Course "Empirische Bewertüsität Berlin, Institut für Informatik, Arbeitsgruppe Software Engineering
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Practice sheet 10 SoSe 2012 due on 2012-07-09

Please make sure to always prepare your solutions in a way that you are able to present them to your class mates and discuss your solution process effectively.

Task 10-1: Scientific Hypothesis

1. Which 3 criteria must a statement fulfill to be considered a scientific hypothesis?
2. Can each of the following statements be considered a scientific hypothesis? State the reasons for your assertion.
    a. The older one gets, the wiser one becomes.
    b. Conflicts between husband and wife are always due to differences of opinion.
    c. Smokers have a shorter life expectancy than non-smokers.

Task 10-2: Ascertainment of Constructs

Please select an ascertainment method for each of the following constructs, i.e. determine the indicators and the tools for data collection. How would you test and assess the construct validity of your methods? Discuss the problematic aspects of each method in relation to the construct validity.

1. Aggression of pupils in the context of school
2. Communication skills of a teacher in class
3. Math skills of a class mate in the same school term as you
4. Fear of spiders in your circle of acquaintances

Task 10-3: Evaluate Quantitative Data Analysis

Learning aim: Practice analyzing and evaluating research that uses quantitative data analysis.

Study a piece of research that used quantitative data analysis. Answer the questions in the „Evaluation Guide" and explain your answer. Also be prepared to give an elevator pitch introducing the piece of research you studied.

Evaluation Guide[1]: Quantitative Data Analysis

1. What kinds of quantitative data were analyzed (for example: nominal, ordinal)?
2. Do the researchers use appropriate visual aids to explain their data and data analysis?
3. What means do the researchers use, if any, for describing the central tendency, distribution and relationships in the data?
4. Do the researchers justify their choice of statistical measures and tests, or assume that the reader will know what they are and why they are used?
5. Do the researchers discuss the null hypothesis?
6. How much of the report is concerned with analysis, and how much with interpretation of the results? Do you think the balance is appropriate?
7. Are the researchers' conclusions justified on the basis of the data they have presented?
8. What limitations in their quantitative data analysis do the researchers recognize?
9. Can you identify other flaws or omissions in the researchers' use of quantitative data analysis?
10. Overall, how effectively do you think quantitative data analysis has been reported and used?

[1] Briony J. Oates: Researching Information Systems and Computing