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Overview

- Formalities
- Background and Related Work
  - Master Thesis Projects – The Bologna Process
  - Generic skills – The Tuning Project
- Contribution
  - Rubric-based evaluation
  - Web-based survey
- Conclusion
  - Ideas for future research
Master Thesis Projects in Sweden

- 20 weeks full-time work
- Typ. one or two students
- Typ. at the end of a study program
  - Trad. 4-5 years programs
  - Now 1-2 years programs due to the Bologna Process
The Bologna Process

• Initiated by the EU in 1999
• Aims to “standardize” higher education in Europe by 2010
  – Make degrees comparable and compatible
  – Stimulate mobility
• Three cycles (the 3+2+3 years model)
  – First cycle -> “Bachelor degree”
  – Second cycle -> “Master degree”
  – Third cycle -> “Doctorate/Ph.D. degree”
Master Thesis Projects in Sweden in Engineering

- Workplace in a university
  - E.g., in a research project
- Workplace in an external organization
  - E.g., in industrial R&D
- Must include a written Master Thesis
Generic Skills (GS)

- Skills not specific to Software Engineering
  - Capacity for analysis and synthesis
  - Writing skills
- Important, e.g. for employability
- Lists of such skills have been produced by the Tuning Project
The Tuning Project

- Funded by the EU since 2000
- 130 universities in 16 countries
- Focus on 9 subject areas (including chemistry, physics and mathematics)
- Identifies many generic skills common to the subject areas
Rubric-Based Evaluation

- Clearly formulated evaluation or grading criteria
- Easy for students to know what is required
- Ideally, also easy for teachers to grade students’ work
- Our experience: *rubrics are more popular among students than thesis supervisors*
Contribution: Survey

- Questions about 17 selected skills
- Sent to students at the three universities
- 23 answers
- Response rates varied between the universities but was generally low (30-50%)
Skills in the Survey (1/2)

- Capacity for analysis and synthesis
- Will to succeed
- Problem solving skills
- Information management skills
- Planning and time management skills
- Research skills
- (Academic) Writing skills
- Capacity for generating new ideas (creativity)
- Concern for quality
Skills in the Survey (2/2)

- Capacity for applying knowledge in practice
- Ability to work autonomously
- Oral Presentation skills
- Critical and self-critical abilities
- Decision-making skills
- Capacity to adapt to new situations
- Initiative and entrepreneurial spirit
- Interpersonal skills
Survey Questions

• 13 questions, including:
  – To what degree are the following skills important to finish an SE thesis project?
  – To what degree has your thesis project improved these skills?

• Multiple choice:
  – For each of the 17 skills
  – 4 = Very high, 3 = High, 2 = Low, 1 = Very low (or none)
  – Average = 2.5
Survey Results
Conclusion

- We performed a small survey
- Ideas for future research
  - Survey with more students/universities/countries
  - Complementary studies: case studies, controlled experiments, interviews, etc.