Fostering Natural and Data Science Skills of School Kids

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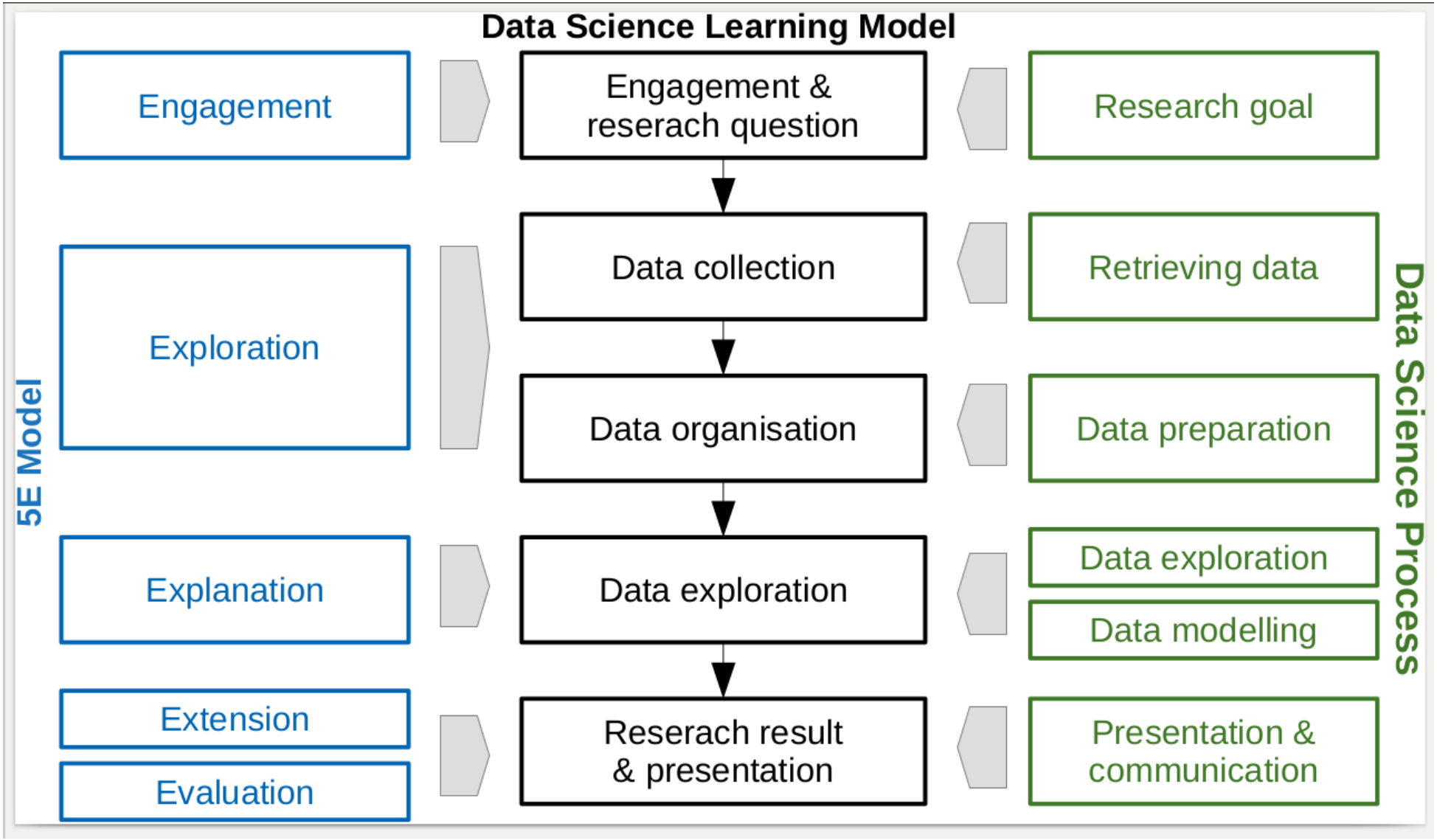
Introduction

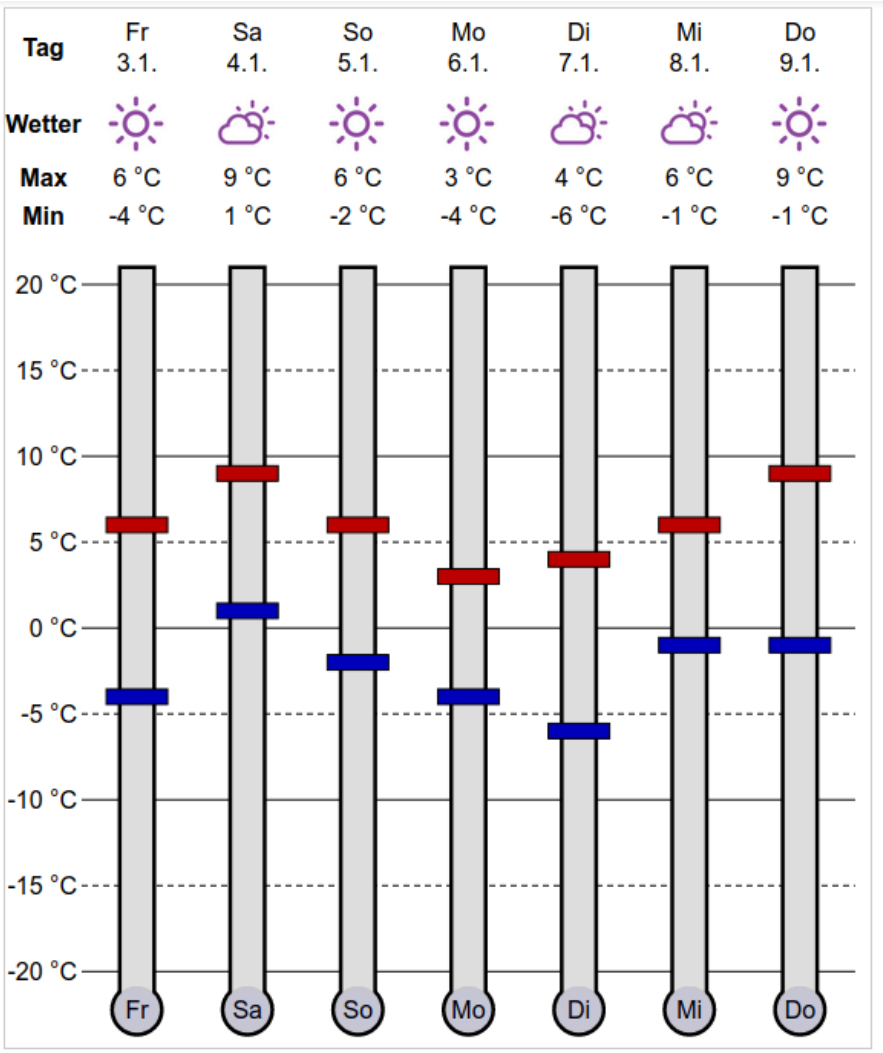
- Background: Goal of VISDAT project
  - stimulating young people’s interest and motivation in dealing with natural science topics
  - competence development in scientific and digital literacy.
  - integration of real world natural science experiments with data science activities
  - two piloting phases with experiments in schools (longitudinal study)
- Presentation overview
  - pedagogical approach
  - first pilot study
  - evaluation
  - outlook to second pilot study

Data Science Learning Model



First Pilot Study: Weather Scenario

- Experiment in 10 school classes
  - in total 170 school pupils
  - primary and seconday schools
  - groups of 3-4 pupils
- Weather scenario
  - Comparison of weather forecaset with individually collected weather data
- Phase 1: Engagement and Reserach Questions
  - How accurate is the weather forecast?

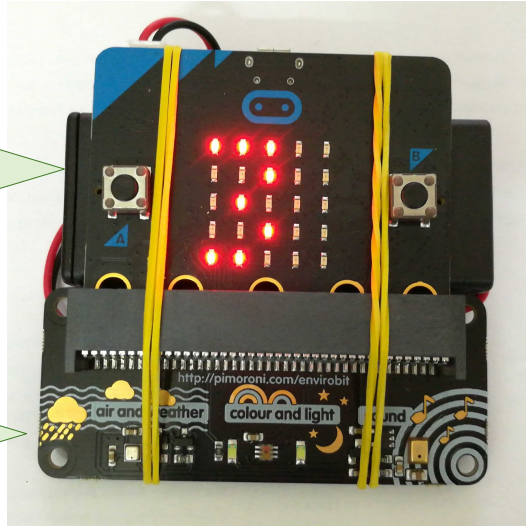


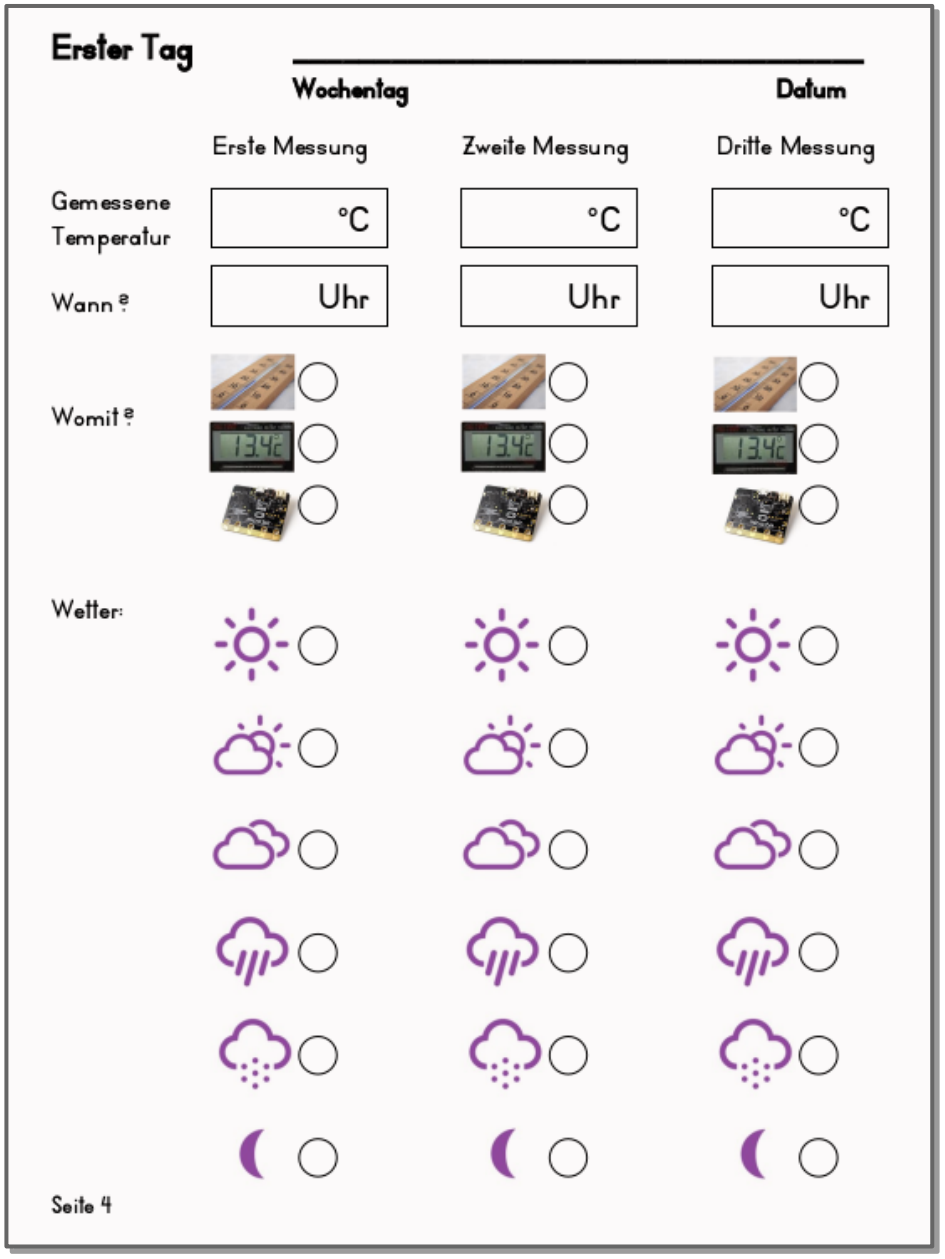
Data Collection

- Reseracher's diary (analogue)
  - collecting weather data three times a day
- Microbit
  - measuring temperature
- Digital environment
  - entering weather data

micro:bit

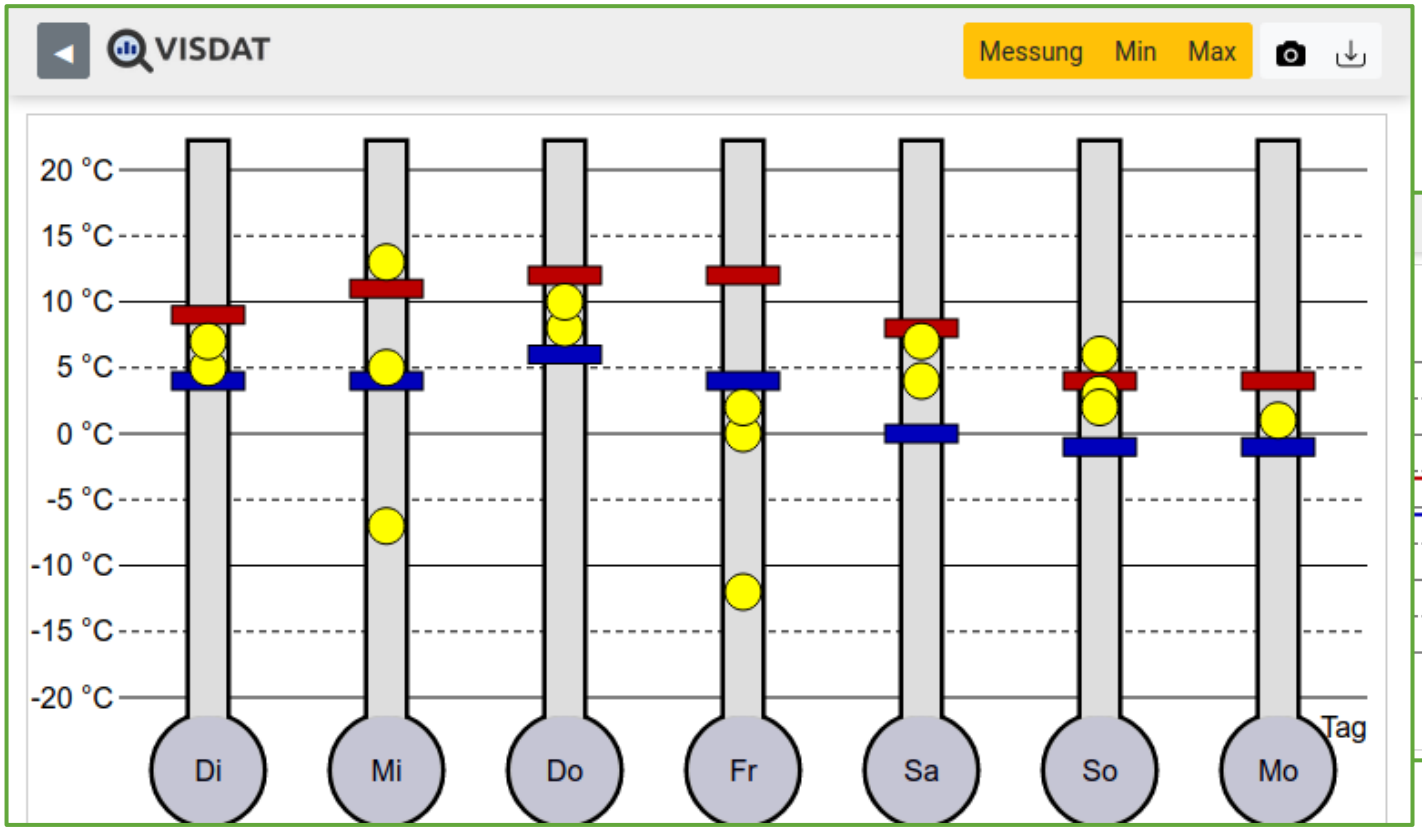
enviro:bit

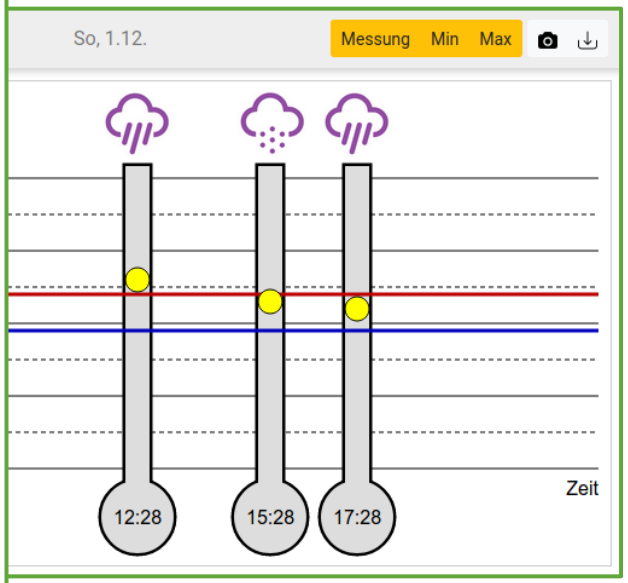




Data exploration

- Interactive diagrams of collected data
  - week view and day view
  - forecase (min, max) and user collected data
- Answering research questions with these diagrams





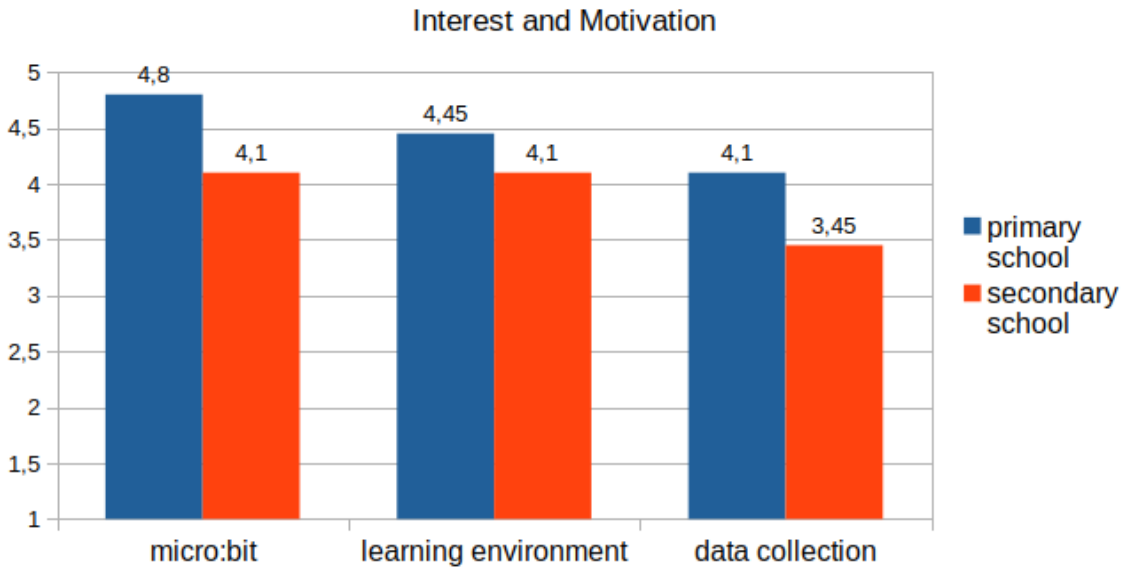
Evaluation

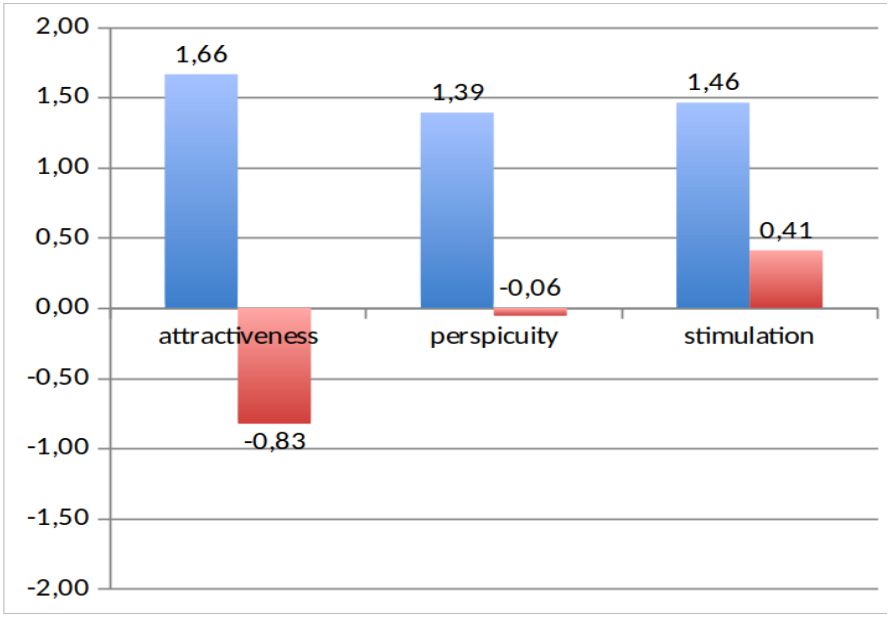
Method

- post-questionnaire of school pupils

Results

- Interest and motivation
  - reasonable high
  - higher in primary schools
- User experience
  - goold values for primary scools
  - not that good for secondary school





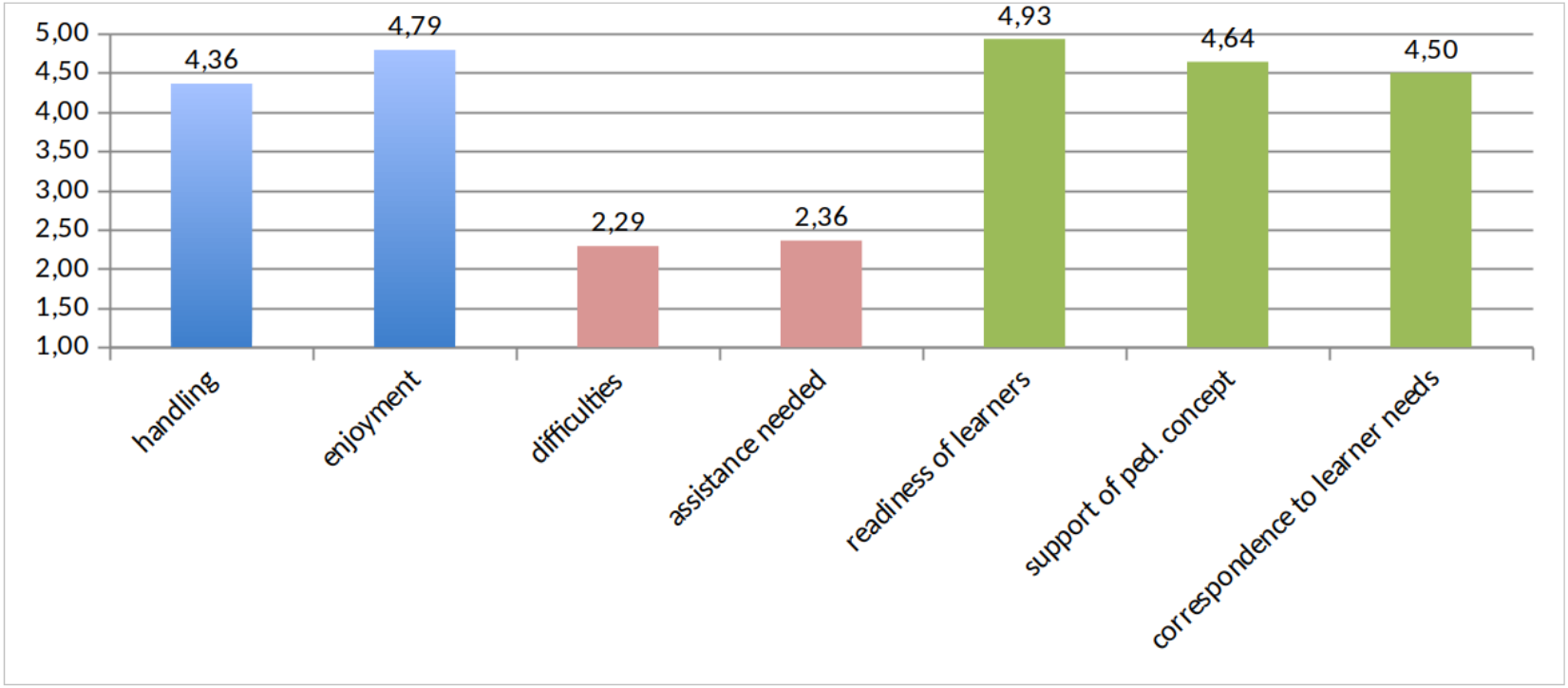
Evaluation

Method

- post-questionnaires of teaching assistants observing pupils

Results

- positive results for usage and enjoyment of learning environment
- few difficulties and assistance needed
- high degree of readiness for learning and pedagogy



Outlook

- Second experiment: growing plants
  - measuring wather consumption, soil moisture, plant size, plant condition
  - same pupils one year later (longitidinal study)
- Analysing competence development
  - using assessment results from first and second pilot study

Contact and Discussion

Any Questions?

Contact

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VISDAT

Visual Analytics for Promoting Digital and Scientific Literacy

http://visdat.at

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