

Mikael Lönn, Ann Mutvei, Jan-Eric Mattsson

Questions

How do results from different assessment types relate to each other?

Can mother tongue explain differences in results ?



Mikael Lönn, Ann Mutvei, Jan-Eric Mattsson

Data on assessments

The data is collected from pre-service teacher training classes. One class in their second semester, in total 47 students

All students were classified into mother tongue categories "Swedish" and "Other"

Data on scores from examinations using

- Multiple choice questions
- Long answer questions
- Experimental work
- Construction of a experimental scientific test
- Evaluation of other student's experimental scientific tests

All analyses made in R.



Mikael Lönn, Ann Mutvei, Jan-Eric Mattsson

PCA

Principal component analysis of all scores.

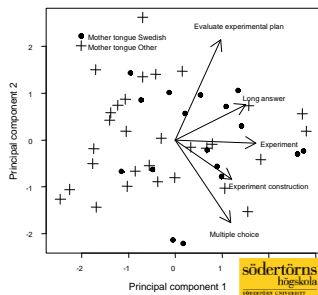
Mother tongue just plotted for over-view

Arrows – direction of sorting for each assessment type

Independent effects (ca 90 degrees angle): Long answer – Multiple choice
Evaluate experimental plan – experiment construction

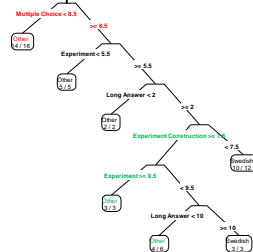
Opposing effects (>90): Evaluate experimental plan – multiple choice.

Coinciding effects: Evaluate experimental plan – Long answer,
Long answer – Experiment, Experiment – experiment construction – Multiple choice



Mikael Lönn, Ann Mutvei, Jan-Eric Mattsson

Classification into mother tongue by assessment scores



Classification tree analysis where the scores from the five assessment types were used to classify the students according to mother tongue (Swedish/Other).

Boxes: No of correctly classed out of total No in group ("leaf")

< and > are the cut-of values

Branching explaining most variation in base of tree (top of figure).

Mother tongue "Other" => low score multiple choice
In general lower scores but "Other" => high scores in Experiment construction and Experimenting.



Reflections from observations

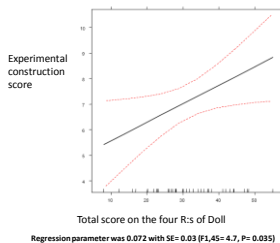
Second semester fieldwork with repeated observations of the same place in nature or in town.

Revisited in the fifth semester and the student reflections were quantified in each category of Doll's R: richness, recursion, relations, and rigor. Summed scores were used in analyses.



Mikael Lönn, Ann Mutvei, Jan-Eric Mattsson

Associations with Doll's richness



Five linear models

Response variable: five assessment categories

Explanatory: the total score the Rs of Doll
The experimental construction score was positively associated with the total score on Doll's richness.

A reflection is that those are the two assessments that measure creativity.

