



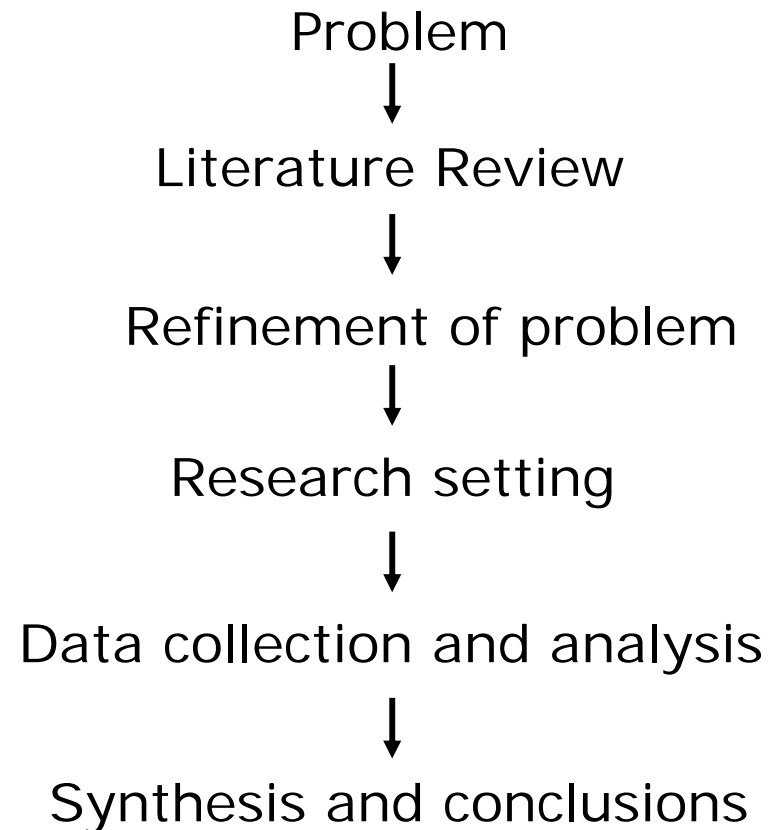
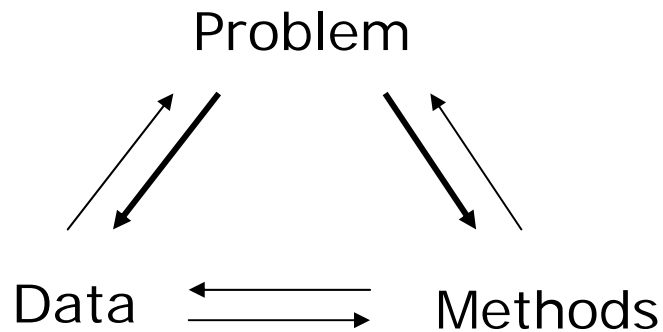
CT10A9500 Research Methods

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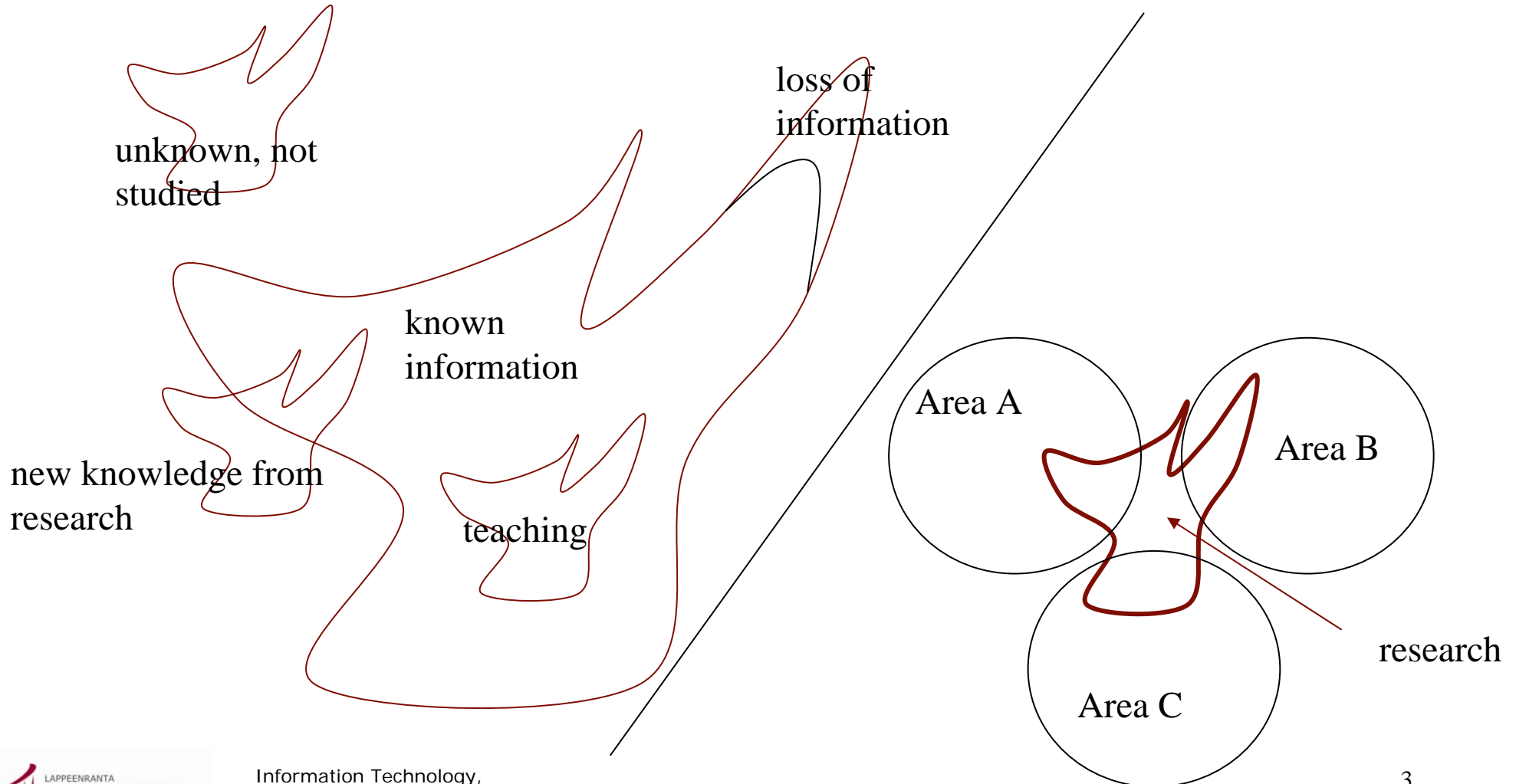
Empirical Research



✘ setting for empirical research and the phases



Information retrieval



Information retrieval



- ✘ objectives of the information retrieval
 - ✘ justification of the project
 - ✘ research topic recognized and appropriate, suitable
 - ✘ what has been done before within the topic?
 - ✘ what is the new contribution?
 - ✘ context of the research
 - ✘ what is the larger context of the topic?
 - ✘ what is the starting point?
 - ✘ which direction?
 - ✘ also outsider understands the research topic
- ✘ information retrieval is the basis and gives the background for the research

Information retrieval



definition

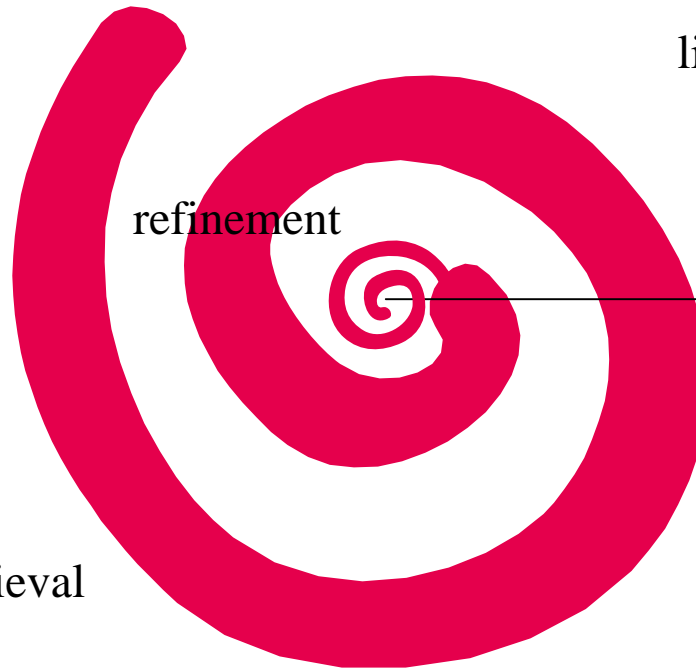
literature review

refinement

breadth of the
focus

literature retrieval

evaluation of
retrieval results

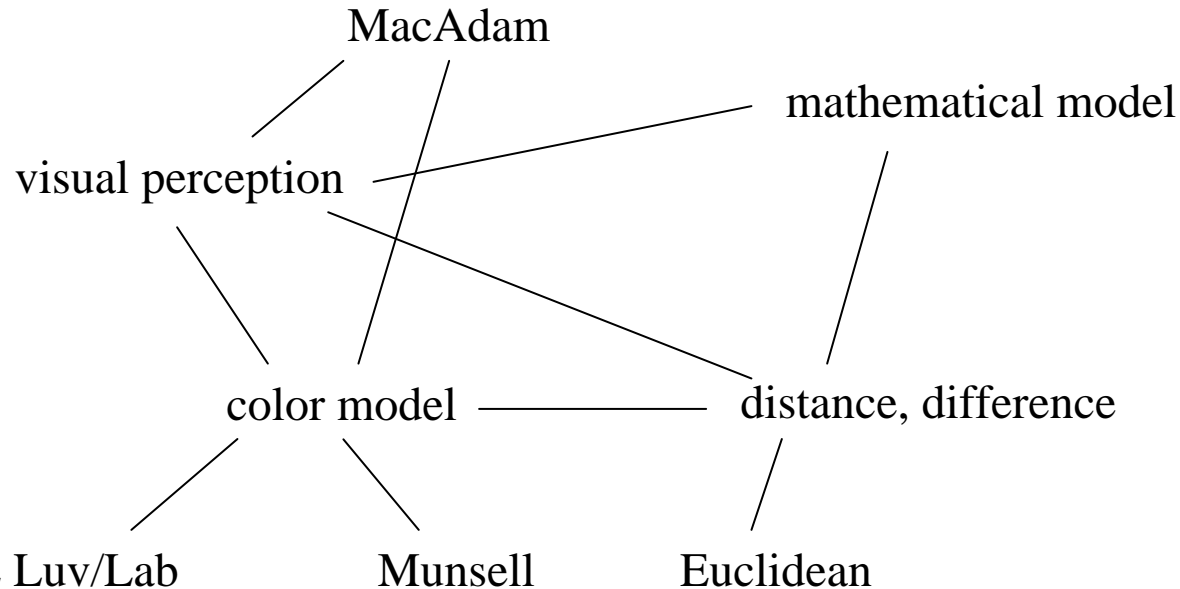


Information retrieval



✘ definition of the search

- ✘ keywords, concepts
- ✘ connections between concepts
- ✘ joining the keywords in search
and/or/not or the distance between the keywords



Information retrieval



✘ information retrieval

- ✘ *systematic* collection of *published* material related to the topic

✘ *systematic* collection

- ✘ relevant material, partially supporting the topic
- ✘ guidelines of retrieval
 - ✘ it takes time: store the bibliographic information and the contents
 - ✘ concentrate: what is the focus of the research?
 - ✘ continuous: follow the research of the other groups

✘ *published* material

- ✘ material recognized before: referee-process of articles

Information retrieval



✘ formats for the publications

- ✘ monography
- ✘ scientific journal article
- ✘ articles in conference proceedings
- ✘ internal reports, theses
- ✘ Internet, manuals, software



✘ classification of the sources

- ✘ primary sources: like those mentioned earlier
- ✘ secondary sources: indexes, abstracts, review-articles
- ✘ tertiary sources: references to primary sources like catalogs from publishers and libraries



Information retrieval



✘ things to recognise

- ✘ type of the article: review, theory, application, case study
- ✘ how to utilize: ideas, techniques, theory, models, references?
- ✘ who are the authors: authority?
- ✘ suitability to the context? Support for the topic? What results were achieved?
- ✘ quality of the publication
 - ✘ is there a logical connection between the assumptions, research questions, hypothesis, methods, experiments and the conclusions?
 - ✘ what is true, what are conclusions or interpretations by the author?
 - ✘ how do the contents map to the existing knowledge?
 - ✘ what kind of references were used?
 - ✘ what are the limitations and constraints used?

Information retrieval



- ✘ selection of literature for research reporting
 - ✘ who are referred before?
 - ✘ authorities in the field
 - ✘ latest edition of the book?
 - ✘ generally: age, up-to-date, credibility contents
 - ✘ article as the state-of-the-art in the topic?
 - ✘ reading guidelines
 - ✘ check title, keywords
 - ✘ read abstract, list of contents, headings, list of appendices, what is the structure? what kind of references?
 - ✘ read introduction, conclusions
 - ✘ read contents: definitions, constraints, research questions, hypothesis, methods, experimental part
- ✘ store the bibliographic information of the publication



- ✘ evaluation of the article
 - ✘ concepts and ideas of the article
 - ✘ theoretical framework and hypothesis
 - ✘ design and viewpoint for the study
 - ✘ results and their evaluation
 - ✘ conclusions and the abstract
- ✘ for example: model for color differences
 - ✘ MacAdam data
 - ✘ mathematical model as a surface model
 - ✘ fitting the model to the data
 - ✘ quality of the fitting
 - ✘ future work

Information retrieval



- ✘ utilization of the contents of an article
 - ✘ summary
 - ✘ use own words to interpret some part of the contents
 - ✘ essential: crystallize
 - ✘ paraphrase
 - ✘ own words, but according to the structure, contents and length of the original
 - ✘ goal: understanding
 - ✘ direct copying
 - ✘ presentation as the original text
 - ✘ style of the text; a distinguished, important, authoritative source; maintaining the original wording

Plagiarism is a theft.

Information retrieval



- ✘ references, citing
 - ✘ Harvard system, like (Hirsjärvi 2004, 338)
 - ✘ normally in information technology [1]

- ✘ references
 - ✘ publicly available
 - ✘ so that the reference can be identified
 - ✘ guidelines for the diploma thesis
 - ✘ check the library web pages:

http://www.lut.fi/fi/kirjasto/ohjeet/viittaaminen_sahkoisiin_dokumentteihin.html

Hirsjärvi, S. & Remes, P. & Sajavaara, P. (2004). Tutki ja kirjoita, Tammi.

[1] Hirsjärvi, S., Remes, P., Sajavaara, P., Tutki ja kirjoita, Tammi, 2004.

Information retrieval



✘ sources for information

✘ web-based databases at LUT

✘ information technology

✘ IEEE explore, ACM, Elsevier, Springer

✘ Compendex, Inspec, CiteSeer

✘ business administration

✘ ABI, ARTO, EU-kannat, Integrum, ABI/Inform

✘ Statfin, Talentum, Yritysonline

✘ ICI Web of Science

✘ www.lib.helsinki.fi/tilke

✘ other sources

✘ scholar.google.com

✘ www.scirus.com



books:

Wilma (at LUT)

Global Books in Print

Amazon

Literature



- [1] Sirkka Hirsjärvi, Pirkko Remes, Paula Sajavaara: Tutki ja kirjoita, Tammi, 2004.
- [2] John W. Creswell: Research Design. Qualitative, Quantitative, and Mixed Methods Approaches, 2nd Edition, Sage Publications, 2003.
- [3] Christian W. Dawson: Projects in Computing and Information Systems, A Student Guide, Addison-Wesley, 2005.
- [4] Hannu Uusitalo: Tiede, tutkimus ja tutkielma, WSOY, 1996.
- [5] Pertti Järvinen: On Research Methods, Opinpajan Kirja, Tampere, 2004.