Master Your Thesis!

Thesis Preparation Workshop

TUM Faculty of Informatics

SS 2024

MASTER YOUR THESIS: KEY DATES

April
Friday
26

Kick-off

Organizational matters. Status analysis.
Specification of needs and goals. Master's Thesis writing as a project.
Writer's block. Outlining rules.

May
Friday
03

Writing the Thesis Proposal

Feedback to outlines. and self- reflections.
Requirements for MTh and for written proposals.
Sections of proposals. Focus : Introduction, conclusions, title.

June
Friday
07

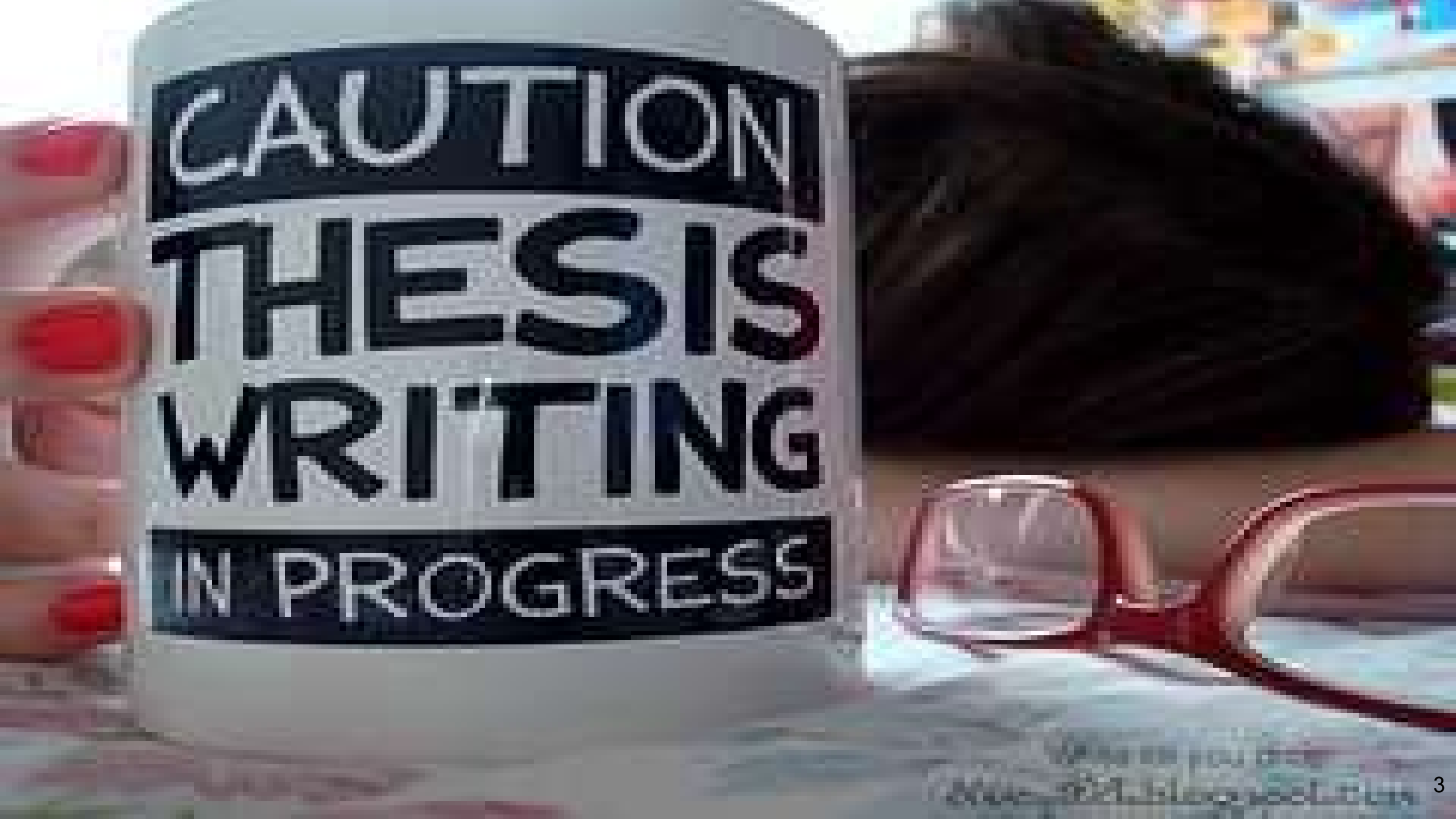
Effective Scientific Presentations

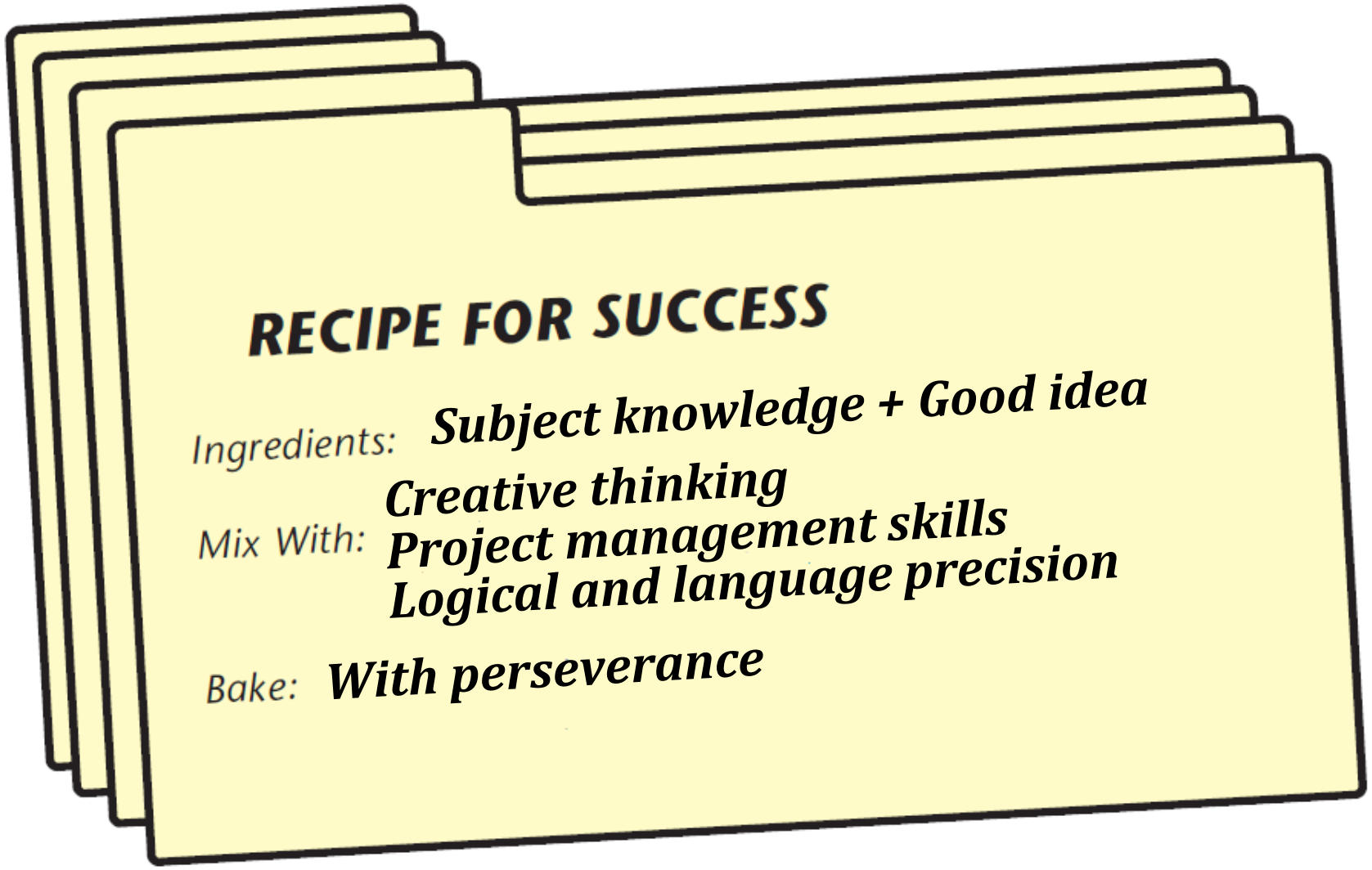
Abstract writing. Telling your story. Visual communication.
Debriefing of the workshop. Matching achievements against envisioned goals. Assessment of group work.

July
Friday
05

Oral Presentations (immanent examination)

Pre-proposal presentations with peer feedback.


CAUTION
THESIS
WRITING
IN PROGRESS


RECIPE FOR SUCCESS
Ingredients: Subject knowledge + Good idea
Mix With: Creative thinking
Project management skills
Logical and language precision
Bake: With perseverance

1. Problem

SOLUTION

2. Goalsetting

Prioritizing
SMART goals

3. Research Question

Indirect question
Hypothesis
Thesis (=Claim)

4. Conceptual Framework

Theory
Research methods Outlining

5. Literature Review

Selection
Annotated bibliography
Excerpting

6. Overall Approach

Structured literature analysis
Positioning

7. Data Collection

Own experiments, measurements, simulations, case studies, interviews

8. Data Analysis

Visualisation
Statistical analysis
Comparison of primary and secondary data

9. Conclusions and Possible Applications

How Documents and Document Modules Are Related

Legend:

TOC= Table of Contents

Purpose, Problem statement, justification

Hypothesis

Literature review

Method statement

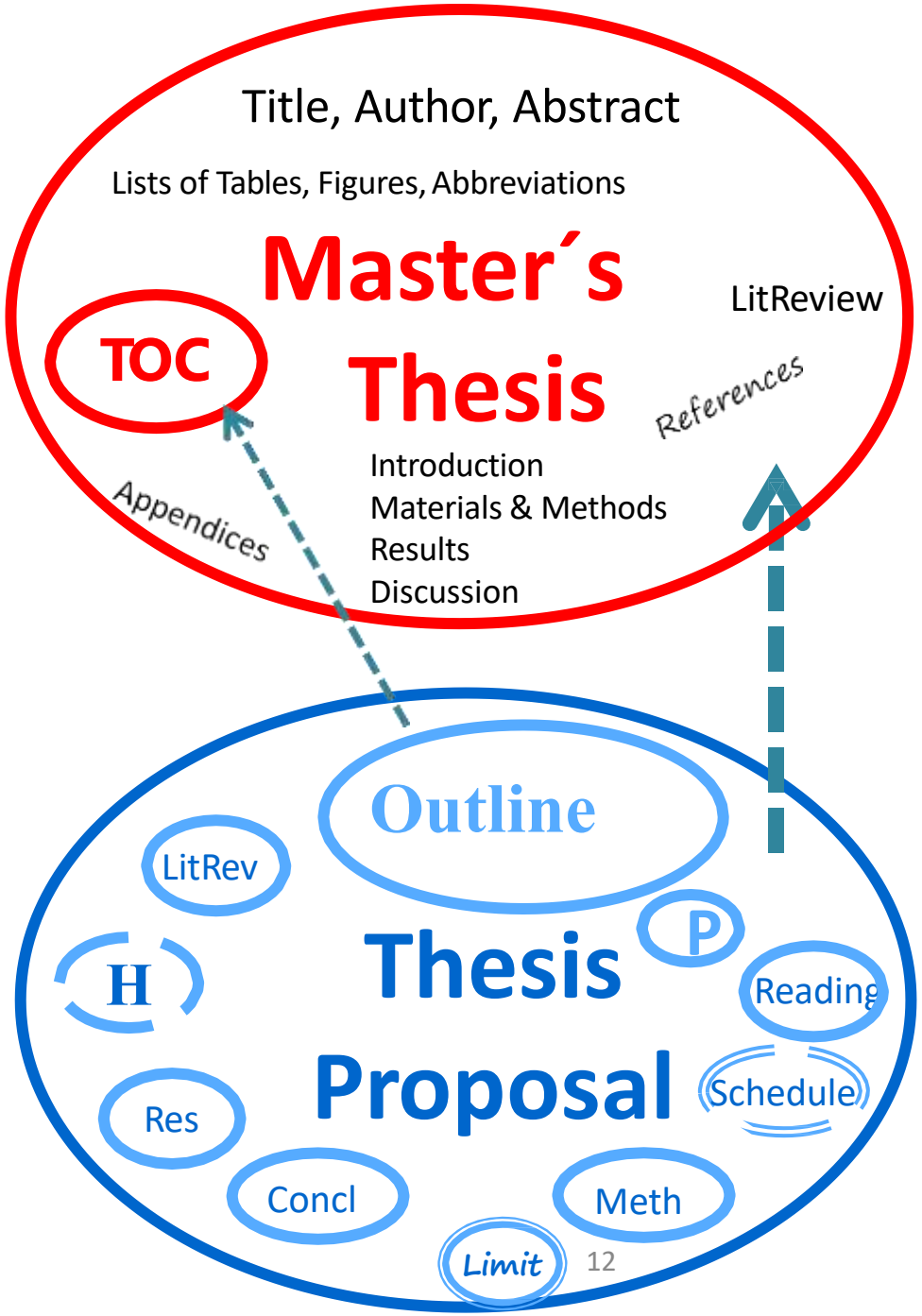
Expected study results

Conclusions and possible uses

Limitations of study

Planned schedule

Envisioned reading list



M´s Thesis Proposal	Outline
Superordinate document	Part of the proposal
Persuasive	Concrete
Shows: • Motivation • Capacity to work • Capacity to manage yourself	Shows: • What will be there in the Master´s Thesis • How it will be arranged
Argumentation	List of full sentences
Compulsory sections	Tree structure
Sections will be extended to or embedded into Master´s Thesis sections	May serve as TOC of Master´s Thesis

YOUR THESIS PROPOSAL

The key goal of a proposal is
to convince a small group of people
(= the thesis committee)
that you have
a workable idea for a Master´s Thesis.

Your Thesis Proposal

needs to show that

- you are researching a good question. ☑
- you have surveyed the secondary literature. ☑
- there are resources available to answer your question. ☑
- you can in practical terms do what needs to be done. ☑

Your Thesis Proposal

- Proof of your
  - familiarity with related research
  - understanding the steps of the research to be conducted
  - ability to complete the research project
  - motivation to carry out the research

Your Thesis Proposal

- Evidence of your
  - expertise
  - knowledge of relevant publications
  - theoretical positioning
  - sound and original idea
  - scientific approach

Introduction of the Proposal

NEVER assume that the reader of the introduction has already read the executive summary.

(The executive summary just repeats!)

- What circumstances led to the proposal?
- What facts best support the project?
- State if the need as acute.
- How does your project relate to similar previous projects?
- What engineering principles will guide your solution?
  (=background)
- Give a brief **overview** of the contents of the whole proposal.

THE *INTRODUCTION* TO YOUR THESIS PROPOSAL

One sentence for each:	*Example:*
Broad introductory sentence (pointing at the area of study)	*A M.Sc. is examined by submission of a thesis...*
The problem (that I tackle)	*Many students fail to complete their theses within the regulation four terms...*
What the literature says about this problem	*Empirical studies indicate that late submission is highly correlated with delaying the start of the write-up...*
How I tackle this problem (my central question/goal)	*A model of M.Sc. study that encourages an early start to the thesis writing task is clearly desirable...*
How I implement my solution	*Such a model encourages the student to plan a structure for the thesis and collect material for each chapter throughout their study...*
The hypothesised result and limiting conditions	*This model dramatically improves submission rates if applied consistently under supervision by all faculty members.*
Offered structure of study	*This thesis is composed of #n chapters, including …*

Project Description or Program

Scope statement

= an explicit statement of what you will and will not be doing to help limit the task.

Explain your approach to the problem in detail:

- What are the technical specifications for the proposed work?
- How will current research be used to help solve the problem?
- How does your work fit into a larger project?
- What are your objectives? *(concrete, measurable, achievable = SMART goals)*
- How will you proceed to achieve these objectives? *(describe and defend chosen methods esp. if new, provide order and timing)*
- How will you evaluate the succes of the project? *(measuring the product, analyzing the process)*

Timeline, Milestones, Budget

Only a few short paragraphs introducing

- Tables
- Gantt-Charts
- Graphs

Containing relevant information

YOUR THESIS PROPOSAL

… should contain:

Missing

- Your problem statement /RQ
- Survey of previous related work
- Summary of your own ideas and preliminary work
- The solution you propose to the problem
- Your plan of action to get to the solution

- Outline of the thesis ✓

Prepare Your Preliminary Proposal!

Use the template structure on Moodle and let yourself be guided by the following questions:

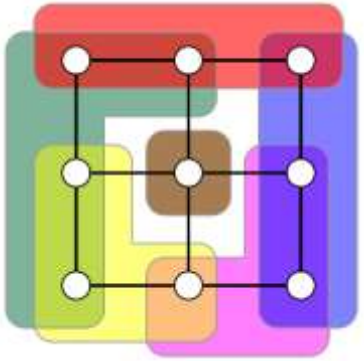
1. What problem are you addressing?
2. What is the contribution to your field of research/inquiry?
3. Why is this problem important (why would this work be meaningful to someone not committed to your field?)
4. How are you going to attack the problem? (how will you subdivide the main task into manageable chunks?)
5. What resources will you need to reach your goal?

N.B.: You do not have to hand in your outline again, nor write it anew.

Open the workflow task on Moodle and

- Upload your pre-proposal for peer-review at latest by ***Friday, May 24, 2024 at 8:00pm.***
- Provide feedback to two peers in the workflow ***Thursday, June 6, 2024at 8:00pm.***

Ten Composition Rules



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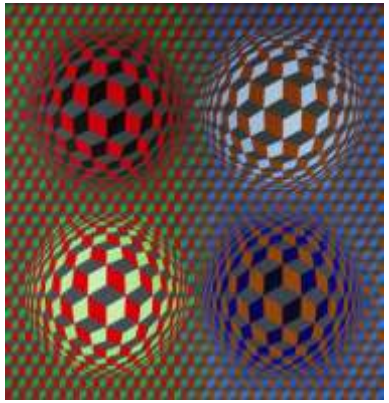

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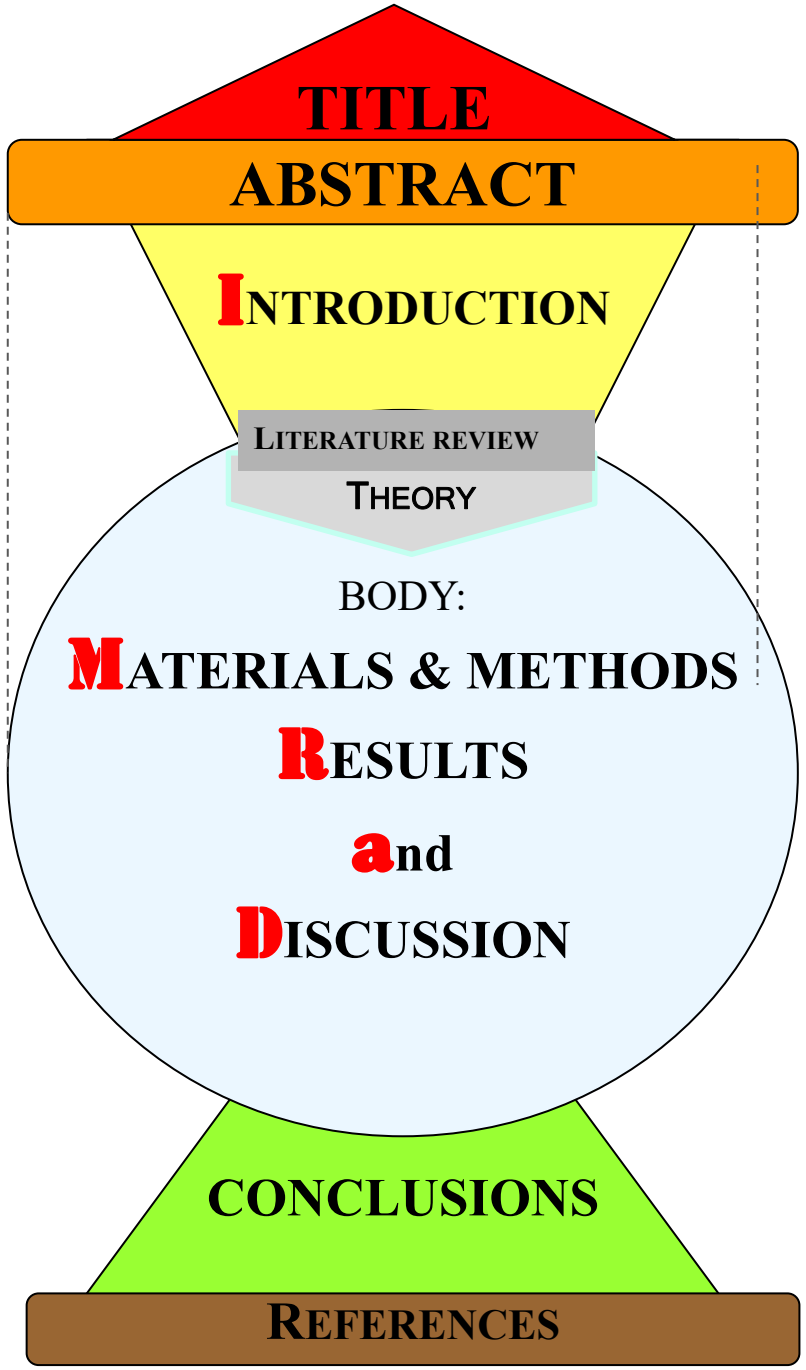
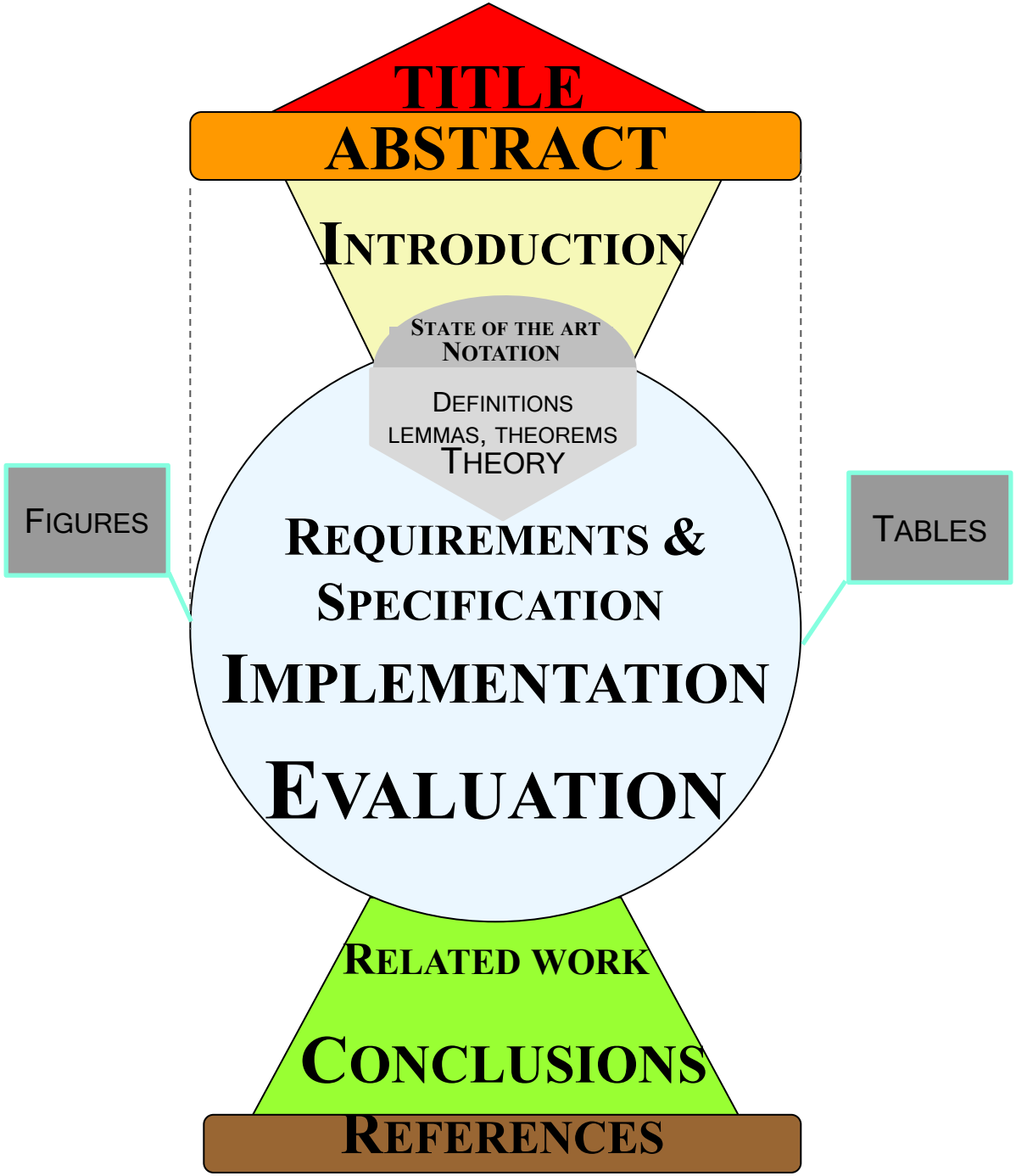
https://affiliateprofitsrevealed.com/wp-content/uploads/2019/03/Readability-Score.jpg

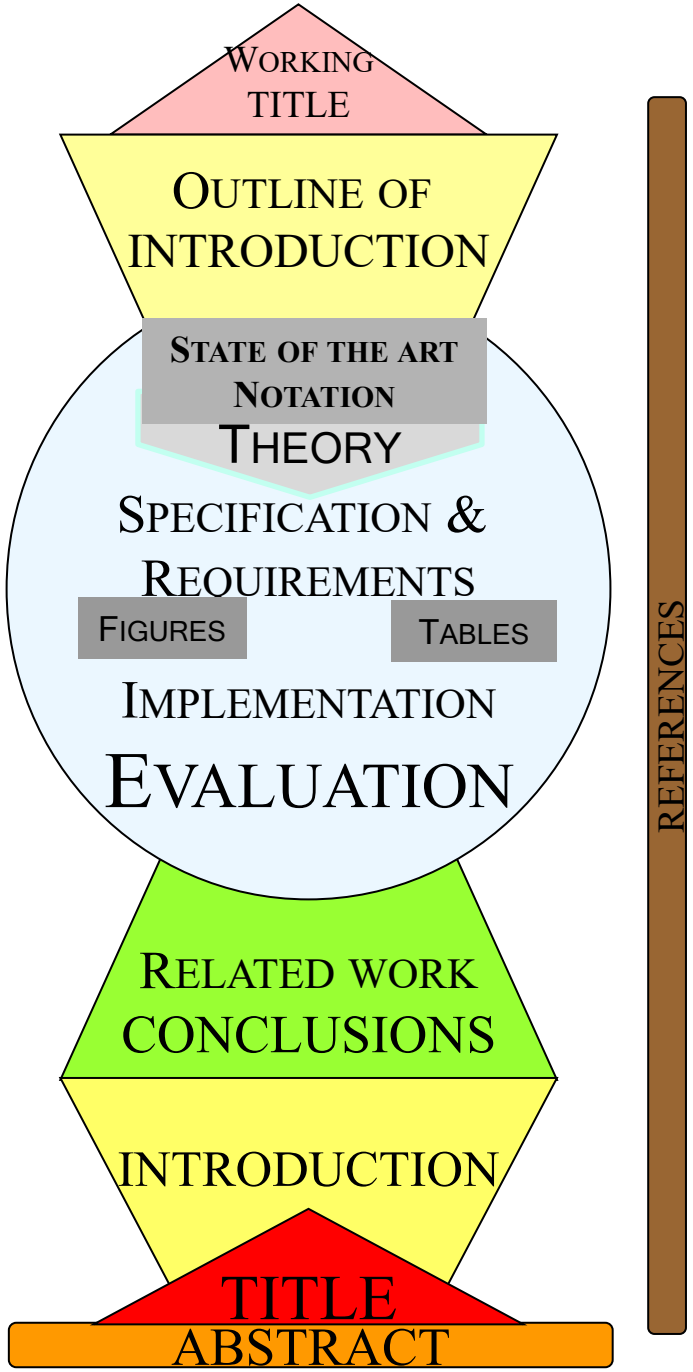
- **Structure rules** (*break it into digestible pieces*)
  - Organize in segments
  - Write segments linearly
  - Consider a hierarchical development
- **Consistency rules** (*be boring creatively*)
  - Use consistent notation and nomenclature
  - State results consistently
  - Don´t underexplain – don´t overexplain
- **Readability rules** (*make it easy for the reader*)
  - Tell them what you´ll tell them
  - Use suggestive references
  - Consider examples and counterexamples
  - Use visualization when possible

THE TYPICAL IMRAD FORMAT OF A MASTER´S THESIS



THE TYPICAL STRUCTURE OF A RESEARCH PAPER IN COMPUTER SCIENCE





When to Write What?

Write modularly
and iteratively,
but regularly.

INTRODUCTION: THE CARS MODEL

CARS = Creating a Research Space

Three main *Moves* + a number of *Steps* to express each move

1. Establishing a research territory
   - showing that the general research area is important, central, interesting, problematic, etc. (optional)
   - introducing and reviewing items of previous research in the area (obligatory)
2. Establishing a niche
   - indicating a gap in the previous research (obligatory)
   - possible extension of that work that will form the basis of the writers' claims. (obligatory)
3. Occupying the niche

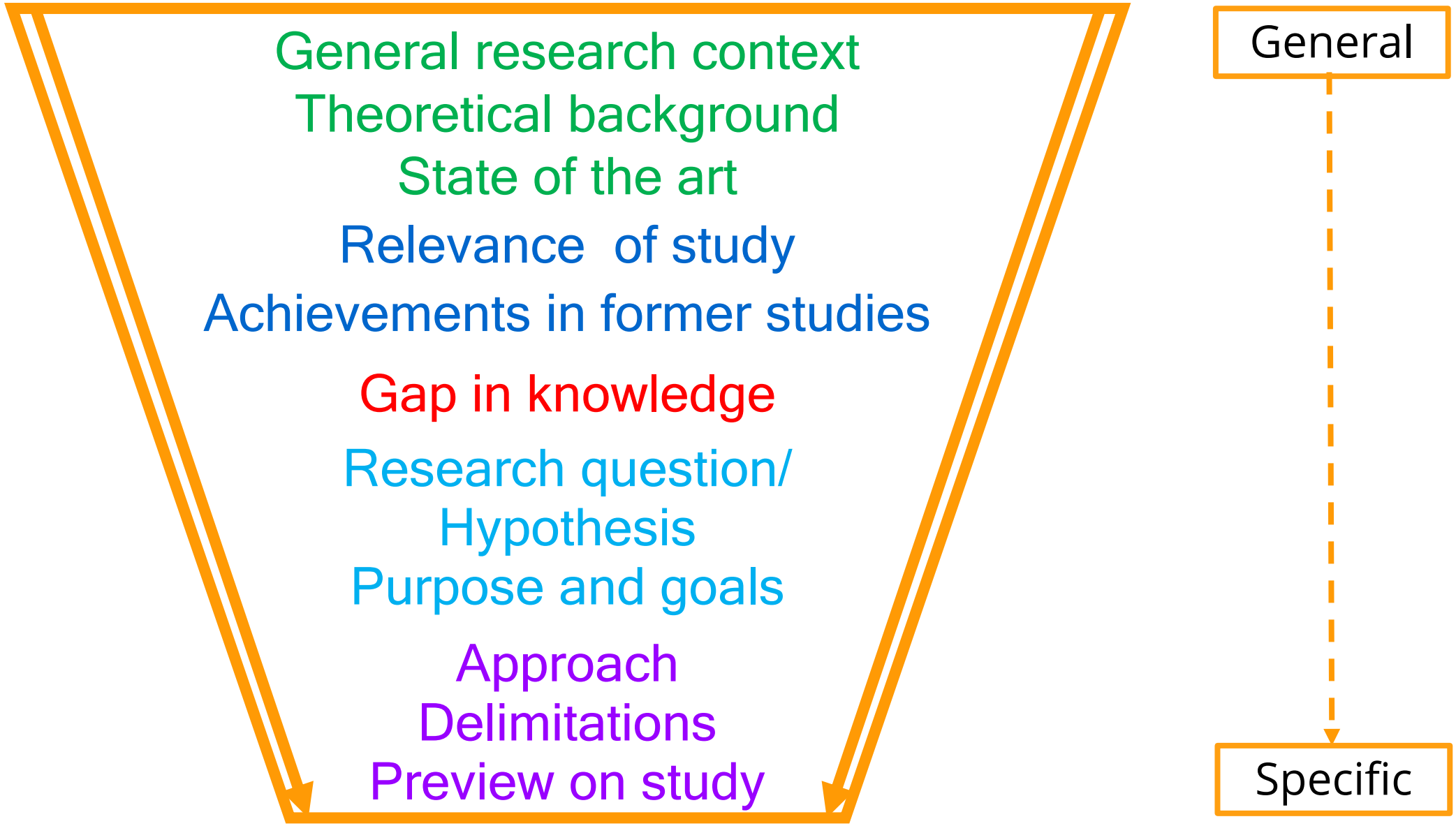
   = Filling the gap by stating the claim and arguing for it.

   - outlining purposes or stating the nature of the present research (obligatory)
   - listing research questions or hypotheses (obligatory)
   - announcing principal findings
   - stating the value of the previous research
   - indicating the structure of the paper

Swales, J.M. (1990) Genre Analysis: *English in Academic and Research Settings.* Cambridge: Cambridge University Press.

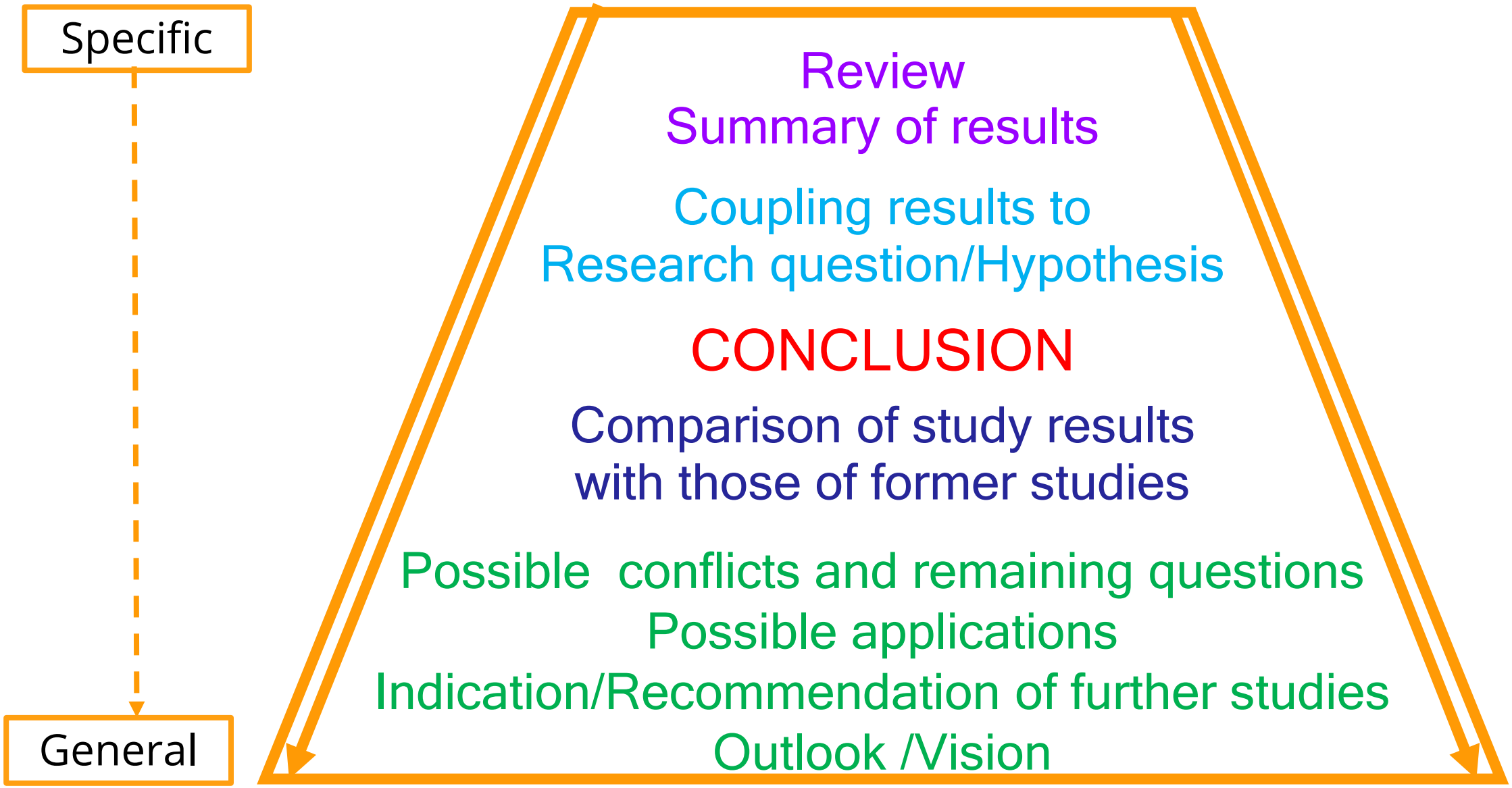
Introduction: The Funnel Model

Functional sections



CONCLUSIONS: INVERSE STRUCTURE

FUNCTIONAL SECTIONS



Inverse Structure of the Introduction and the Conclusions Section