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# **A School Survey Management System for Educational Assessments in Switzerland**

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# Overview

1. Educational assessments in Switzerland
2. Reasons for a School Survey Management System
3. Design principles
4. Functionalities
5. Project partners and timeline

# Educational assessments in Switzerland

Currently two large educational assessment programs exist in Switzerland:

1. PISA, the well-known Programme for International Student Assessment, an OECD initiative that involves a large number of nations (in 2015 72 nations). It is conducted since 2000 every three years and aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students (in 2015 28 million students).
2. ÜGK, the Swiss National Core Skills Assessment Program (in German: ÜGK – Überprüfung der Grundkompetenzen) is a national study. It was initiated following completion of the PISA 2015 to get more results with national relevance and focuses on the assessment based on Swiss measurement instruments.

# The Swiss National Core Skills Assessment Program (ÜGK)

- In Switzerland, the main responsibility for education and culture lies with the cantons.
- In 2009 it was decided in an intercantonal agreement to harmonize some cornerstones of the swiss educational system nationwide
- Therefor the Swiss National Objectives in Education were developed until 2011 and describe which core skills students in all cantons should have obtained after 2, 6 and 9 years of school in languages, math and natural sciences.
- They are now part of all curriculums in all cantons.
- In 2013 it was decided to assess these objectives and if the harmonization has been successful. Therefor ÜGK was initiated.
- 15 Partners conducting theses surveys. HTW Chur is one of them.

# Example of a ÜGK item in mathematics

Task 2/57

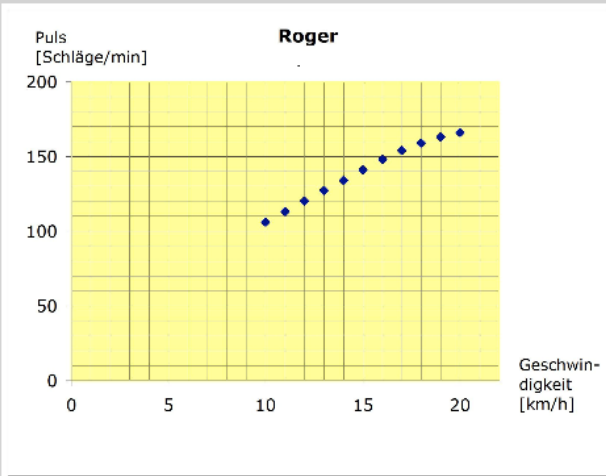
**M\_d\_9\_001\_002**

Der Conconi-Test gibt Sportlern Informationen zu ihrer Fitness. Der Athlet rennt mit vorgegebenen Geschwindigkeiten. Die Geschwindigkeit wird konstant erhöht (10 km/h; 11 km/h; 12 km/h; ...). Bei jeder Erhöhung wird der Puls gemessen.  
In der Grafik sind die Testdaten von Roger eingetragen.

**Aufgabe**

Mit welcher Geschwindigkeit läuft Roger bei einem Puls von 150 Schlägen/min?

km/h



Geschwindigkeit [km/h]	Puls [Schläge/min]
10	105
11	115
12	125
13	135
14	145
15	155
16	165
17	175
18	185
19	195
20	205

Calculator

# Tasks of HTW Chur in «ÜGK»

Leading the work package IT support and data management

IT support:

- Coordinating and organizing the hardware with the service provider
- Coordinating the use and set up of software and servers with DIPF
- Optimizing and developing the tools for the survey management

Data management:

- Introducing and optimizing the data management
- Introducing metadata standards for educational data
- Consulting for FORS regarding the preservation of educational data and metadata

## Coordinating PISA and ÜGK

- Switzerland has participated in PISA in every round from the beginning in the year 2000; the first assessment of ÜGK was in 2016
- In Switzerland PISA and ÜGK are both computer based assessments since 2012
- Sampling: 25.000 students in PISA until 2015; as of 2015 the number was reduced to 5.000 students which is adequate for international comparison. For the comparison on the cantonal level ÜGK was introduced. Each Canton participates with a sample of 1.000 students, that means ca. 25.000 in total.

	2012	2013	2014	2015	2016	2017	2018
<b>PISA (15 years old students)</b>	mathematics			natural sciences			reading
<b>ÜGK (9th grade)</b>					mathematics		
<b>ÜGK (6th grade)</b>						school language and first foreign language	
<b>ÜGK (2nd grade)</b>							

# Reasons for improving research data management

- The assessments will be repeated in the upcoming years. The aim is that analysis of individual learner progresses or trends in education over longer periods would be possible after several waves.
- Long term preservation of the data is needed. Items and results from previous rounds have to be processible in later rounds as well
- A problem for computer-based assessments is that the tools for the item production are not backward compatible and do not use an abstract item model.
- Demand from research side for more metadata, paradata and data. Especially the paradata usually are not forwarded from the data collection agency to the research agency.



# Challenges in Data Collection for ÜGK and PISA

- Manual assignment of tests to students
- Interim solutions for communication between schools, collection centers and
- Proceedings in the classroom are logged on sheets of paper, following data entry of paradata depends on yearly budget
- No disposition codes
- Offline survey mode
- Synchronization to servers (in ÜGK no synchronization during field test, only limited synchronization during main study)
- Manual process for analyzing field work
- No automatic reporting for status of sessions
  
- Idea to build a management tool for survey management and field monitoring

## Project aims

The tool should support the fieldwork, survey and data management in an adequate manner:

- Support the administration and fieldwork during the data collection process
- Efficient quality control of the data and the data collection process to make direct corrections possible
- Transparent and organized data flow as well as data access
- Optimize the data documentation process by generating documentation und metadata as a byproduct without additional effort during the data collection process

## Design principles

- Tool bases on a modified version of Rogatus Survey 2.0 (specifically the case management system) which was developed for PIAAC, the OECD Programme for the International Assessment of Adult Competencies
  - Current version only supports CAPI – will be modified to use case “data collections in schools”
  - Should be able to use different metadata standards for preservation
- GLBPM Model (Generic Longitudinal Business Process Model) will be used as means for the analysis of the current processes, stakeholders and functions
- Data and privacy protection
- User friendly graphical user interface
- Open source product
- Agile development process based on user stories and SCRUM
- «Must have» functions first, but further developments should be possible.

# Functionalities

Functionalities will be organized in modules:

- Study description and sampling
  - General information about the study
  - Lists of students (universe) which can be used to produce the sample
- Scheduling and IT support
  - Scheduling of the assessments in the schools
  - Coordination of assessments and their persons in charge
  - Update and bug fixes
- Documentation of the assessment
  - Absent students, interruptions, non expected events
- Field monitoring and reporting
  - Quality control of the project, e.g. comparison of assessment and original sample, progress of the project
- Quality control of the data
  - Synchronization of data and check

## Project partners and timeline

- The project is scheduled for 1,5 years from autumn 2017 until spring 2019 to accommodate the next field tests of ÜGK and PISA
- Currently an scientific advisory board is established with the following members
  - Swiss Conference of Cantonal Ministers of Education (EDK)
  - State Secretariat for Education, Research and Innovation (SERI)
  - University of Bern
  - University of Teacher Education St. Gallen (PHSG)
  - Service de la recherche en éducation (SRED)
  - University of Applied Sciences and Arts of Southern Switzerland (SUPSI)
  - Swiss Coordination Centre for Research in Education (SKBF)
  - Swiss Centre of Expertise in the Social Sciences (FORS)

# Outlook

- Data collection processes will be more process-oriented and improve in overall quality
- Resulting metadata, paradata and data will be richer and better documented by automatic processes (by-product of the overall survey process)
- Usage of metadata standards like DDI or QTI provides for interoperability and long term maintenance
  
- Nevertheless one challenge – no «paradata standard» exists to document disposition codes, log files (timing information, interactions), contact attempts or overall interview situation (e.g. reluctance).
- More work on this topic might be needed by providers of standards as currently all of that is proprietary or vendor specific in survey systems



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Thank you  
for your attention!

