

Types of research

How to select the research topic?

The final thesis' structure

What scientific research is...?

(partially based on Stone, 2000)

- Research is an **original contribution to knowledge**.
- For being recognised by the scientific world, your scientific research should show 3 things:
 1. that you identified one (or more) **unanswered scientific question(s)**
 2. that you are **able to provide the answer(s)** to these question(s)
 3. that you have provided these answer(s) on the basis of a **robust/convincing methodology!**

(→ *Supervisors are supposed to provide guidance on the difficulty of the question(s)*)

What scientific research is...?

(Source: Stone, 2002 – modified)

→ And, at the end, your scientific research results **must** be **communicated to other scientists**. In other words, your research results **must** be **published!**

- The PhD thesis
- Papers connected to your PhD thesis
- Papers constituting your PhD thesis

4 main types of PhD thesis

Traditional Simple (6/15) <ol style="list-style-type: none"> 1. Introduction 2. Literature Review 3. Materials and Methods 4. Results 5. Discussion 6. Conclusions 	Traditional Complex (4/15) <ol style="list-style-type: none"> 1. Introduction 2. Literature Review 3. (Background Theory) 4. (General Methods) 5. Study 1 <ul style="list-style-type: none"> • Introduction • Methods • Results • Discussion 6. Study 2 <ul style="list-style-type: none"> • Introduction • Methods • Results • Discussion 7. Study 3+ <ul style="list-style-type: none"> • Introduction • Methods • Results • Discussion 8. Discussion 9. Conclusions 	Compilation Based (1/15) <ol style="list-style-type: none"> 1. Introduction 2. Background to the Study 3. Research Article 1 <ul style="list-style-type: none"> Introduction Literature Review Materials and Methods Results Discussion Conclusions 4. Research Article 2 <ul style="list-style-type: none"> Introduction Literature Review Materials and Methods Results Discussion Conclusions 5. Research Article 3 <ul style="list-style-type: none"> Introduction Literature Review Materials and Methods Results Discussion Conclusions 6. Conclusions
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Paltridge, B. (2002). Thesis and dissertation writing: an examination of published advice and actual practice, English for Specific Purposes, 21(2): 125-143

How to select (or better focusing) the topic of your thesis/research

How to select the topic of your thesis/research

Main criteria:

- Your personal interests and attitudes (also with respect to 5 types of research... – see next slides)
- Already available information (and sources)
- Contacts
- Funds?
- Sponsors' interests?
- (Utility for the community)

5 main types of research (=papers, thesis)

1. The acquisition and interpretation of new knowledge
2. The re-organization or re-evaluation of old knowledge in a relevant context
3. The development, testing and refinement of information-capture methodology
4. The generation of knowledge from new case studies with direct or indirect applicability to the understanding of a topic
5. The critical, formal and analytical description of natural resources, production practices or other issue characteristics or their development or management

1. The acquisition and interpretation of new knowledge

→ *direct surveys; research carried out mainly on primary sources of information*

E.g.:

Survey exercises on the market demand for responsible-produced/high quality products

Survey exercises for assessing the risk for timber coming from illegal logging activities in selected countries

2. The re-organization or re-evaluation of old knowledge in a relevant context

→ *assembly of data bases; comparison-studies; meta-analysis – research carried out mainly on secondary sources of information*

E.g.:

Comparative studies on import-export data of biomasses for analysing discrepancies
Comparison studies among different standards for responsible management

3. The development, testing and refinement of information-capture methodology

→ *elaboration, improvement or adaptation of working procedures, creation of new methodology to collect data, ...*

E.g.:

Elaboration of procedures and operational tools for assessing good governance of natural resources at local level

4. The generation of knowledge from new case studies with direct or indirect applicability to the understanding of a topic

→ *case studies*

E.g.:

Assessment of the economic value of externalities like biodiversity protection or water quality improvement in selected rural area case studies

5. The critical, formal and analytical description of natural resources, production practices or other issue characteristics or their development or management

→ *modelling, software development, ...*

E.g.:

Modelling: the devising or use of abstract or mathematical models to describe how something - such as a process, theory, or system - works

Not mutually exclusive research typology!

A thesis, above all when “traditional complex” or “compilation based” may integrate two or even more research typologies

Exercise

- Working in groups: 2-3 students/group
- Read through at least 2 random selected scientific papers (from various issues of scientific Journals distributed in classroom)
- Try to classify each paper according to one or more types of research (= 5 types of research as previously listed).
- Discussion (group by group)

The 5 main types of research

1. The acquisition/interpretation of **new knowledge** (**direct survey**)
2. The **re-organization or re-evaluation of old knowledge** in a relevant context (**comparison studies, meta-analysis, ...**)
3. The development, testing and refinement of **information-capture methodology**
4. The generation of **new case-studies** with direct or indirect applicability to the understanding of the topic
5. The critical, formal and analytical description of natural resources or other issues, or their development or management, including **modelling** and **softwares development**

How to select the topic of your thesis/research

... still no ideas?

- Try and write abstracts on topics of your interest, collecting a few core papers
- Look at the “future research section” of papers and others (MSc and PhDs thesis, etc.)
- *Rightsize* your dissertation problem

Source: Stone, 2002

The logical framework of a research activity

Some thoughts... Publish or perish
"You need to be concentrated to carry out the revolution"
(Source: Stone, 2002 – modified)

How to perform good research?
 No prescriptions... **process of doing research is unstructured!**

Doing research is a **grind!**

- **Hard to stay motivated** in a vacuum... (and writing)!
- Many daily operations: **reading papers**, writing review of papers, **discussing ideas**, finding brilliant ideas, ...
- **To stay in contact** with other students, academics and, above all, supervisors is important
- Being always **focused and oriented** to your final objectives

How doing strategic grind...
(Source: Stone, 2002 – modified)

- **Be selective in what you read through**
 - scan before reading
 - by **reading abstract and conclusions**, first!
 - if it still looks interesting, read and read it again
 - summarise the ideas/findings
 - find appropriate conferences (always a risk!!!)
 - ask your supervisors and other academics

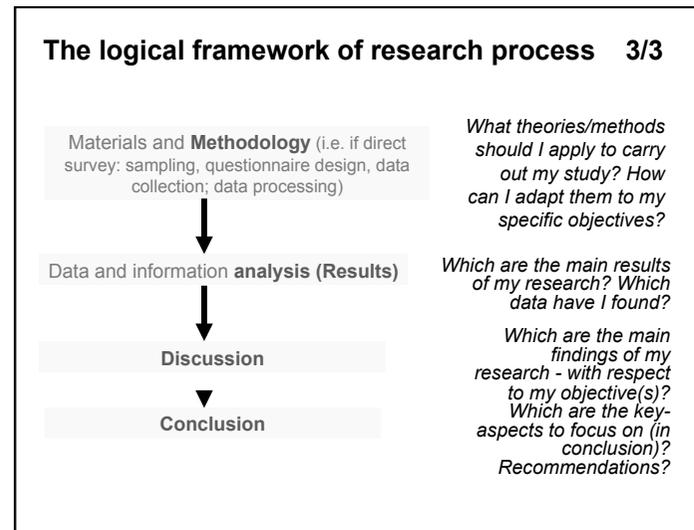
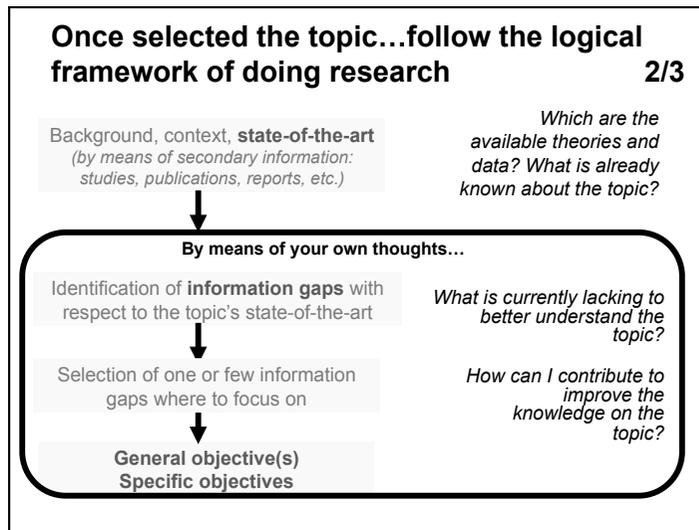
By the way... do not worry, it's normal to feel overwhelmed!

Once selected the topic... follow the logical framework of doing research 1/3

By means of literature review (see later)

Background, context, **state-of-the-art**
(by means of secondary information: studies, publications, reports, etc.)

Which are the available theories and data? What is already known about the topic?



When writing, ... please think of the reader(s)

(Source: Stone, 2002 – modified)

- **Write simple!**
- Do **not** make **unreasonable assumptions** about your audience
- Examiners (and supervisors!) **hate** to loose time to understand poorly named sections, to check references, % and other basic results, and wade through bad grammar

The research question(s) and the problem statement

A generic paper/thesis structure

(Source: Stone, 2002 – modified)

Abstract

- Summary of the question
- Justification for question
- Birdseye view of the results

Introduction

- Summary of the question
- Justification for question
- General organization of the paper/thesis

Background information

- particularly if you encompasses two or more traditional areas (as often might happens)

A generic paper/thesis structure

(Source: Stone, 2002 – modified)

Literature review

- State-of-the-art
- Organised by ideas rather than time/author/geography

The problem statement/the research question

(the core/foundation of your research)

- Concise statement of question
- Justification, refer closely to review (analysis)
- Explain why question is worthwhile (applicability)

A key-aspect: the formulation of the research core

In order to carry out a clear, comprehensive, effectiveness research activity and to justify your efforts, 2 points are of paramount importance:

1) clearly formulate the research question(s)

A key-aspect: link the core question to your conclusions

2) clearly link the research question(s) (= the *Objective(s)*) to the results/findings (= *where to focus on the discussion and the conclusion*)

'Originality is proven by thorough review of topic and closely related topics and reference review to demonstrate that question(s) has/have not previously answered and it is worthwhile answering' (Stone, 2002)

Exercise

Read through the selected **examples of problem statements and related conclusions and/or draft papers**.

1. Are they properly formulated, complete and clear?
2. Let's try and correct/improve them.
3. Have the authors been able to provide clear answers to their own research questions? If not, why?

Discussion

Guiding-questions in papers/thesis evaluating ...

Source: Stone, 2002 - modified

- Did the described ideas really work?
- Are there any really interesting idea?
- Which have been the motivations of the author(s)?
- Validity of assumptions?
- Is the methodology clear and robust?
- Which were the results?
- Any future direction?

Exercise

The research core/foundation should be (carefully) prepared by developing a **research synopsis (RS)**

1. Read through the guidelines for RS
2. Read through examples of RS presented by PhD candidates for their selection and find weaknesses/mistakes

Discussion