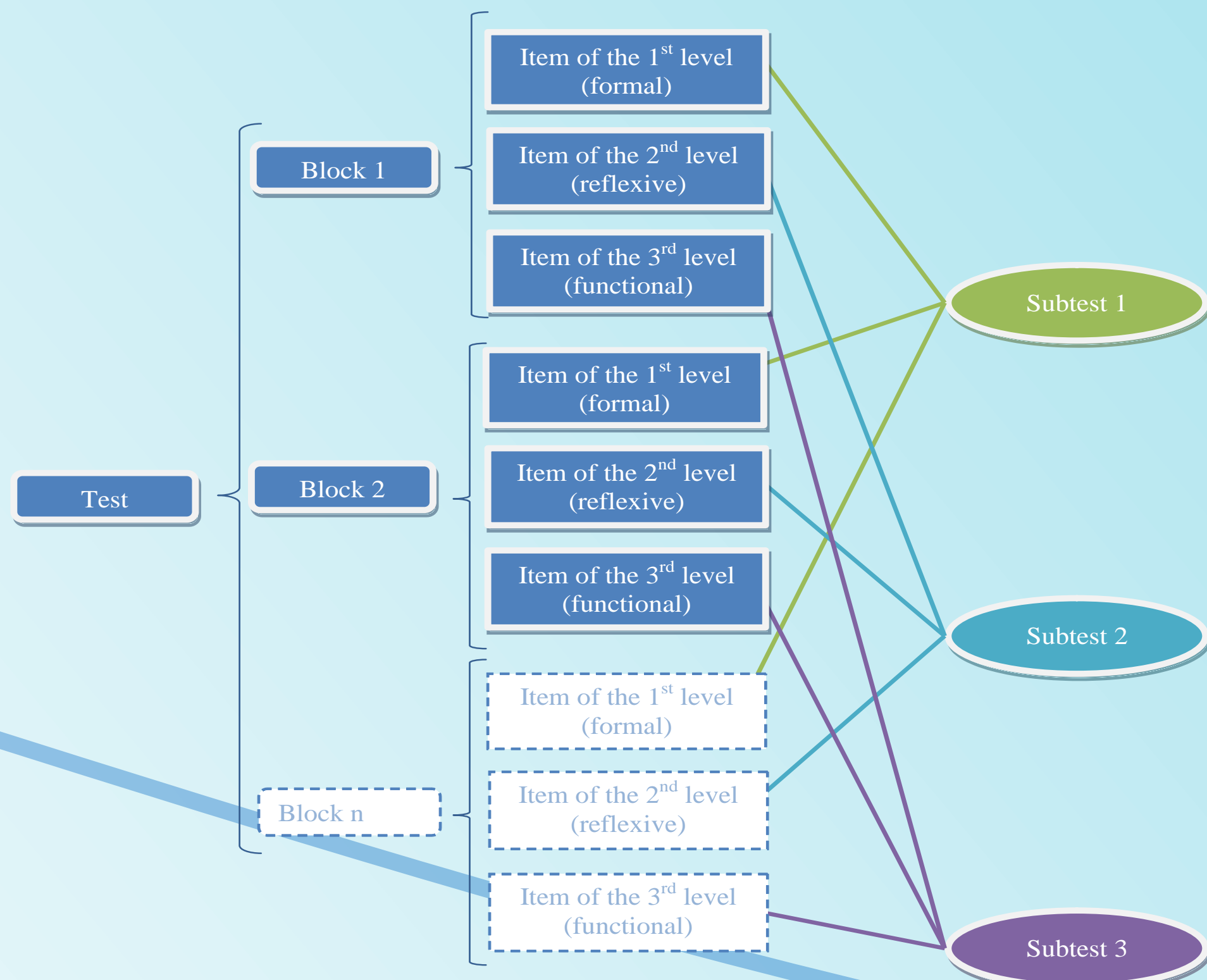
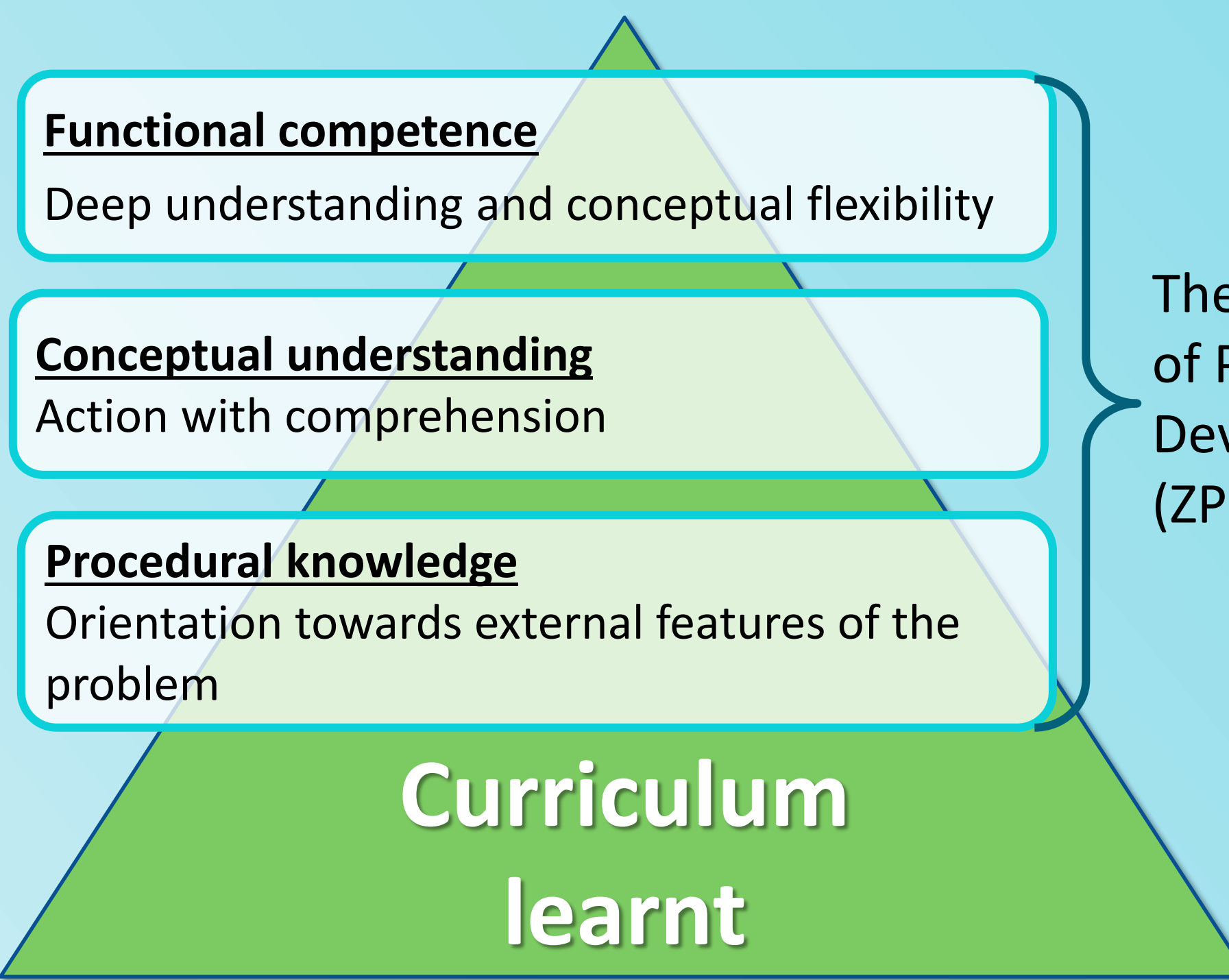


## Test structure

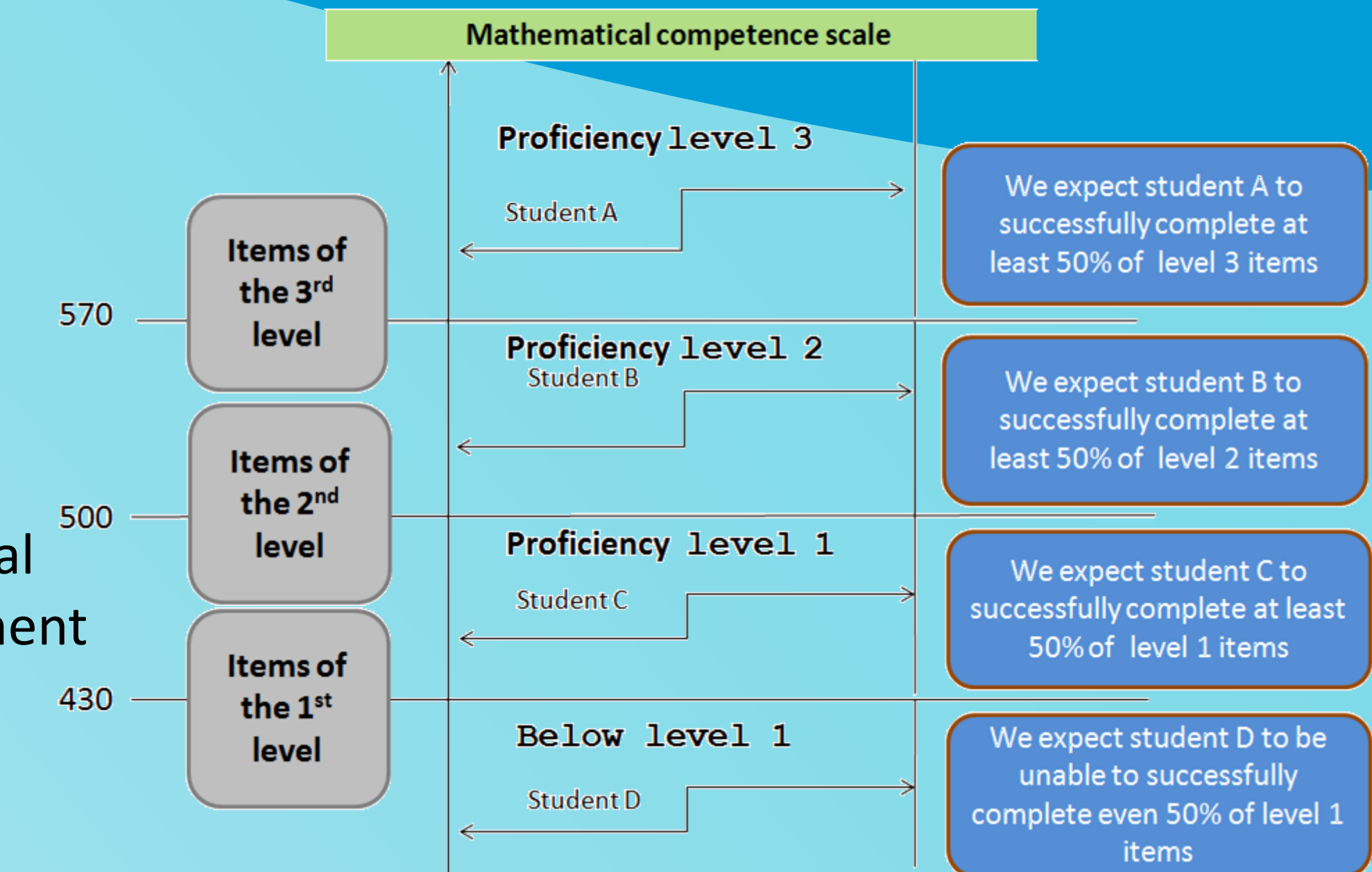


**SAM purpose:** assessment of subject competences of primary school students in mathematics and native language

**Theoretical framework:** teaching/learning process concept based on L.S. Vygotsky's ideas



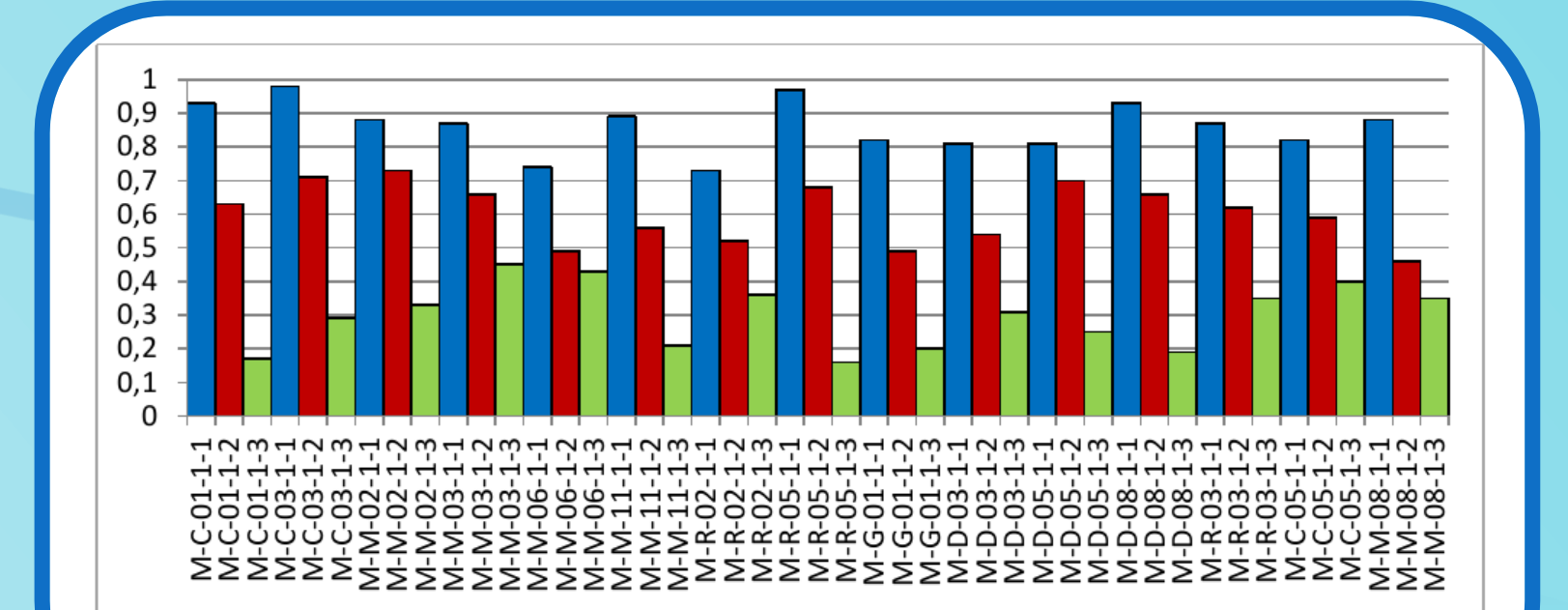
## Estimation of examinees



## Content validity

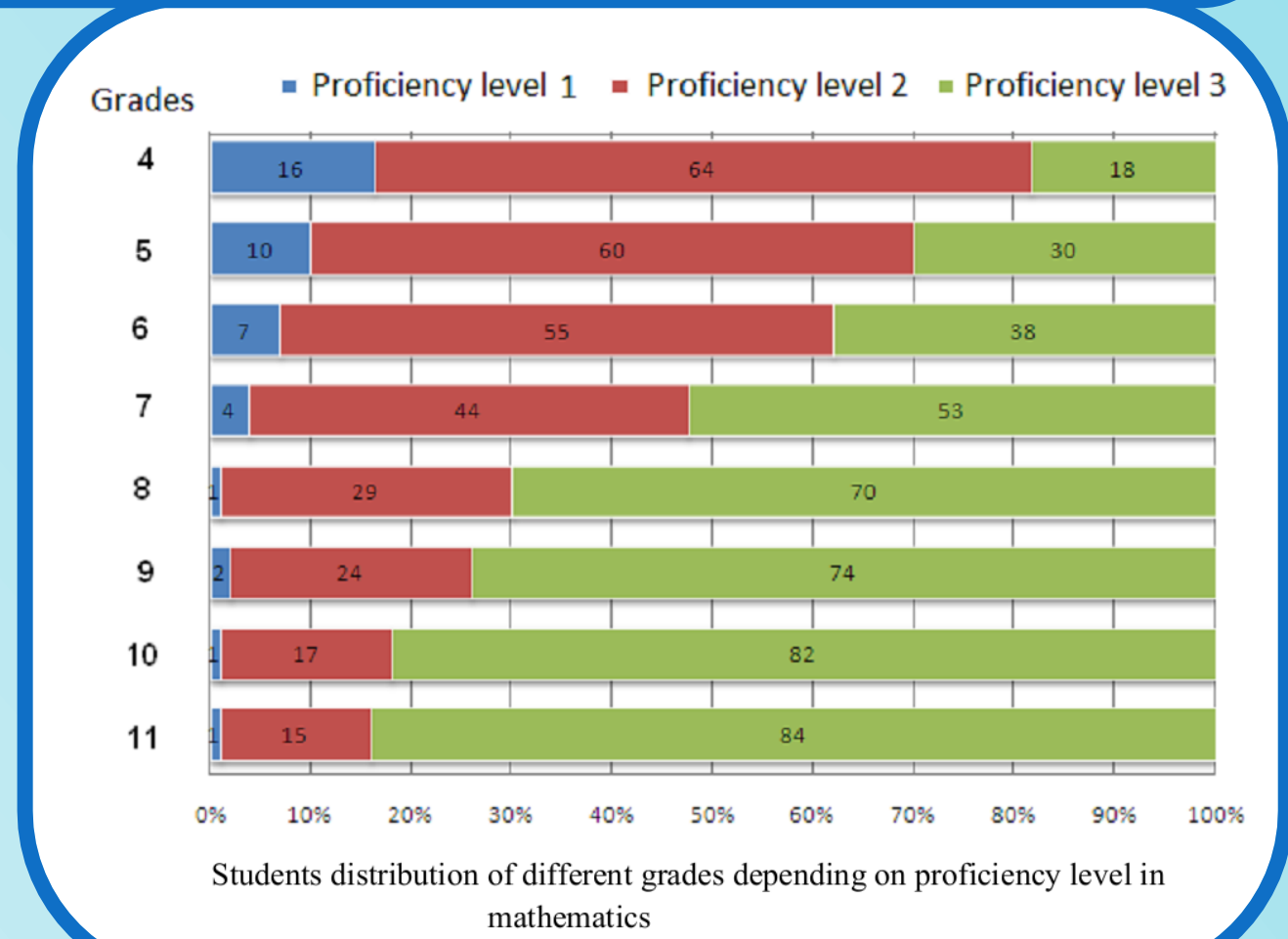
## Validity study

## Construct validity



**First hypothesis:** The items of three levels related to the same block and meeting the theoretically-grounded criteria of three levels should be built into a difficulty-based hierarchy.

**Second hypothesis:** Towards the end of the primary school the syllabus is expected to be acquired on the 2<sup>nd</sup> level. Acquiring this syllabus on the 3<sup>rd</sup> level is expected to happen towards the end of the middle school.



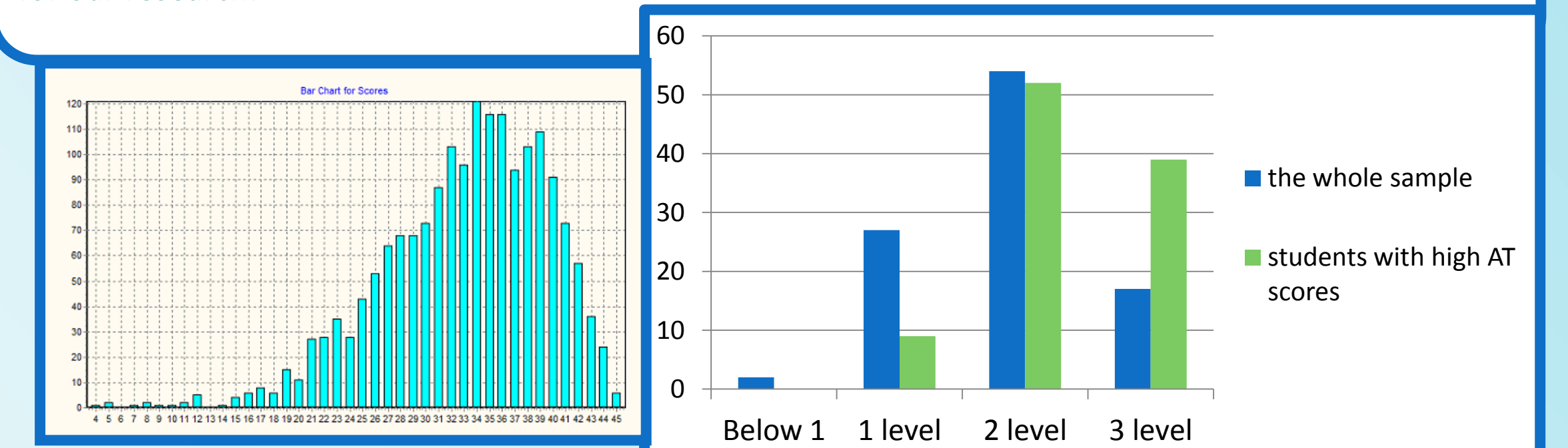
Testing of hypotheses that follow from the theoretical foundation of the test construct

## Other validity evidence research

	Correlation
The 1 <sup>st</sup> level items	0.882
The 2 <sup>nd</sup> level items	0.973
The 3 <sup>rd</sup> level items	0.928
The whole test	0.931

## Convergent validity

refers to the degree to which two measures of constructs that theoretically should be related, are in fact related. To establish convergent validity we used AT test - an instrument of monitoring of educational achievements in mathematics of primary school students that was developed by the Center of Quality Assessment of Russian Academy of Education. Among students who completed AT test, students with high test scores were selected. The maximum possible score for AT test was 24. Students with test scores not less than 20 were selected for our research.



## Psychometric quality

	Test form 1	Test form 2
Number of examinees	3018	2941
Raw score average	26	27
Standard deviation	8.37	8.55
Average difficulty level	0.59	0.61
Average discrimination index	0.44	0.46
Average point-biserial coefficient	0.39	0.39
Reliability index (KR20)	0.90	0.91
Standard error of measurement	2.61	2.61

## DIF analysis

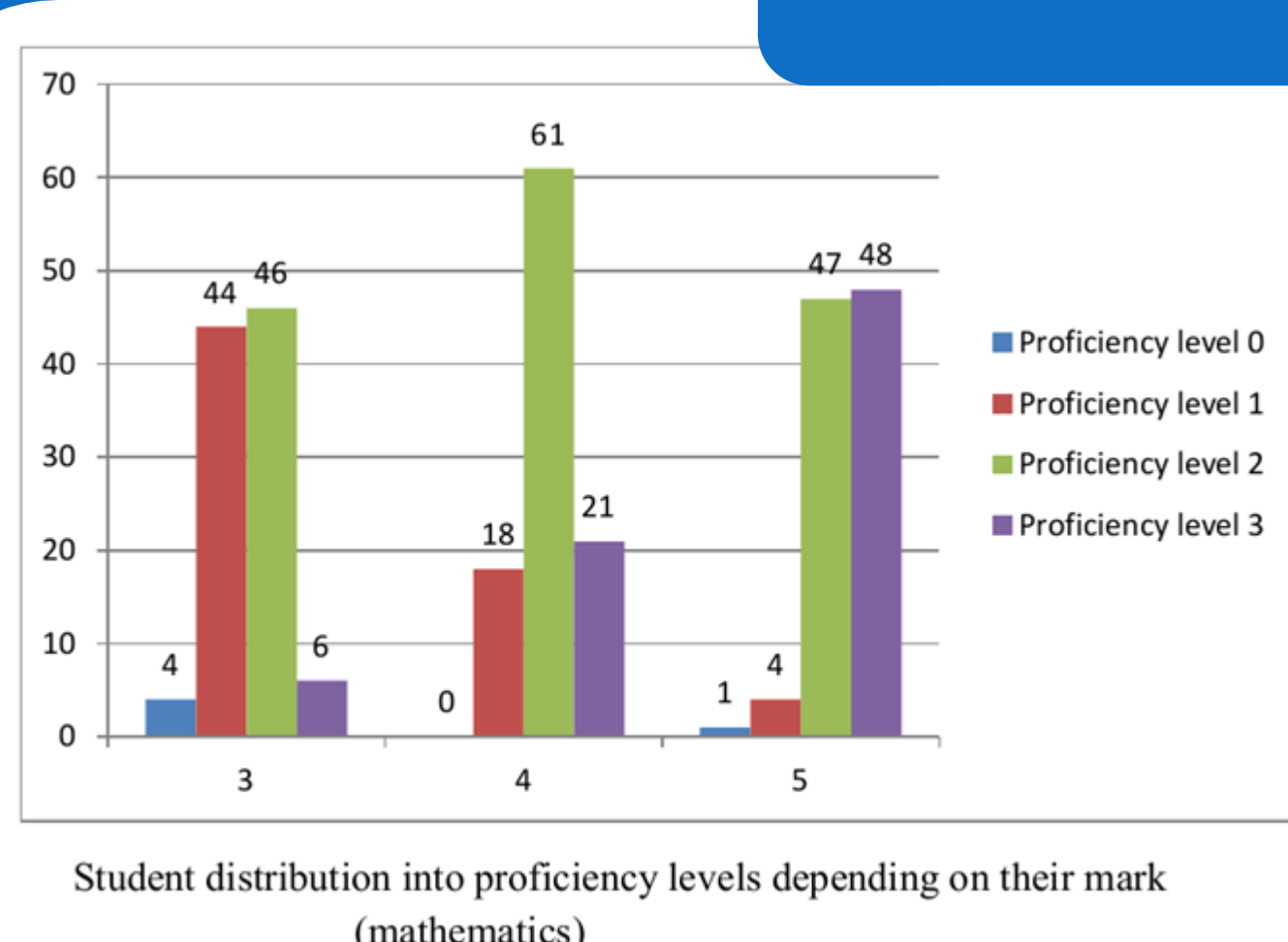


## Dimensionality

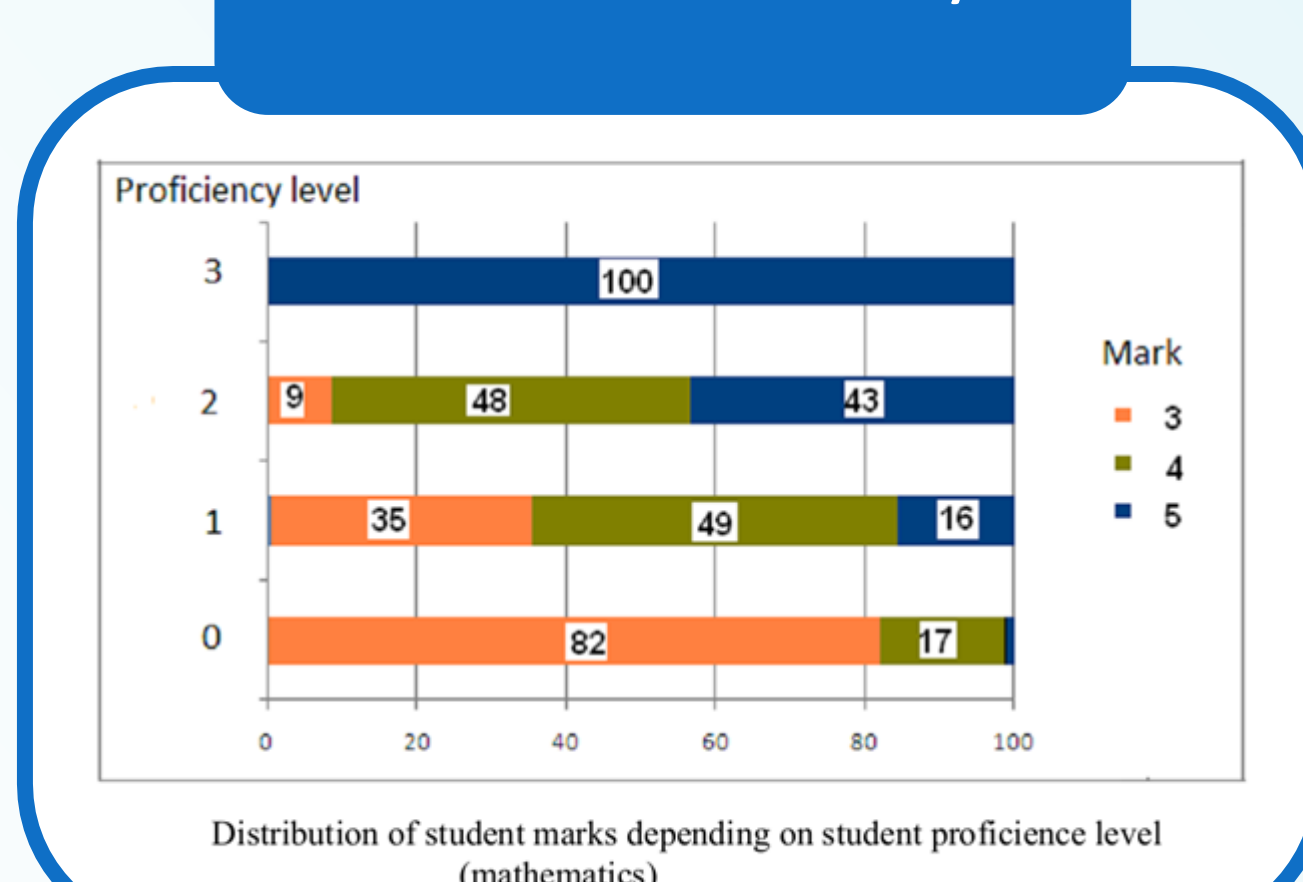
	Empirical	Modelled
Total raw variance in observations	77.8	100.0%
Raw variance explained by measures	32.8	42.1%
Raw variance explained by persons	13.9	17.9%
Raw Variance explained by items	18.9	24.3%
Raw unexplained variance (total)	45.0	57.9%
Unexplained variance in 1st contrast	1.7	2.2%
Unexplained variance in 2nd contrast	1.5	1.9%
Unexplained variance in 3rd contrast	1.4	1.9%
Unexplained variance in 4th contrast	2.4	3.1%
Unexplained variance in 5th contrast	1.3	1.7%

## Criterion validity

## Concurrent validity



## Predictive validity



## Ongoing research:

1. Connection of SAM test results and educational program in school
2. Connection of SAM test results and teachers characteristics
3. Comparability of test results from Computer Based and P&P Test Forms

If you have interest in our research and you want to find out more details write to this e-mail: [ekardanova@hse.ru](mailto:ekardanova@hse.ru) (Elena Kardanova)