

Gyöngyvér Molnár
University of Szeged

<http://www.staff.u-szeged.hu/~gymolnar>



„Developing Diagnostic Assessments” Project

Assessing Developmental Aspects of Dynamic Problem Solving



3rd Szeged Workshop on Educational Evaluation
Szeged, Hungary, April 27-28, 2011

The tendencies in educational assessment

- shifting of emphasis from curricular content to the measurement of cross-curricular competencies (PS)
- complexity, real-life, real-time problems – indicates the shift from PP->CB
- Possibilities of measuring problem solving in CBA environment:
 - to provide rich stimulus material
 - new item formats, enables measuring new constructs, new areas, assessing dynamic
 - rises new issues in assessment – EDM



The tendencies in educational assessment

- National and international projects (PIAAC, PISA, NAEP, DIPF TBA project etc.)
- focus on one measurement point vs. from a developmental perspective



Measuring development

- Tests – assess skills – students of a certain age range
- broad age range => different tests - common anchor items
- IRT models – express the results on the same scale
- Rasch model - for scaling the data, PV - compare the achievements of the age groups



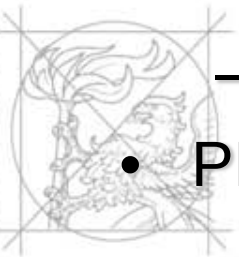
Aims of the analysis

- to compare students' achievements in tests that assess different dimensions of PS;
- to compare sub-groups of the samples,
- to establish problem solving competency scales in all of the dimensions of PS by IRT;
- to place the scaling into a developmental context, by expressing the achievements of the different age groups on the same scale; and
- to place the results into international context.



Methods

- March and April, 2011
- Grade 3-11 (9-to 17 year-old student)
- ca. 500 students in each cohort – total number – 5000
- Instruments of the study:
 - Inductive reasoning test - CB
 - Inteligenztest - PP
 - Static complex problem solving test – PP
 - Dynamic PS – CB
 - Background questionnaire – CB
- PP and CB mode as well



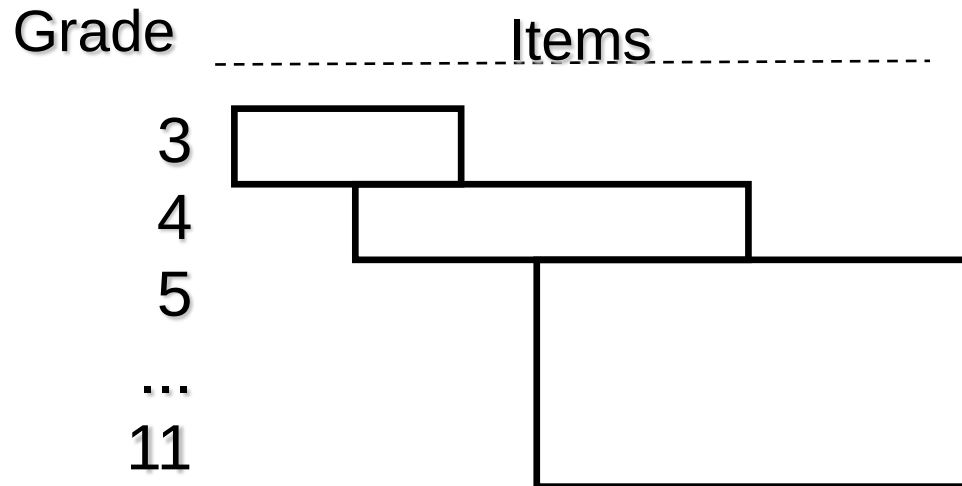
Structure of the survey

Test	Grade								
Dynamic PS				6	7	8	9	10	11
Static CPS	3	4	5	6	7	8	9	10	11
Ind. reasoning	3	4	5	6	7	8	9	10	11
Intelligenzt.	3		5		7	8	9	10	
Questionnaire	3	4	5	6	7	8	9	10	11

(Grade 3 = 9 year-old student...grade 11= 17 year-old student)
(Grade 3-8: primary school, grade 9-11: secondary school)

General abilities dimension of PS (ind. reasoning)

- Grade 3-11; CBA; TAO
- Common anchor items

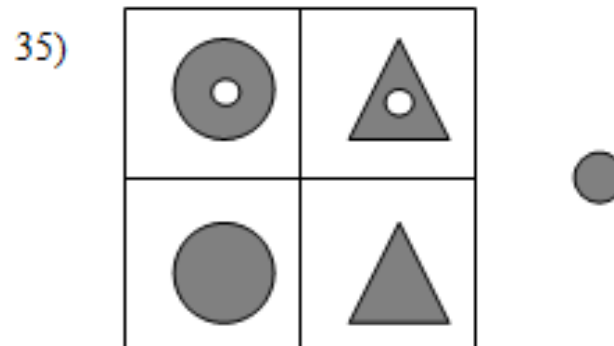
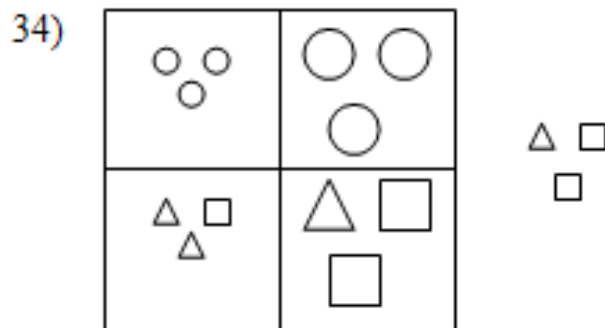
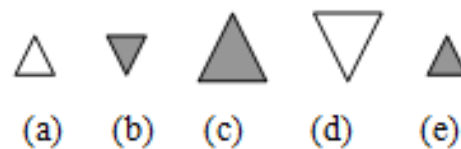
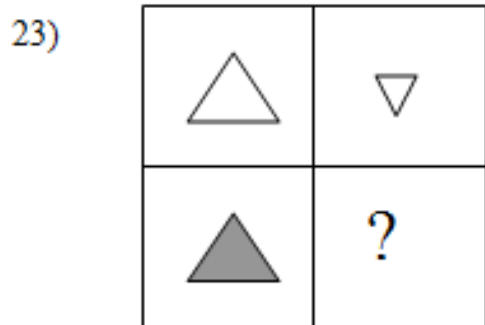
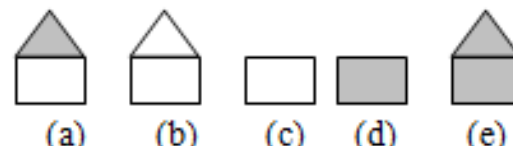


(Grade 3 = 9 year-old student...grade 11= 17 year-old student)

(Grade 3-8: primary school, grade 9-11: secondary school)

Inductive – lower grades

18)  :  =  : ?



Inductive – higher grades

a) $20 \rightarrow 32 :: 8 \rightarrow 20 :: 11 \rightarrow \underline{\hspace{2cm}}$

20:24

SZÉK : BÚTOR = KUTYA : ?

- ☐ MACSKA
- ☐ ÁLLAT
- ☐ TACSKÓ
- ☐ RÓKA
- ☐ KUTYAÖL

3

6

11

14

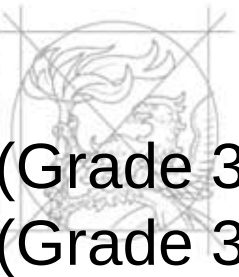
19

22

General abilities dimension of PS (intelligenztest)

- CFT-20
- Grade 3, 5, 7-10
- 2 versions: Grade 3, 5 – subtest
- Common anchor items
- PP

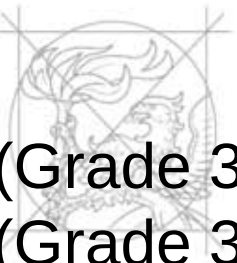
(Grade 3 = 9 year-old student...grade 11= 17 year-old student)
(Grade 3-8: primary school, grade 9-11: secondary school)



Literacy dimension of PS

- Dynamic PS test – adapted test
- CBA
- 1 test – all grades (6-11)

(Grade 3 = 9 year-old student...grade 11= 17 year-old student)
(Grade 3-8: primary school, grade 9-11: secondary school)



Expertise dimension - Static CPS test

- CPS in real-life situations - integrating transfer and knowledge application
- Tasks - novel, complex, semantically rich, knowledge intensive, intransparent and similar to real-life problems
- Crucial questions:
 - how pupils transfer knowledge to new, real-life contexts
 - how they use their problem solving strategies in unusual situations

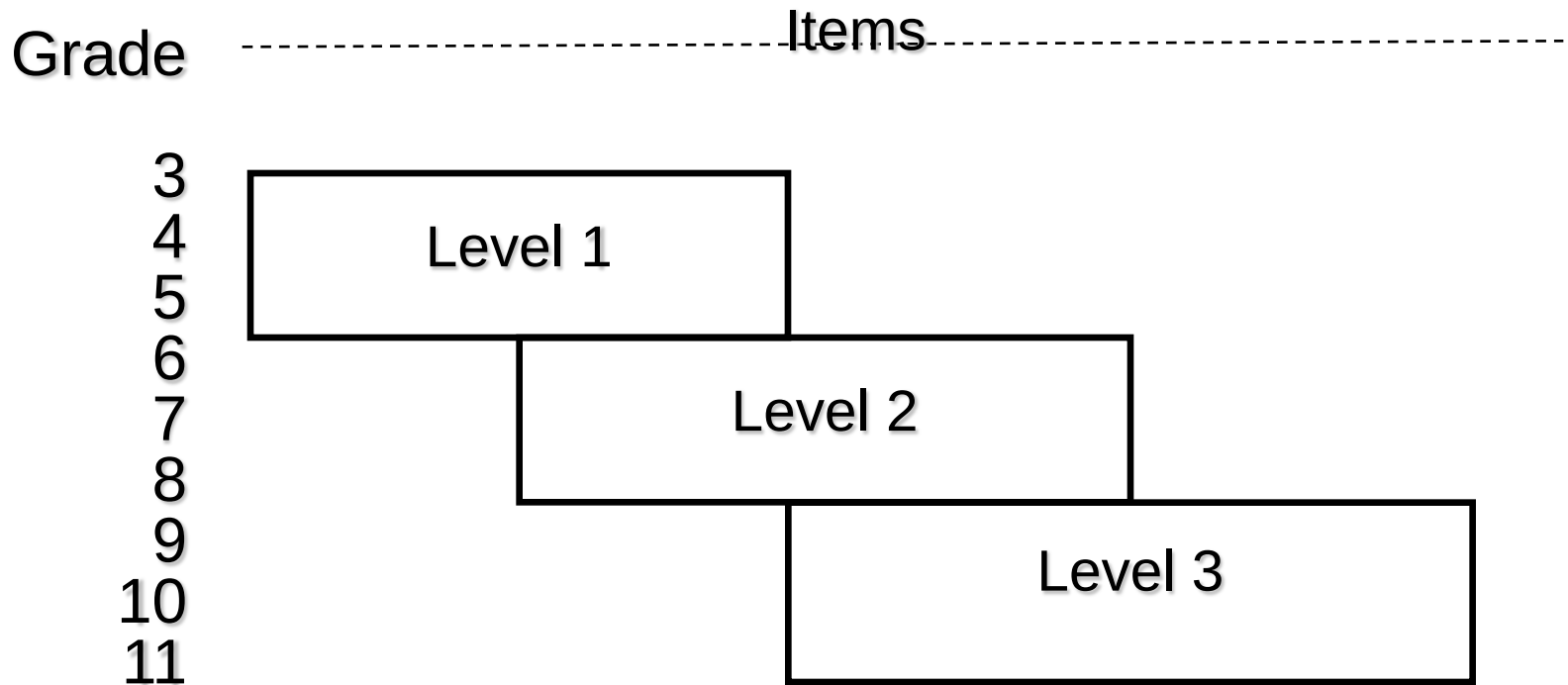


Static CPS test

- According the amount of information 3 types of problems
 - Everything is given
 - Incomplete problems (missing information learnt at school – National curricula)
 - Incomplete problems (information needed from real-life)
- broad age range => different tests - common anchor items



Structure of the static CPS surveys



(Grade 3 = 9 year-old student...grade 11= 17 year-old student)

(Grade 3-8: primary school, grade 9-11: secondary school)

Apród pizzák

kép	megnevezés	20 cm	28 cm	32 cm	60 cm
	► Sajtos pizzaszós, sajt, paradicsomkárka	690 rendel	850 rendel	990 rendel	2890 rendel
	► Sonkás pizzaszós, sonka, sajt	690 rendel	850 rendel	990 rendel	2890 rendel
	► Gombás pizzaszós, gomba, sajt	690 rendel	850 rendel	990 rendel	2890 rendel
	► Kolbászos pizzaszós, kolbász, sajt	690 rendel	850 rendel	990 rendel	2890 rendel
	► Szalámis pizzaszós, szalámi, sajt	690 rendel	850 rendel	990 rendel	2890 rendel
	► Caribi pizzaszós, sonka, trópusi gyümölcsök, sajt	690 rendel	850 rendel	990 rendel	2890 rendel
	► Erdő kapitánya pizzaszós, sonka, gomba, sajt	690 rendel	850 rendel	990 rendel	2890 rendel
	► So-ku pizzaszós, sonka, kukorica, sajt	690 rendel	850 rendel	990 rendel	2890 rendel

Főnemes pizzák

kép	megnevezés	20 cm	28 cm	32 cm	60 cm
	► Hawaii pizzaszós, sonka, ananász, kukorica, sajt	750 rendel	950 rendel	1090 rendel	3390 rendel
	► Son-go-ku pizzaszós, sonka, gomba, kukorica, sajt	750 rendel	950 rendel	1090 rendel	3390 rendel
	► Spencer tejföl, főtt tojás, bacon, mozzarella	750 rendel	950 rendel	1090 rendel	3390 rendel
	► Mexikói chilisós, sonka, bab, kukorica, pfefferoni paprika, sajt	750 rendel	950 rendel	1090 rendel	3390 rendel

KOSÁR TARTALMA

Üres a kosár

Összesen: 0 Ft*

*+ csomagolási és száll. díj

Név: Város: Cím: Telefon: E-mail:

Megjegyzés:

☒ Jegyezd meg a rendelésem

AKCIÓ!!!

EGYET FIZET,
KETTŐT KAP. **

* Kiszállítási díj: 180 Ft.

A doboz ára 70 Ft.

** Az ajánlat kizárólag a
28cm-es pizzára vonatkozik.

Másnap délelőtt átjött négy haverom, 11-kor már nagyon éhesek voltunk, rendeltünk egy-egy pizzát. Anna és Juli közösen kértek egy sonkás pizzát, a fiúk pedig egy-egy kicsi gombásat, én egy közepes mexikóit. Ez vajon mennyibe kerülhetett?

A: 3360Ft

B: 3570Ft

C: 3780Ft

D: 2460Ft

Miután megérkezett a pizzánk, olyan jó illata volt, hogy anyuék is úgy döntöttek, ők is pizzát esznek ebédre. Apa beült a kocsiba és hozott magának egy nagyobb Erdő kapitánya pizzát, anyának pedig egy kicsit kisebb ananászos pizzát. Mennyi pénzt kellett apunak legalább vinni a pizzériába?

A: 1700Ft

B: 2100Ft

C: 2500Ft

D: 2900Ft

Problems - limitations

- faced several technological challenges
- the required technological parameters given in advance
- several technological means available in schools diversity, compatibility require further considerations
- Trouble with Internet connections – speed, monitor resolution...





Thank you for your kind attention!

<http://www.staff.u-szeged.hu/~gymolnar>

