



Exjobb--Från Idé till Rapport

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Mål

- ◆ Självständigt genomföra ett större “jobb”
- ◆ Arbeta vetenskapligt
- ◆ Tillämpa kunskaper
- ◆ Förvärva nya kunskaper
- ◆ Fördjupa sig i ett “specialområde”
- ◆ Presentera resultaten muntligt och skriftligt



Moment

- ◆ Hitta ämne
- ◆ Tränga in i ämnet
- ◆ Specificera själva exjobbet
- ◆ Planera arbetet
- ◆ Lägga upp en websida
- ◆ “Forska”
- ◆ Hålla kontakt med handledaren
- ◆ Genomföra arbetet
- ◆ Beskriva ansats, arbetet och resultat
- ◆ Vetenskaplig fördjupning
- ◆ Skriva rapport
- ◆ Presentera resultat



Frågor

- ◆ Hur noga måste specen vara (vem ansvarar)
- ◆ Hur planeras ett exjobb
- ◆ Hur går man tillväga
- ◆ Hur forskar man
- ◆ Hur skrivs en rapport
 - Vetenskaplighet
 - Organisation av innehållet
 - Citat och referenser
 - Bedömningskriterier
- ◆ Hur presenteras ett exjobb



Specifikation av exjobbet

- ◆ Uppdragsgivaren **och** exjobbaren ansvarar
- ◆ Måste vara tillräckligt detaljerat, så att **alla** inblandade förstår vad exjobbet går ut på
- ◆ Måste finnas i skriftlig form
- ◆ Måste godkännas av
 - ❑ Exjobbaren
 - ❑Handledarna
 - ❑ Examinatorn



Hur planeras och genomförs ett exjobb

“Ett steg i taget”

- ◆ Planera över huvud taget
 - ❑ Utan planering har du ingen koll på framgång
 - ❑ Gör gärna en riskanalys
 - ❑ Följ upp planeringen
 - ❑ Håll planen up-to-date
- ◆ Dra nytta av handledningen
 - ❑ Se till att du får handledning (externa exjobb)
 - ❑ Håll regelbunden kontakt med handledarna
 - ❑ För fram problem tidigt
- ◆ Glöm inte fördjupningsdelen
- ◆ Tänk på “vetenskapligheten”



How to Do Research

- ◆ Collect information
 - ❑ Area of interest
 - ❑ Background/ applications
- ◆ Read through the information
- ◆ Gather notes
 - ❑ Identify the references
 - ❑ Write summaries using your own words
 - ❑ Add critical comments and explanations
 - ❑ Keep track of your own ideas and thoughts
 - ❑ Relate to other information
- ◆ Archive and structure your material
- ◆ Discuss and exchange ideas
- ◆ Narrow down your subject



Collecting Information

- ◆ Review the literature
 - ❑ Search physical/ virtual libraries
 - Catalogues
 - Literature databases
 - ❑ Check references of publications
 - ❑ WWW pages of societies, research-/ working-/ interest groups
 - ❑ Conference home page
- ◆ Ask an expert
 - ❑ Fellow student
 - ❑ Supervisor
 - ❑ Post question in appropriate newsgroup
- ◆ Inquiries/ interviews
- ◆ Experiments/ prototypes



Build an Annotated Bibliography

Bibliography:

A list of writings relating to a given subject.

To annotate:

To furnish with with critical commentary or explanatory notes.

➔ Commented reference section

D.F. Beer (ed.): *Writing and Speaking in the Technology Profession: A Practical Guide*, IEEE Press, 1992.

A miscellany of articles on different aspects of technical writing and oral presentations. Not all of it is valuable but the various viewpoints are interesting. ...

➔ Check for further examples



How to Write the Thesis

- ◆ Review, revise, and extend and your archive
- ◆ Analyse the topic
 - ❑ **What** are the key problems?
 - ❑ **Why** are those problems and for **whom**?
 - ❑ **Who** is your target audience?
- ◆ Make an outline of your paper
- ◆ Writing supports understanding
 - ❑ Write down your thoughts
 - ❑ Edit and reedit
 - ❑ Do not hesitate to redo even big parts completely
- ◆ Productivity is low (1-2 pages per day)



Preparing an Outline

- ◆ Introduction
 - ❑ Explain the background
 - ❑ Describe the key problems on appropriate levels
- ◆ Contents organisation
 - ❑ List section- and subsection headers
 - ❑ Write at least one paragraph for each section and subsection
 - ❑ Select references
 - ❑ Make outlines of figures and examples
 - ❑ Introduce “hooks” for “more to come”
- ◆ You need not write “straight forward”
- ◆ Maintain a list of open questions
- ◆ Make a schedule/ to-do list



Example Outline

- ◆ Title and author
- ◆ Abstract
- ◆ Introduction
- ◆ Survey } MAIN PARTS
- ◆ Results } headings and subheadings according to YOUR TOPIC
- ◆ Summary and Conclusion
- ◆ (Future Work)
- ◆ References
- ◆ (Appendices)



References versus Citations

Research in cognitive science shows the importance of detailed and situated narratives ([Carrol et al 94]).

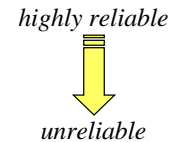
“Recent theory and methodology in cognitive science clearly reflects a growing and broadening awareness of the importance of detailed and situated narratives.” ([Carrol et al 94]).

- ◆ To give evidence for something
- ◆ To present your sources of information
- ◆ To distinguish between the original ideas of other’s and your own ones
- ◆ To show that you know the area of research
- ◆ To link to further information
- ◆ To honour someone
- ➔ To make your reasoning trustworthy



What to Cite and Reference?

- ◆ Reliable sources
 - ❑ Refereed publications *highly reliable*
 - ❑ Books
 - ❑ Technical reports
 - ❑ Sales brochures *unreliable*
- ◆ Original sources
- ◆ Accessible sources
 - ❑ Published material
 - ❑ No confidential material
- ◆ Be very careful with web references
 - ❑ Trustworthiness/ credibility
 - ❑ Objectivity
 - ❑ Stability



Format of References

- ◆ No common standard
 - ❑ [1], [2], [3], ...
 - ❑ (Björk, Knight, and Wikborg 88), (Carrol et al 94), (Zobel 97), ...
 - ❑ [BKW 88], [Car+ 94], [Zob 97], ...
 - ❑ ...
- ◆ Required information in reference section
 - ❑ All authors [2] J.M. Carrol, R.L. Mack, P. Robertson, M.B. Rosson: Binding Objects to Scenarios of Use, *Journal of Human-Computer Studies* 41, 1994, 243-276.
 - ❑ Title
 - ❑ Publication
 - ❑ Date [Zob 97] J. Zobel: *Writing for Computer Science*, Springer, 1997.
 - ❑ (Pages)
- ◆ Format depends on type of reference



Scientific Character

- ◆ Statements are motivated and/or provable
- ◆ Statements can be established in literature
- ◆ Many-sidedness
 - ❑ Discuss assumptions/ approaches
 - ❑ Ask questions
 - ❑ Exemplify
- ◆ No “blind” trust
 - ❑ Critically evaluate facts
 - ❑ Check the original sources if possible
 - ❑ Even the “gurus” make errors (sometimes)
 - ➔ Do not take anything for granted
- ◆ Adequate writing style
- ◆ Discussion of related work



Integrity

- ◆ Careful distinction between
 - ❑ Facts and interpretations of facts
 - ❑ Your own original ideas and those of others
 - ❑ What you have done and others have done
- ◆ No plagiarism
- ◆ Obey all copyright rules
- ◆ No exaggeration
- ◆ No “commercials”
- ◆ Critically discuss even your own material
- ➔ Be honest and serious



How to Write a Research Paper

- ◆ Review and rework your archive
- ◆ Analyse the topic
 - ❑ **What** are the key problems?
 - ❑ **Why** are these problems important?
 - ❑ For **whom** are these problems important?
 - ❑ **Who** is your target audience?
- ◆ Make an outline of your paper
- ◆ Writing supports understanding
 - ❑ Write down your thoughts
 - ❑ Edit and reedit
 - ❑ Do not hesitate to redo even big parts completely
- ◆ Peer reviewing
- ◆ Productivity usually 1-2 pages per day



What to Cite and Reference?

- ◆ Trustworthy and objective sources
 - ❑ Books
 - ❑ Refereed publications
 - ❑ (Technical reports)
 - ❑ No sales/ marketing brochures
- ◆ Original sources
- ◆ Accessible sources
 - ❑ Published material
 - ❑ No confidential material
- ◆ Be very careful with web references
 - ❑ Trustworthiness
 - ❑ Objectivity
 - ❑ Stability
 - ❑ Credibility



Writing Style 1

- ◆ Be aware of your target audience
- ◆ Be objective, accurate, and serious
- ◆ Have a simple, logical organisation
- ◆ Have one idea per sentence/ paragraph
- ◆ Have one topic per section
- ◆ Use short sentences with a simple structure
- ◆ Avoid buzzwords and clichés
- ◆ Motivate and explain (why, what, how)
- ◆ Omit unnecessary information/ details
- ◆ Explain all acronyms
- ◆ Briefly define or explain all technical terms and use them consistently



Writing Style 2

- ◆ Use common and basic vocabulary
- ◆ Avoid “insider” comments (or explain them)
- ◆ Do not use short verb forms, like I’m, can’t, they’re, ...
- ◆ Do not use conversational opening phrases, like Well, You see, ...
- ◆ Avoid colloquial language, jargon, and jokes
- ◆ Be careful with culturally localised concepts, such as times, dates, and currencies
- ◆ Do not write have/has got (har fått)
- ◆ Be careful with singular and plural
 - ❑ He/she/it is/was/has/does/...
 - ❑ They are/were/have/do/want/...



Contacting your Supervisor

- ◆ Be prepared and take initiative
 - ❑ Prepare specific questions
 - ❑ Bring along current versions of your works ...
 - ❑ ... AND your supervisor’s latest comments
- ◆ Take notes
- ◆ Reflect on results
- Use your and your supervisor’s time effectively



Preparing your Presentation

- ◆ Design your overheads carefully
 - ❑ Use big fonts
 - ❑ Avoid cluttered overheads
 - ❑ Use colour carefully
 - ❑ Make a script for your talk
 - ❑ Do not use copies from your thesis
- ◆ Use examples
- ◆ Prepare for questions
- ◆ You will need 20-25 overheads for 40-45 minutes
- ◆ Test the readability of your overheads
- ◆ Test the presentation equipment



Overhead Design

- ◆ Do not use background graphics
- ◆ Use dark text on transparent overheads
- ◆ Use landscape format
- ◆ Use big fonts; This example is 16-point; This one is 12-point only
- ◆ Do not copy from books, papers, etc.
- ◆ Highlight your main points only
- ◆ Use only few different figures, graphics, icons, fonts, and colours together
- ◆ Do not use red and green together, nor either of these together with brown or grey



The Presentation

- ◆ **Do not read your overheads!**
- ◆ Do not hide parts of your overheads
- ◆ Do not try to prove that you know more than the audience (*your audience is here to learn something*)
- ◆ Keep the time
 - Be prepared to omit some slides
 - Prepare some extra slides
- ◆ Test your talk at least once



Literature

- ◆ J. Bell: *Introduktion till Forskningsmetodik*, Studentlitteratur, 1995.
- ◆ L. Björk, M. Knight, E. Wikborg: *The Writing Process*, Studentlitteratur, 1988.
- ◆ L. Björk, Ch. Räisänen: *Academic Writing*, Studentlitteratur, 1996.
- ◆ D. Holtom, E. Fisher: *Enjoy Writing Your Science Thesis or Dissertation*, Imperial College Press, 1999.
- ◆ R. Johnson et al: Panel: How to Get a Paper Accepted at OOPSLA, *Proceedings OOPSLA '93*.
- ◆ A. Snyder: How to Get Your Paper Accepted at OOPSLA, *Proceedings OOPSLA '91*.
- ◆ K. Widerberg: *Att Skriva Vetenskapliga Uppsatser*, Studentlitteratur, 1995.
- ◆ J. Zobel: *Writing for Computer Science*, Springer, 1997.
- ◆ How to Give a Good Research Talk, *SIGPLAN Notices* **28** (4), Nov 1993.



For More Information

- ◆ Ask your supervisor(s)
- ◆ Discuss with fellow students
- ◆ Read “old” theses
- ◆ Read recommended books and papers
- ◆ Check web pages
 - <http://www.cs.umu.se/education/examina/>
 - <http://www.cs.umu.se/kurser/TDBD10/VT00>