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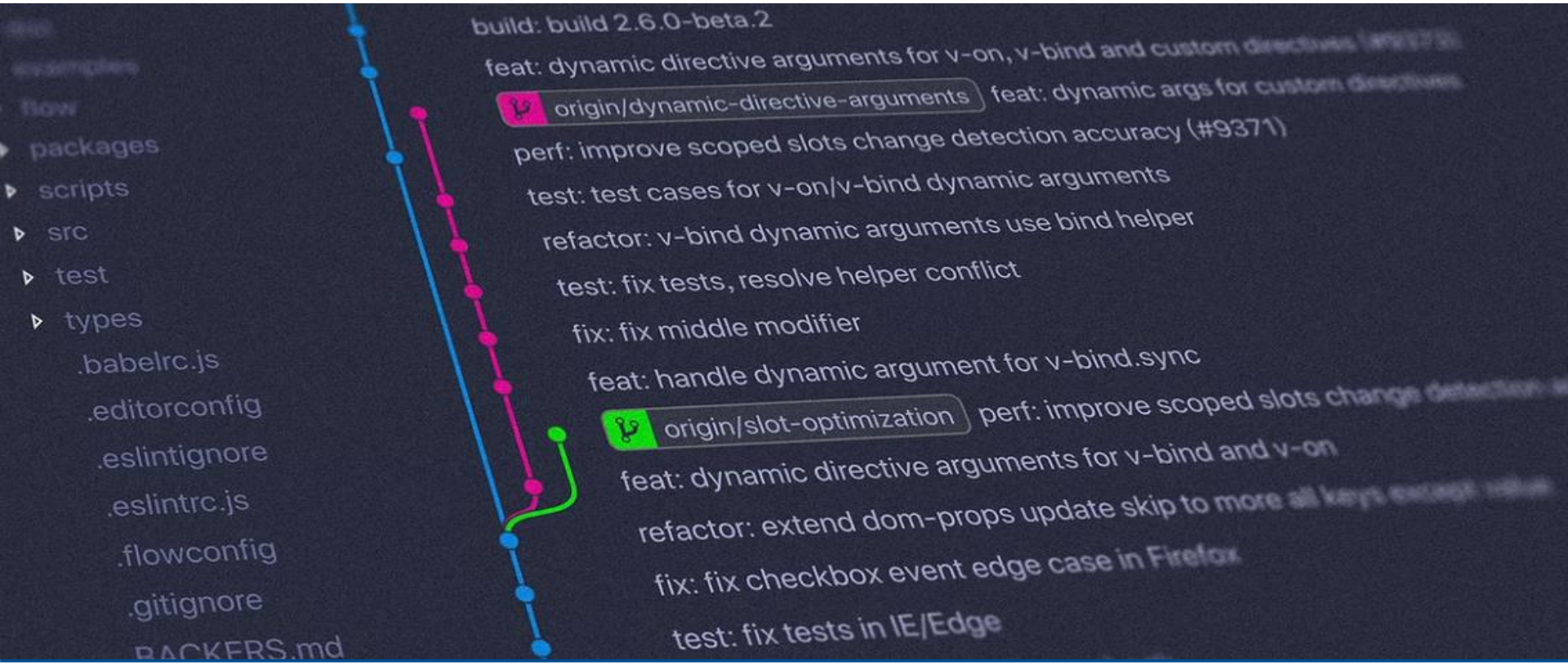

RESEARCH SEMINAR

mprause@uni-koblenz.de

OBJECTIVE

RESEARCH SEMINAR

Primary goal:

- Writing a scientific literature review

Secondary goals:

- Conducting a literature search
- Using a bibliography software
- Excerpting the relevant information
- Summarizing, organizing and structuring the information
- Writing an article
- Getting fluent in LaTeX

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STRUCTURE

The seminar starts with a 90 minutes lecture on academic writing and a selection of topics. The kick-off meeting is followed by a midterm meetings of 2x90 minutes and we are closing with a full day of presentations.

- Kick-off lecture: 17.11.2022, 8 am to 10 am, Room B013.
- Midterm lecture 1 and presentation: 16.12.2022, 8 am to 11 am, Room: E524
- Midterm lecture 2 and presentation: 27.01.2023, 11 am to 1 pm, Room: E524
- Midterm lecture 3 and presentation: 27.02.2023, 10 am to 1 pm, Room: tbd
- Final lecture & presentation: 17.3.2023, 10 am to 4pm , Room: tbd

Physical presence is mandatory for all days. Missing a lecture/presentation will result in a lower grade. Exceptions apply only with an official sickness certificate.

DELIVERABLES

Each student must write an academic paper (about 20 pages) and present the findings in the closing session (20 minutes presentation + 10 minutes Q&A) and a preliminary structure in the midterm lecture.

Academic paper formal guidelines (for the final deadline):

- Writing the article in LaTex following the ArXiv template by:
- https://github.com/kourgeorge/arxiv-style. Submit the final PDF file
- Using a bibliography tools. Submit the *.bib file exported from your reference manager.
- The paper including all references should be around 20 to 24 pages, not exceeding 24 pages (hard limit) including everything (title, references, images etc.)
- Proof read your article before submission.
- Submit all referenced articles as PDFs in a ZIP file along with paper

Presentation formal guidelines (for the midterm and final presentation):

- Creating a presentation using the beamer template: https://www.latextemplates.com/template/beamer-presentation
- Submit a PDF file

DELIVERABLES

Deadline 1: 12.12.2022 23:59 CET for the Midterm lecture 1

Deadline 2: 23.1.2023 23:59 CET for the Midterm lecture 2

Deadline 3: 23.2.2023 23:59 CET for the Midterm lecture 3

A presentation (according to the formal guidelines) showing your progress on the SLR (structured literature review) and the structure of your paper (maximum 4 pages, hard limit). Submit a pdf file via email to mprause@uni-lkblenz.de latest until the deadline.

1. Naming convention: <lastname>_<firstname>_midterm_X_presentation.pdf

DELIVERABLES - DEADLINES

Deadline 4: 14.3.2023 23:59 CET: The final academic paper according to the formal guidelines and a presentation as described on the previous slide. Submit the following files via email to mprause@uni-koblenz.de latest until deadline 2.

1. Final article: Submit a pdf file. Naming convention: <lastname>_<firstname>_final_article.pdf
2. Final article bib file: Submit a *.bib file of your references
3. Final presentation: Submit a pdf file. Naming convention: <lastname>_<firstname>_final_presentation.pdf
4. Referenced articles: Combine all articles (as PDF files) that you used as references in a ZIP file. Submit a zip file: Naming converntion: <lastname>_<firstname>_references.zip. If the size of the zip file is too large for an email, upload it to a cloud service and include the link in the email. Make sure that the cloud link can be accessed publicly.

Not adhering to the deadlines and structure results in lower grades

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INDIVIDUAL GRADING

5% Midterm presentation 1: Grading elements: Structure, layout

5% Midterm presentation 2: Grading elements: Structure, layout

10% Midterm presentation 3: Grading elements: Structure, layout

20% Final presentation

Grading elements: Narrative, structure, visual presentation of findings, presentation by the student, adhering to the format and time, layout, answering questions in the discussion to the presentation

60 % Final article

Grading elements: Following the Pyramid Principle, correct citations & references, structure of the SLR, thoroughness of the SLR, line of argumentation for the SLR process and analyzing the results, framework to analyze the articles and combine the results, grammar, format and layout

ECTS

10 -> down to 4, cover up with doubling the time + more guidance.

KLIPS

https://klips.uni-koblenz.de/qisserver/rds?state=verpublish&status=init&vmfile=no&publishid=149661&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung

LATEX

LATEX

- LaTeX is document preparation system for high-quality typesetting
- LaTeX is not a word processor. Not a WYSIWYG approach
- Separation of layout and content (similar to HTML)
- Control over large documents containing sectioning, cross-references, tables and figures.
- Typesetting of complex mathematical formulas.

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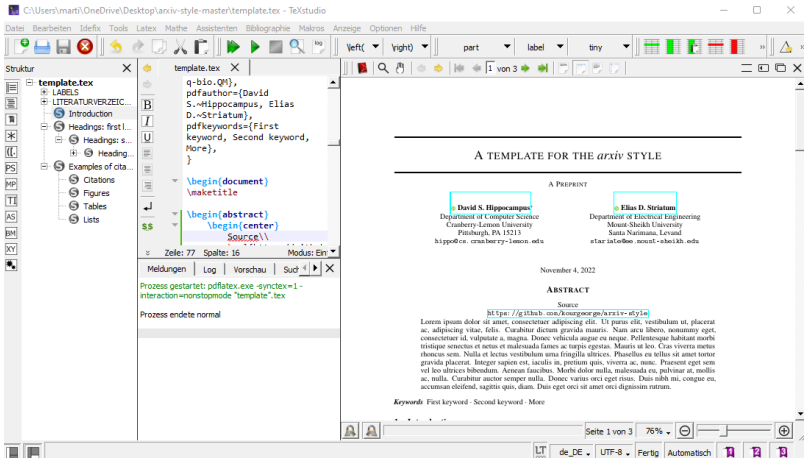
LATEX SYSTEMS

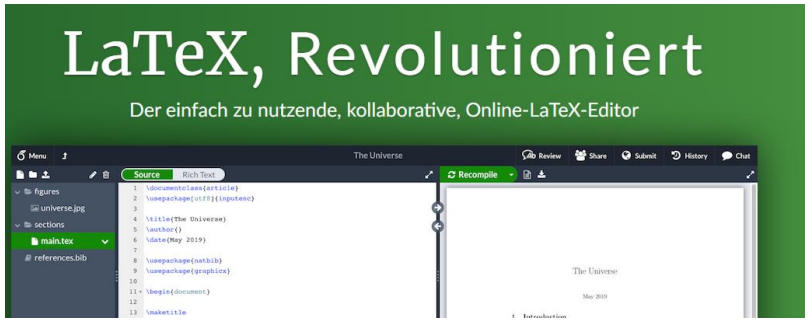
https://www.latex-project.org/

https://www.latex-project.org/get/

https://tug.org/texworks/

www.overleaf.com





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BIBLIOGRAPHY SOFTWARE

Kostenlos

- https://www.mendeley.com/
- https://www.jabref.org/

Kostenpflichtig

- https://endnote.com/
- https://www.citavi.com/de

REFERENCE STYLE

The preferred citation (if not overruled by the examination office) is APA 7th style. The APA (American Psychological Association) style is one of the most commonly used citation styles. A reference can be found here: https://apastyle.apa.org/

Format of a journal article/book in the reference list

Author, A. A., & Author, B. B. (Year). Title of the article. *Name of the Periodical*, volume(issue), #–#. https://doi.org/xxxx

Author, A. A., & Author, B. B. (Copyright Year). *Title of the book* (7th ed.). Publisher. DOI or URL

The abbreviation of the first name of the author can be omitted. The reference list is alphabetically ordered.

A SYSTEMATIC LITERARURE REVIEW

THE RESEARCH QUESTION

"The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill."

(Albert Einstein quoted in Csikszentmihalyi 1988, p. 160.)

- A research question should be specific, measurable, attainable, realistic, timely, important, and meaningful.
- Often a lot of academic rigor is applied, and research methods are correctly used to come up with an answer, unfortunately, to a wrong question.
- This is a typical type III error if one comes up with a sophisticated answer to the wrong problem.

THE WRONG PROBLEM

What is the wrong problem? A problem that is not important and not of significant interest.

Six reasons why the formulation of the problem can lead to a type III error:

Source: Rai (2017)

Streetlight Effect	Ease of research (e.g., easy-to-access datasets and easy-to-use tools) rather than the need for research drives the problem formulation
Being Solution-Driven Rather than Problem Minded	Unclear or pseudo-problems are formulated with the idea of advancing a theory, method, or solution
Gap-Spotting and Gap-Patching	Areas not addressed in past work drive the problem formulation—will patching the gaps make a substantial change in the knowledge body?
Myopic problem formulation, while overlooking the generic, archetypal problem	Immediate practical need or a limited manifestation of a phenomenon inform the formulation—relation to generic problems or broader phenomenon is overlooked The contribution may be more ephemeral than if the problem was formulated by relating the immediate practical problem to the accumulated knowledge about the generic problem and its solution
The Answer to the Question Is Derivative to Current Understanding	A problem is formulated to re-evaluate a well-established theory, model, or solution in a different setting with the expectation of affirmation, which is confirmed through the research Straight-up applications of theories and models from other disciplines
The Goldilocks Principle: Excessive or Marginal Scope	Is the problem formulation too narrow, seeking to know "everything about nothing," or too diffuse and lacking depth seeking to know "nothing about everything"

A LITERATURE REVIEW VERSUS A SYSTEMATIC LITERATURE REVIEW (SLR)

Knowledge advancement is build on existing work

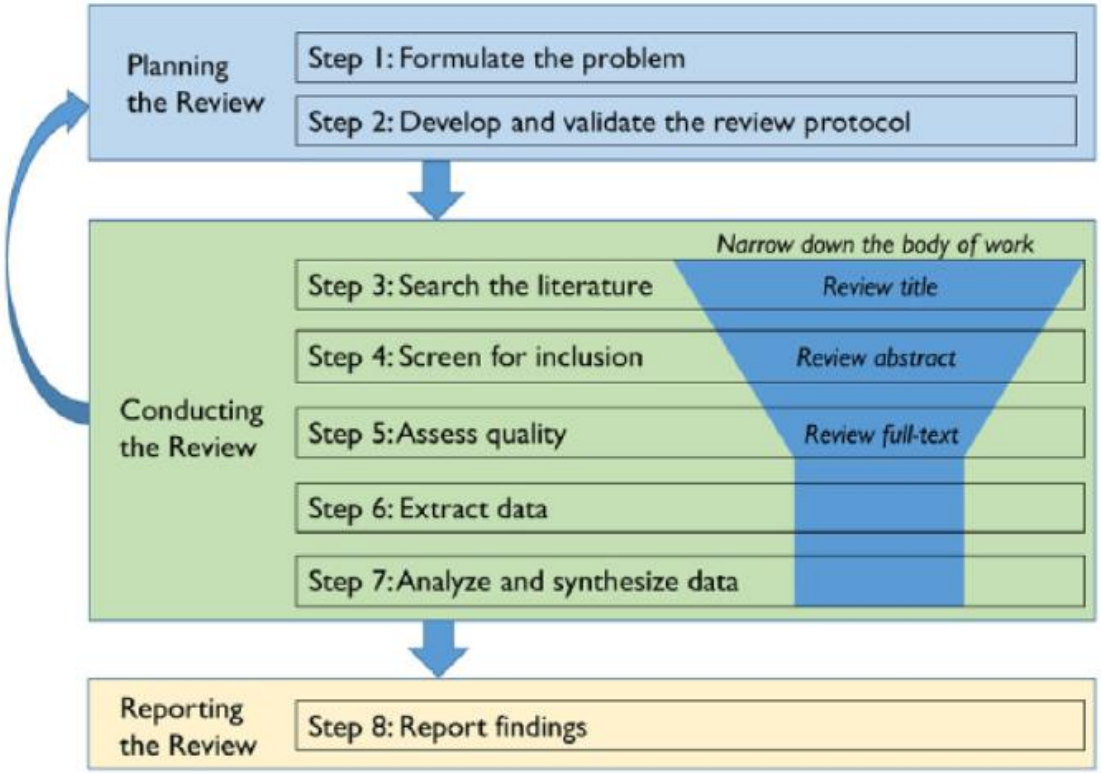
A Literature Review

- A Literature review is used to provide background information.
- A literature review helps to assess the current work in a context
- A literature review can be biased if only latest relevant sources are considered and the focus is the presented work/solution.

A Systematic Literature Review

- As scientific inquiries, literature reviews should be valid, reliable, and repeatable.
- Systematic reviews are a rigorous and transparent form of literature review.
- A systematic review is a type of review that uses analytical methods to collect and analyze secondary data.
- A systematic review is less biased
- A systematic review is used to uncover research gaps, contraries

THE PROCESS OR AN SLR



Xiao and Watson (2019)

FINDING THE RELEVANT SOURCES

Primary sources	Original works, Creative works, Empirical research
Secondary sources	Contain others' insights into and analyses of those primary works. Secondary sources analyze, review, interpret, and/or evaluate information in primary resources or other secondary resources.
Tertiary sources	Provide overviews of topics by synthesizing information gathered from other resources such as encyclopedias

Scholarly Articles

The highest quality articles are ones that appear in peer-reviews journals that have a high impact or citation factor. For example, articles that appear in the following journals are of high quality:

- Science (https://www.science.org/)
- Academy of Management (https://journals.aom.org/journal/amj)
- Journal of Pattern Recognition (https://www.journals.elsevier.com/pattern-recognition)

FINDING THE RELEVANT SOURCES

There are hundreds of high-quality journals for each discipline. How do you know if a journal is of high quality? Each journal publishes a measure such as an “Impact Factor” or “Citation Score” (see https://en.wikipedia.org/wiki/Journal_ranking for further information). Higher numbers are better. But what is high enough?

There are institutional and noninstitutional journal ranking lists that try to categorize journals based on their Impact Factor into A, B, C, and D journals, such as:

- https://www.erim.eur.nl/about-erim/erim-journals-list-ejl/
- https://academic.oup.com/journals/pages/journals_a_to_z?login=true
- https://www.scimagojr.com/journalrank.php

FINDING THE RELEVANT SOURCES

Journals are typically published by scientific publishers. Renowned publishers are:

- https://www.sciencedirect.com/
- https://www.ieee.org/
- https://dl.acm.org/
- https://www.jstor.org/
- https://link.springer.com/
- -> this is not an extensive list

A typical process could look like

1. Check https://www.scimagojr.com/journalrank.php for the relevant journals in your field
2. Create a ranking of the journals, pick only the relevant ones
3. Check the scientific publishers if you can download the article you are interested in
4. Do a complementary search on https://scholar.google.com/ to capture any missing articles

FINDING THE RELEVANT SOURCES

Working papers and conference papers

The second highest (for some disciplines also highest) quality are working papers and conference papers. Especially in some disciplines, such as computer science conference papers might be even more important than journal publications due to their momentum. In very narrow scientific domains, it is also acceptable to reference working papers (if the author's institute is credible). A large collection of working papers are published in

- https://arxiv.org/
- https://econpapers.repec.org/
- -> this is not an extensive list

ANALYZING THE ARTICLES

Table 1. Approaches to Literature Reviews

Concept-centric	Author-centric
Concept X … [author A, author B, …] Concept Y … [author A, author C, …]	Author A … concept X, concept Y, … Author B … concept X, concept W, …

Table 2. Concept Matrix

Articles	Concepts				
	A	B	C	D	…
1		✖	✖		✖
2	✖	✖			
…			✖	✖	

Table 3. Concept Matrix Augmented with Units of Analysis

Articles	Concepts														
	A			B			C			D			…		
Unit of analysis	O	G	I	O	G	I	O	G	I	O	G	I	O	G	I
1					✖				✖						✖
2	✖				✖	✖		✖							
…								✖	✖			✖			

Legend: O (organizational), G (group), I (individual)

Webster and Watson (2002)

EXAMPLE: SLR ON JUDGE-ADVISOR SYSTEMS

What is the current state of information systems research in H2C JAS?

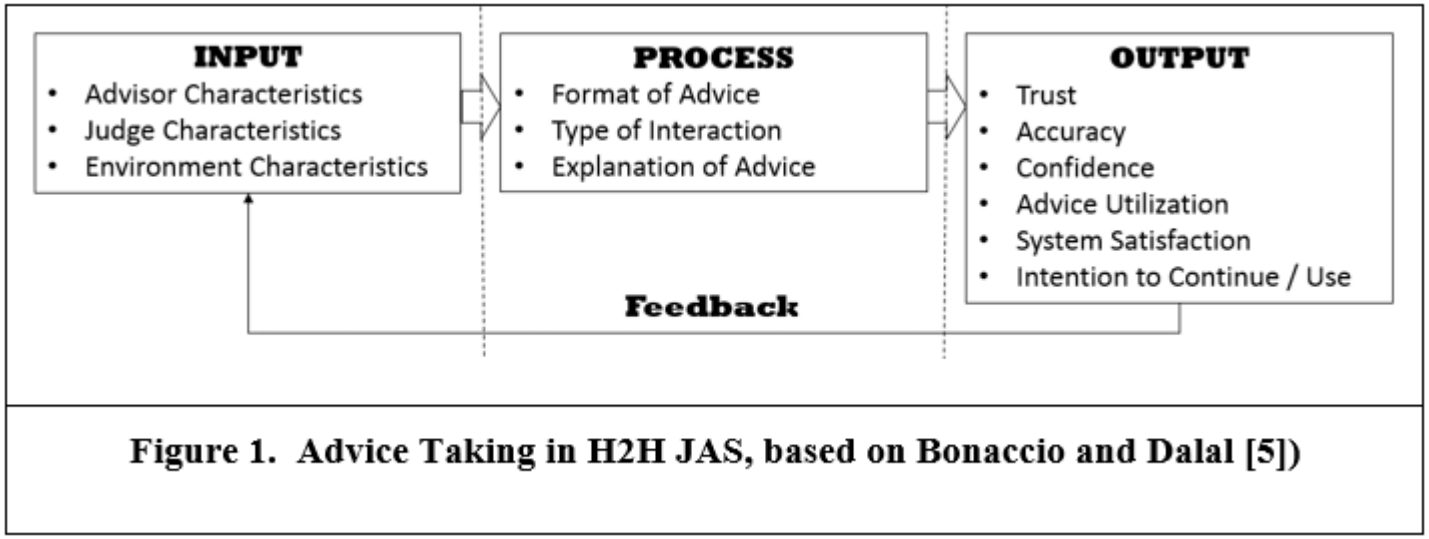
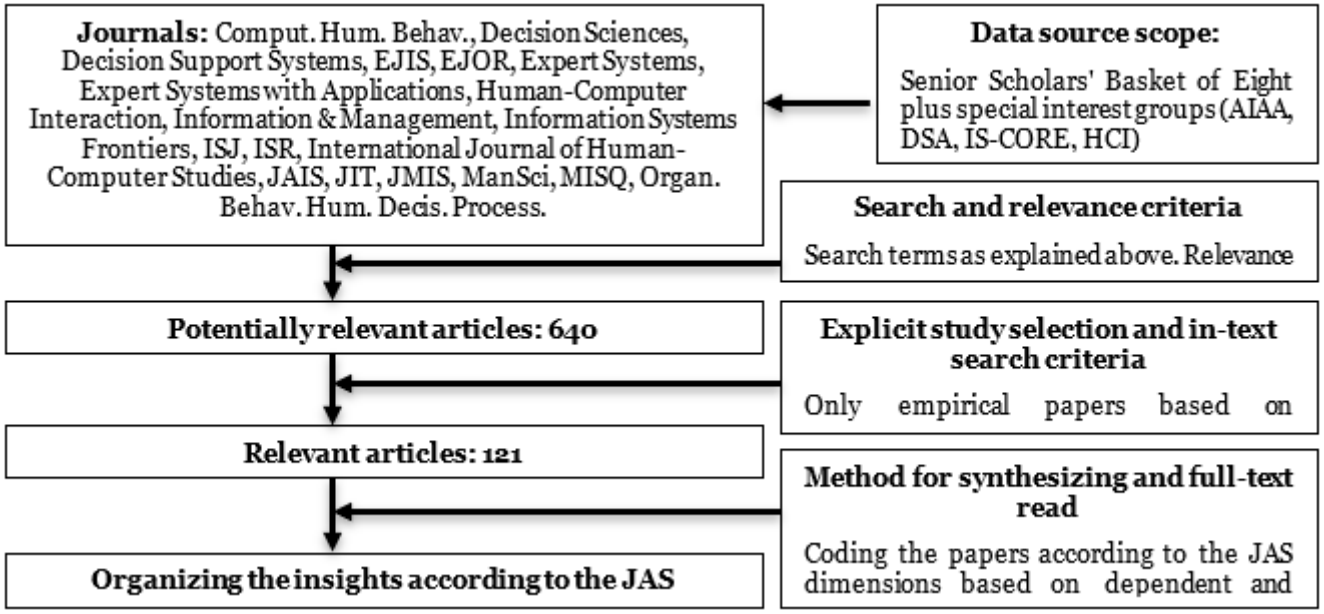


Figure 1. Advice Taking in H2H JAS, based on Bonaccio and Dalal [5])

EXAMPLE: SLR ON JUDGE-ADVISOR SYSTEMS



OUTLINE

Abstract
Introduction and research question
Conceptual Background (-> Human-to-Human Judge-Advisor-Systems)
Methodology of the SLR
Results of the Literature Review (-> note expressive headline)

- The Effects of Judge Characteristics
- The Effects of Environmental Characteristics
- The Effects of DSS Characteristics
- The Effects of Explainability
- The Effects of Interaction
- The Effects of Advice Format

Conclusion
Limitation
References
Statutory declaration (-> Declaring that you did the assignment/thesis on your own etc.)

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ADDITIONAL EXAMPLE

Computers & Education 59 (2012) 661–686

Contents lists available at SciVerse ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

A systematic literature review of empirical evidence on computer games and serious games

Thomas M. Connolly [a,*], Elizabeth A. Boyle [a], Ewan MacArthur [a], Thomas Hainey [a], James M. Boyle [b]

[a] University of the West of Scotland, High St., Paisley PA1 2BE, Scotland, United Kingdom
[b] University of Strathclyde, Glasgow, Scotland, United Kingdom

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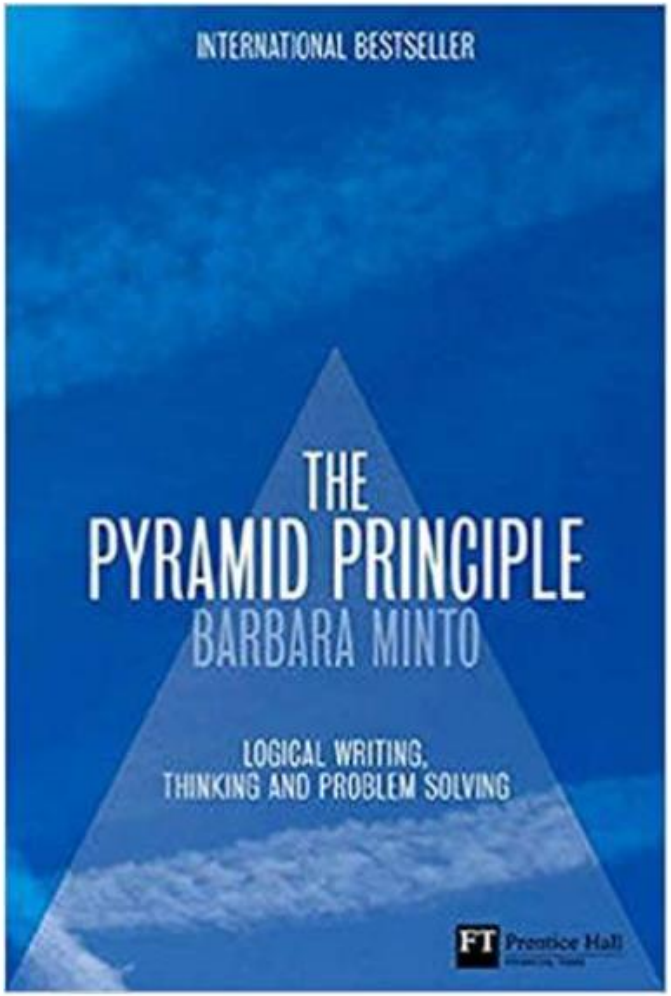
THE LOGIC IN WRITING



Minto (1995), The Pyramid Principle: Logic in Writing and Thinking, Prentice Hall.

Examples and visuals are copied from the book for educational purposes

INTRODUCTION

"John Collins telephoned to say that he can't make the meeting at 3:00. Hal Johnson says he doesn't mind making it later, or even tomorrow, but not before 10:30, and Don Clifford's secretary says that Clifford won't return from Frankfurt until tomorrow, late. The Conference Room is booked tomorrow, but free Thursday. Thursday at 11:00 looks to be a good time. Is that OK for you?"

What is the text about?

INTRODUCTION

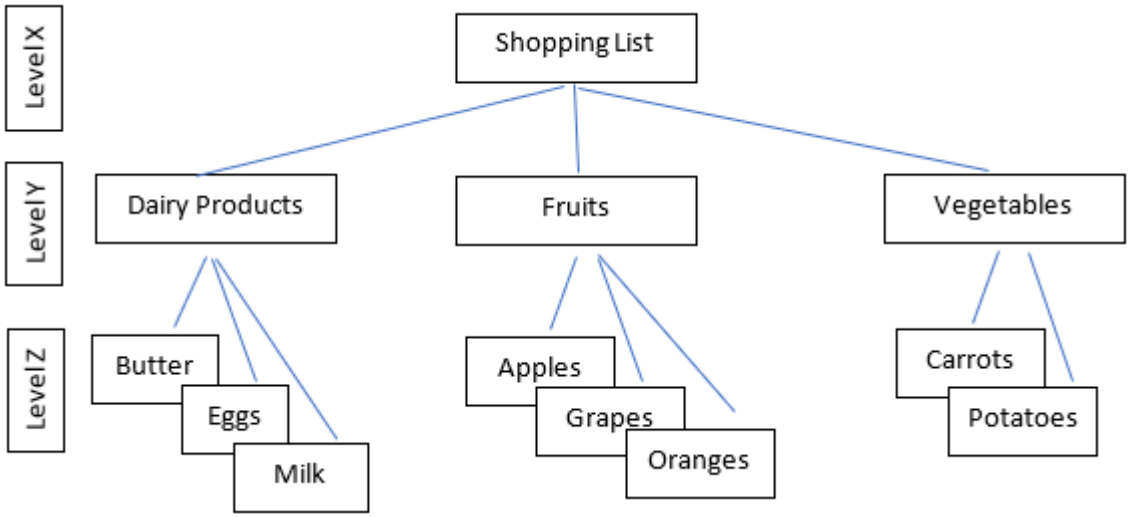
Could we reschedule today's meeting to Thursday at 11:00? This would be more convenient for Collins and Johnson and would also permit Clifford to be present."

The key skill is recognizing your major and minor ideas and working out their relationships -> The Logic in Writing.

INTRODUCTION

Remember the following shopping list:

- Grapes
- Milk
- Potatoes
- Eggs
- Carrots
- Oranges
- Butter
- Apples



Easier?

GROUPING AND ORDERING

The pyramid scheme is way easier to remember and comprehend because it follows our natural human flow of grouping (hierarchical, vertical) and ordering (horizontal).

Now grouping can happen in many ways, but they follow a certain logic:

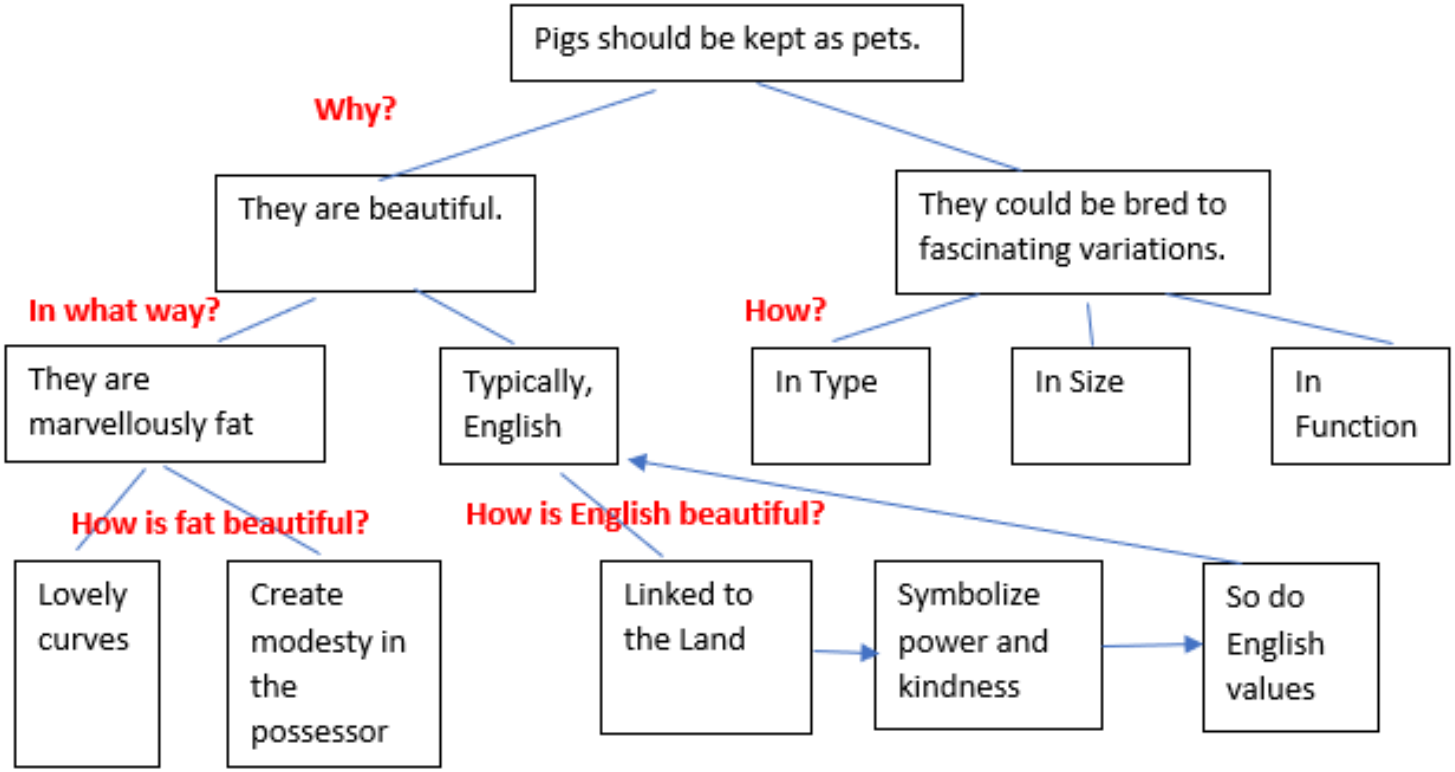
- Ideas at any level of the pyramid must always be summaries of the ideas grouped below.
- Ideas in each grouping must always be the same kind of ideas
- Ideas in each grouping must always be logically ordered

ELEMENTS OF THE PYRAMID

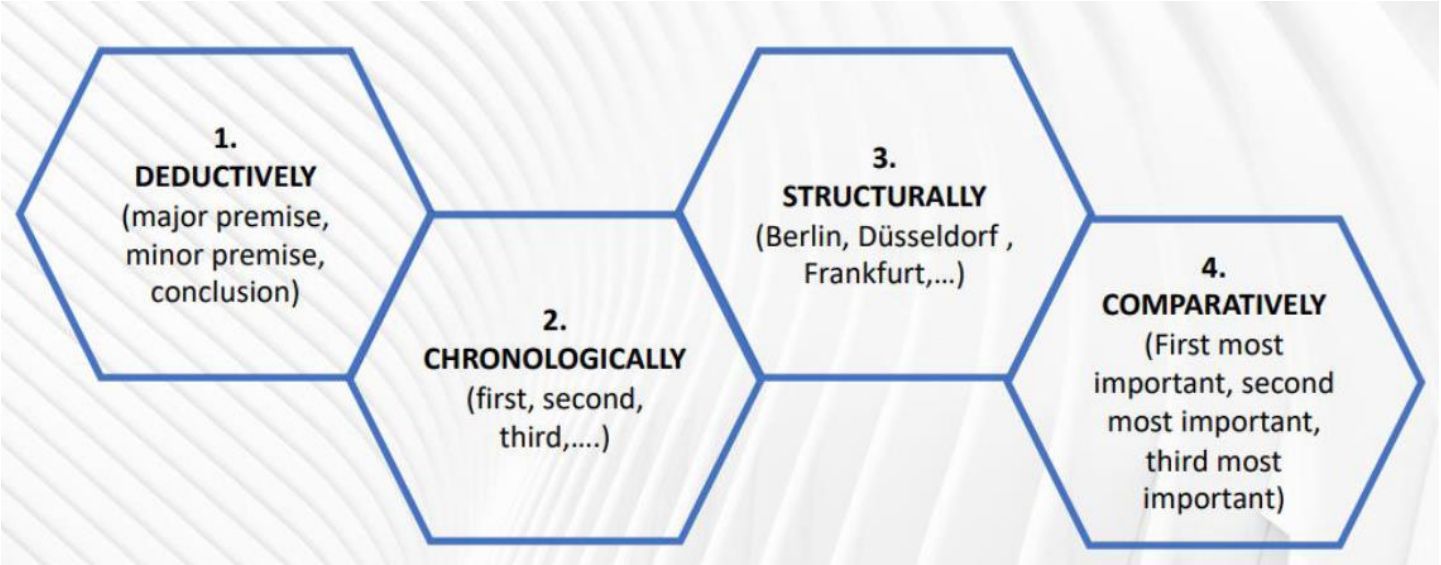
However, you cannot just sit down and arrange ideas into the pyramid. You need to discover them by exploring:

- The vertical relationship between points
- The horizontal relationship between points
- The narrative flow of the introduction

THE VERTICAL RELATIONSHIP



THE HORIZONTAL RELATIONSHIP



THE INTRODUCTORY FLOW

The question/answer dialog cannot be engaging without a statement in the beginning that is relevant to the reader.

The only way you can be confident of relevance is to ensure that it directly answers a question you have identified as already existing in the reader's mind.

Therefore, you can implement a Situation, Complication, Question, and Answer (SCQA) storytelling pattern.

THE INTRODUCTORY FLOW – BAD EXAMPLE

"The purpose of this memorandum is to pull together some ideas for further reflection and discussion in such questions as:

1. Composition of the Board and its optimum size.

2. A conception of the board roles of the Board and the Executive Committee, the specific responsibilities of each, and the relationships of one to the other.

3. Making the outside Board member an effective participant.

4. Some principles dealing with the selection of Board members and their tenure

5. Alternate ways for the company to get from where it is to where it wants to be in Board and Executive Committee operations."

THE INTRODUCTORY FLOW – GOOD EXAMPLE

The new organization installed in October places full authority and responsibility for running the day-to-day activities of the two divisions squarely on the shoulders of the managers of those divisions. This move frees the Board to deal entirely with the board matters of policy and planning that are its exclusive responsibility.

However, the Board has for so long oriented itself to dealing with short-term operating problems that it is not presently in a position to focus its attention on long-range strategy development. Consequently, it must consider the changes needed to permit itself to do so. Specifically, we believe it should:

- Relinquish responsibility for day-to-day operating matters to the Executive Committee
- Broaden its composition to include outside members
- Establish policies and procedures to formalize internal operations.

THE INTRODUCTORY FLOW

The SCQ™ framework	*Example 1* An oil company looking to enter the renewable energy sector	*Example 2* A solar energy company looking for new markets
Situation *What we want to do*	***Renewable energies will allow us to displace oil and future-proof our business***	***Our home market has stagnated, so we need to expand to new markets***
Complication *What is the obstacle preventing us from doing it*	***We do not have experience in renewable energies, and so far oil companies have enjoyed limited success in this sector***	***Our whole structure is geared towards our home market, expansion will take time and money***
Question *What we need to do to remove that obstacle*	***We need to identify the technologies, markets and value-chain steps that best suit our goals and experience***	***We need to identify the partners and the partnership model that will allow us to expand quickly and within a reasonable budget***

Source: Barbara Minto, X&Y Partners analysis

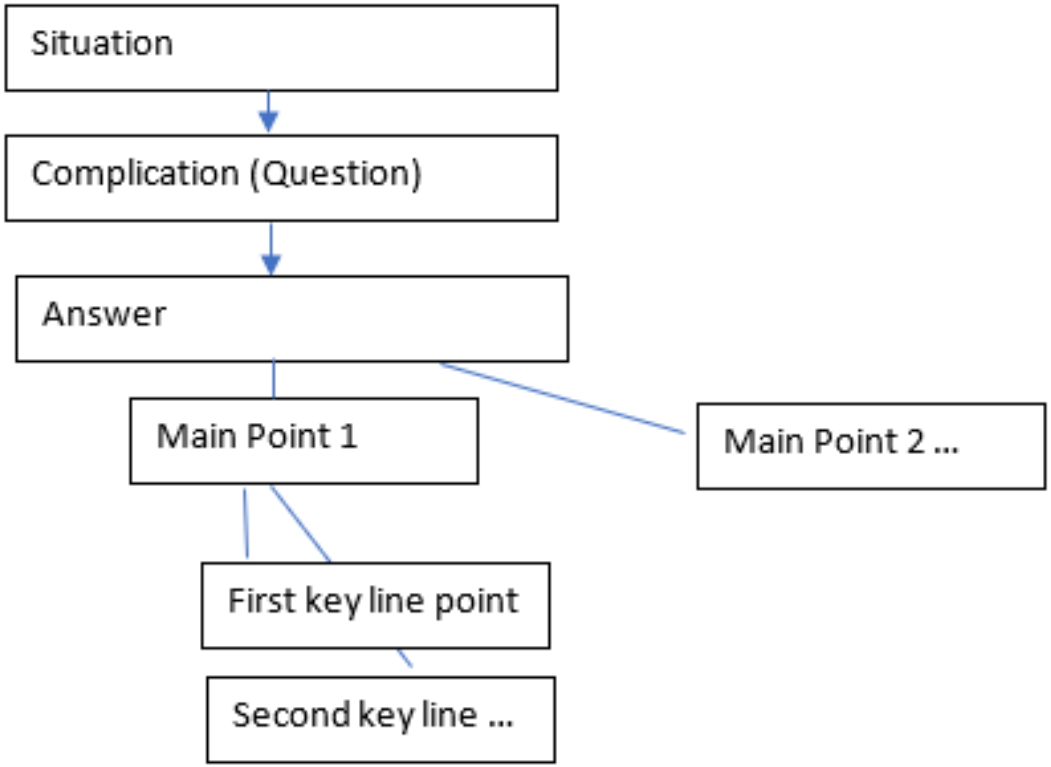
BUILDING A PYRAMID STRUCTURE

1. What subject are you discussing?
2. What question are you answering in the reader's mind about the subject? (Visualize the reader)
3. What is the answer? (if you know it)
4. What is the situation (Make the first non-controversial statement that the reader can easily agree with)?
5. What is the complication? Ask yourself, "So What"? What happened in that Situation to raise the question?
6. Recheck the Question and Answer. The statement of the complication should immediately raise the question you have already written down. Otherwise, you don't have the right question or complication. Rethink it.

COMPLICATIONS

Situation	Complication	Question
Recognized stable situation	Something went wrong	What do we do?
	Something could go wrong	How can we prevent it?
	Something changed	What should we do?
	Something could change	How should we react?
	Here's what you might expect to find in it	Do we find it?
	Here's someone with a different point of view	Who is right?
	In this situation, we have three alternatives	Which one should we take?

PYRAMID STUCTURE



PYRAMID STUCTURE

Situation: A statement about the subject with which you know the reader will agree

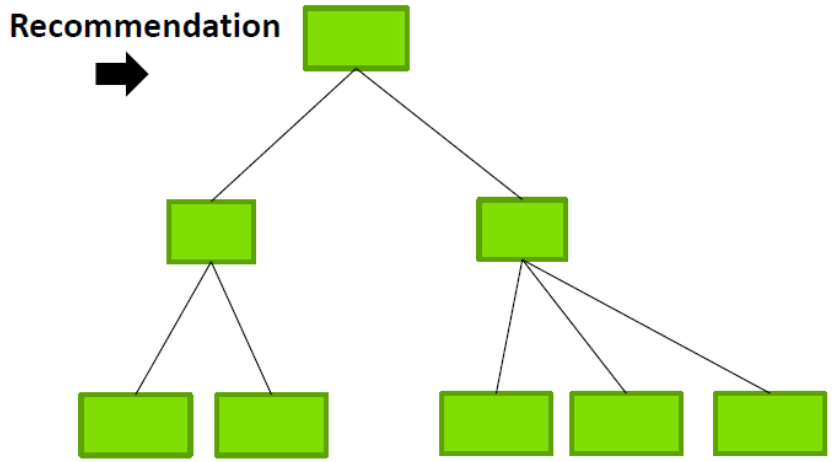
Complication: The complicating event / problem that creates tension in the story

Question: The implicit question that results from the complication

Answer: States the answer to the question raised in the readers mind

Key Line: Major points which taken together prove the answer

Support: Data and facts that support the key line



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Minto (1995), The Pyramid Principle: Logic in Writing and Thinking, Prentice Hall.

Rai (2017), Avoiding Type III Errors: Formulating IS Research Problems that Matter, MIS Quarterly, 41(2), iii-vii.

Webster and Watson (2002), Analyzing the Past to Prepare for the Future: Writing a Literature Review, MIS Quarterly, 26(2), xiii-xxiii.

Xiao and Watson (2019), Guidance on Conducting a Systematic Literature Review, Journal of Planning Education and Research 39(1), 93-112.

NEXT STEPS

COMING TO CLASS

Kick-off: 17.11.2022, 8 st am to 10 am, Room B013. We start at 8am sharp, not at 8:15!

SELECTING A TOPIC

Topics will be presented in class. Topics will be distributed randomly.

ASKING QUESTIONS

Write an email to mprause@uni-koblenz.de