problem definition: This section explains the scientific problem area and what the approaches and opinions are of other authors in the discipline, based on your review of the international literature.

Research question: This section explains the exact problem that you will investigate; e.g. "Can the general public aid in better air pollution monitoring?"

Hypotheses: This section explains specific hypotheses that you wish to test in order to contribute to the research question defined above; e.g. "a) The public is sufficiently interested in air pollution that they will actually be prepared to spend time and energy towards the monitoring of air pollution. b) It is possible to teach the public to perform two very simple air sampling techniques. c) The air samples collected by the public are reliable and analysable to determine air pollution." Each of these hypotheses should be individually testable.

Methods: This section describes in detail the procedure through which you will go in order to test each of your hypotheses above. This will include some type of workplan as well as a time schedule for different activities.

Expected results: This section outlines the results that you expect to obtain and how these results will aid in testing the hypotheses that you have defined.

A proposal such as the above contributes towards the planned execution of your research and ultimately facilitates the writing of your thesis and obtaining the degree for which you registered.