

Sino-Finland Learning Research Innovation Center: The Chinese Perspectives --Student Learning

Beijing Normal University

Jun Wang, May 16, 2016

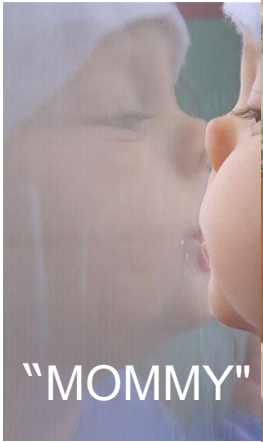


Outline



BACKGROUNDS

Learning: critical for survival and success



China and Finland: Rank top in student achievement

Snapshot of performance in mathematics, reading and science

- Countries/economies with a mean performance/share of top performers above the OECD average
- Countries/economies with a share of low achievers below the OECD average
- Countries/economies with a mean performance/share of low achievers/share of top performers not statistically significantly different from the OECD average
- Countries/economies with a mean performance/share of top performers below the OECD average
- Countries/economies with a share of low achievers above the OECD average

	Mathematics				Reading		Science	
	Mean score in PISA 2012	Share of low achievers (below Level 2)	Share of top performers (Level 5 or 6)	Annualised change in score points	Mean score in PISA 2012	Annualised change in score points	Mean score in PISA 2012	Annualised change in score points
OECD average	494	23.0	12.6	-0.3	496	0.3	501	0.5
Shanghai-China	613	3.8	55.4	4.2	570	4.6	580	1.8
Singapore	573	8.3	40.0	3.8	542	5.4	551	3.3
Hong Kong-China	561	8.5	33.7	1.3	545	2.3	555	2.1
Chinese Taipei	560	12.8	37.2	1.7	523	4.5	523	-1.5
Korea	554	9.1	30.9	1.1	536	0.9	538	2.6
Macao-China	538	10.8	24.3	1.0	509	0.8	521	1.6
Japan	536	11.1	23.7	0.4	538	1.5	547	2.6
Liechtenstein	535	14.1	24.8	0.3	516	1.3	525	0.4
Switzerland	531	12.4	21.4	0.6	509	1.0	515	0.6
Netherlands	523	14.8	19.3	-1.6	511	-0.1	522	-0.5
Estonia	521	10.5	14.6	0.9	516	2.4	541	1.5
Finland	519	12.3	15.3	-2.8	524	-1.7	545	-3.0
Canada	518	13.8	16.4	-1.4	523	-0.9	525	-1.5
Poland	518	14.4	16.7	2.6	518	2.8	526	4.6
Belgium	515	19.0	19.5	-1.6	509	0.1	505	-0.9
Germany	514	12.7	17.5	1.4	508	1.8	524	1.4
Viet Nam	511	14.2	13.3	m	508	m	528	m
Austria	506	18.7	14.3	0.0	490	-0.2	506	-0.8
Australia	504	19.7	14.8	-2.2	512	-1.4	521	-0.9
Ireland	501	16.9	10.7	-0.6	523	-0.9	522	2.3
Slovenia	501	20.1	13.7	-0.6	481	-2.2	514	-0.8
Denmark	500	16.8	10.0	-1.8	496	0.1	498	0.4
New Zealand	500	22.6	15.0	-2.5	512	-1.1	516	-2.5
Czech Republic	499	21.0	12.9	-2.5	503	-0.5	508	-1.0
France	495	22.4	12.9	-1.5	505	0.0	499	0.6
United Kingdom	494	21.8	11.8	-0.3	499	0.7	514	-0.1
Iceland	493	21.5	11.2	-2.2	483	-1.3	478	-2.0
Latvia	491	19.9	8.0	0.5	489	1.9	502	2.0
Luxembourg	490	24.3	11.2	-0.3	488	0.7	491	0.9
Norway	489	22.3	9.4	-0.3	504	0.1	495	1.3
Portugal	487	24.9	10.6	2.8	488	1.6	489	2.5
Italy	485	24.7	9.9	2.7	490	0.5	494	3.0
Spain	484	23.6	8.0	0.1	488	-0.3	496	1.3
Russian Federation	482	24.0	7.8	1.1	475	1.1	486	1.0
Slovak Republic	482	27.5	11.0	-1.4	463	-0.1	471	-2.7
United States	481	25.8	8.8	0.3	498	-0.3	497	1.4
Lithuania	479	26.0	8.1	-1.4	477	1.1	496	1.3
Sweden	478	27.1	8.0	-3.3	483	-2.8	485	-3.1
Hungary	477	28.1	9.3	-1.3	488	1.0	494	-1.6
Croatia	471	29.9	7.0	0.6	485	1.2	491	-0.3
Israel	466	33.5	9.4	4.2	486	3.7	470	2.8
Greece	453	35.7	3.9	1.1	477	0.5	467	-1.1
Serbia	449	38.9	4.6	2.2	446	2.6	445	1.5
Turkey	448	42.0	5.9	3.2	425	4.1	463	6.4
Romania	445	40.8	3.2	4.9	438	1.1	439	3.4
Cyprus ^{1,2}	440	42.0	3.7	m	449	m	438	m
Bulgaria	439	43.8	4.1	4.2	436	0.4	446	2.0
United Arab Emirates	434	46.3	3.5	m	442	m	448	m
Kazakhstan	432	45.2	0.9	9.0	393	0.8	425	8.1
Thailand	427	49.7	2.6	1.0	441	1.1	444	3.9
Chile	423	51.5	1.6	1.9	441	3.1	445	1.1
Malaysia	421	51.8	1.3	8.1	398	-7.8	420	-1.4
Mexico	413	54.7	0.6	3.1	424	1.1	415	0.9
Montenegro	410	56.6	1.0	1.7	422	5.0	410	-0.3
Uruguay	409	55.8	1.4	-1.4	411	-1.8	416	-2.1
Costa Rica	407	59.9	0.6	-1.2	441	-1.0	429	-0.6
Albania	394	60.7	0.8	5.6	394	4.1	397	2.2
Brazil	391	67.1	0.8	4.1	410	1.2	405	2.3
Argentina	388	66.5	0.3	1.2	396	-1.6	406	2.4
Tunisia	388	67.7	0.8	3.1	404	3.8	398	2.2
Jordan	386	68.6	0.6	0.2	399	-0.3	409	-2.1
Colombia	376	73.8	0.3	1.1	403	3.0	399	1.8
Qatar	376	69.6	2.0	9.2	388	12.0	384	5.4
Indonesia	375	75.7	0.3	0.7	396	2.3	382	-1.9
Peru	368	74.6	0.6	1.0	384	5.2	373	1.3

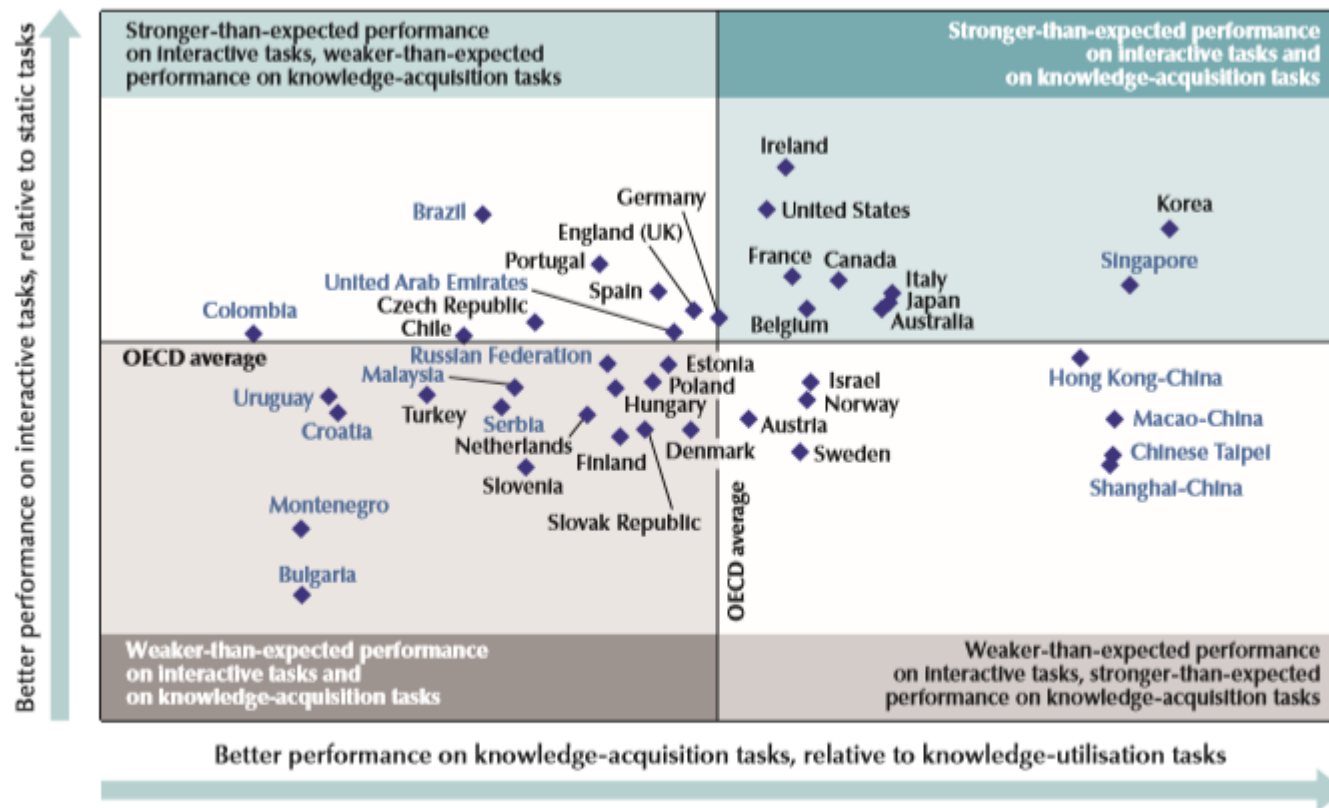
PISA 2012 Results in Focus

What 15-year-olds know and what they can do with what they know



Both Facing challenges

Students' strengths and weaknesses in problem solving

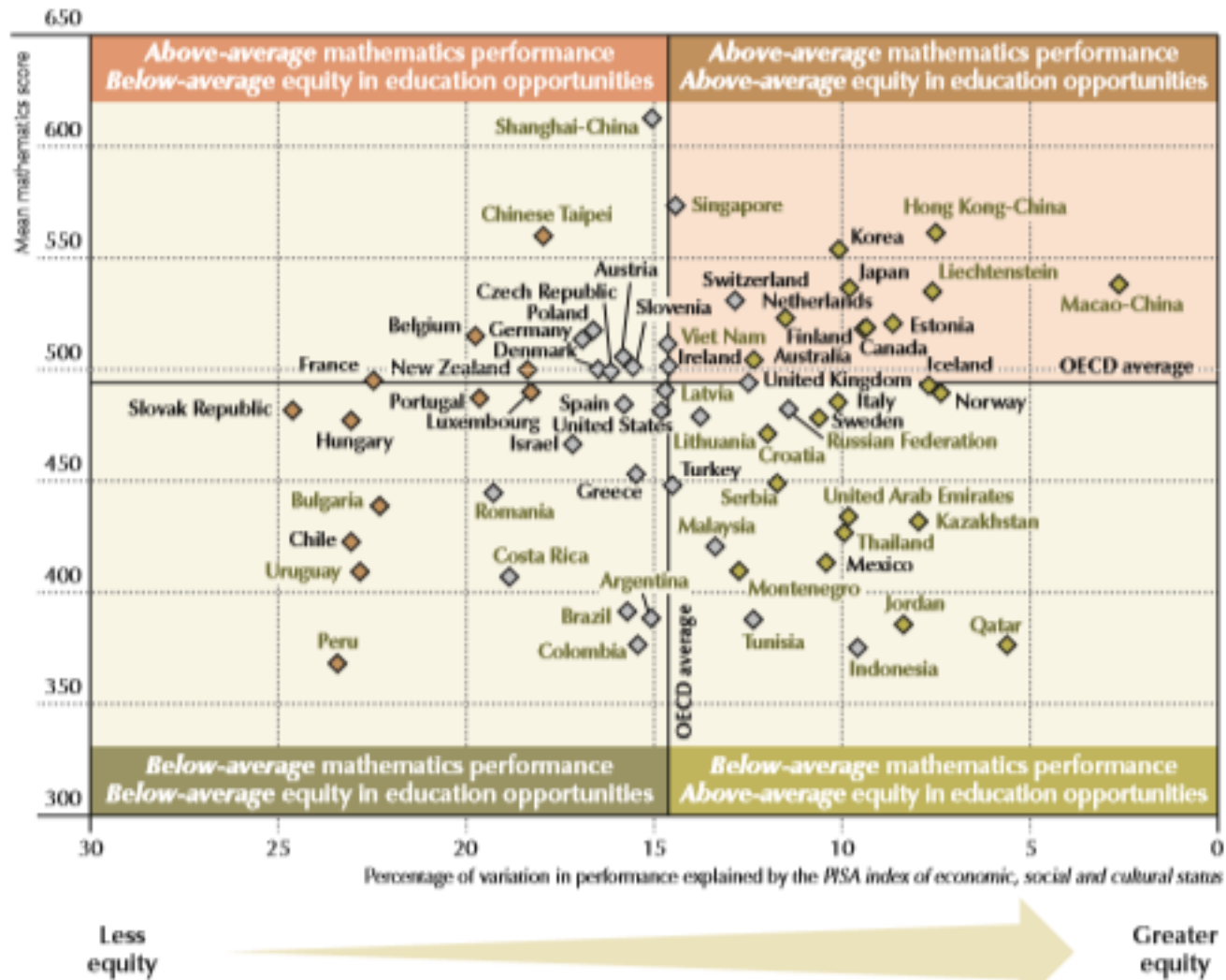


Note: In interactive tasks, students must uncover some of the information required to solve the problem; static tasks have all the necessary information disclosed at the outset. For each country/economy and for each set of tasks, expected performance is based on the country's/economy's overall performance in problem solving and on the relative difficulty of tasks, as measured across OECD countries.

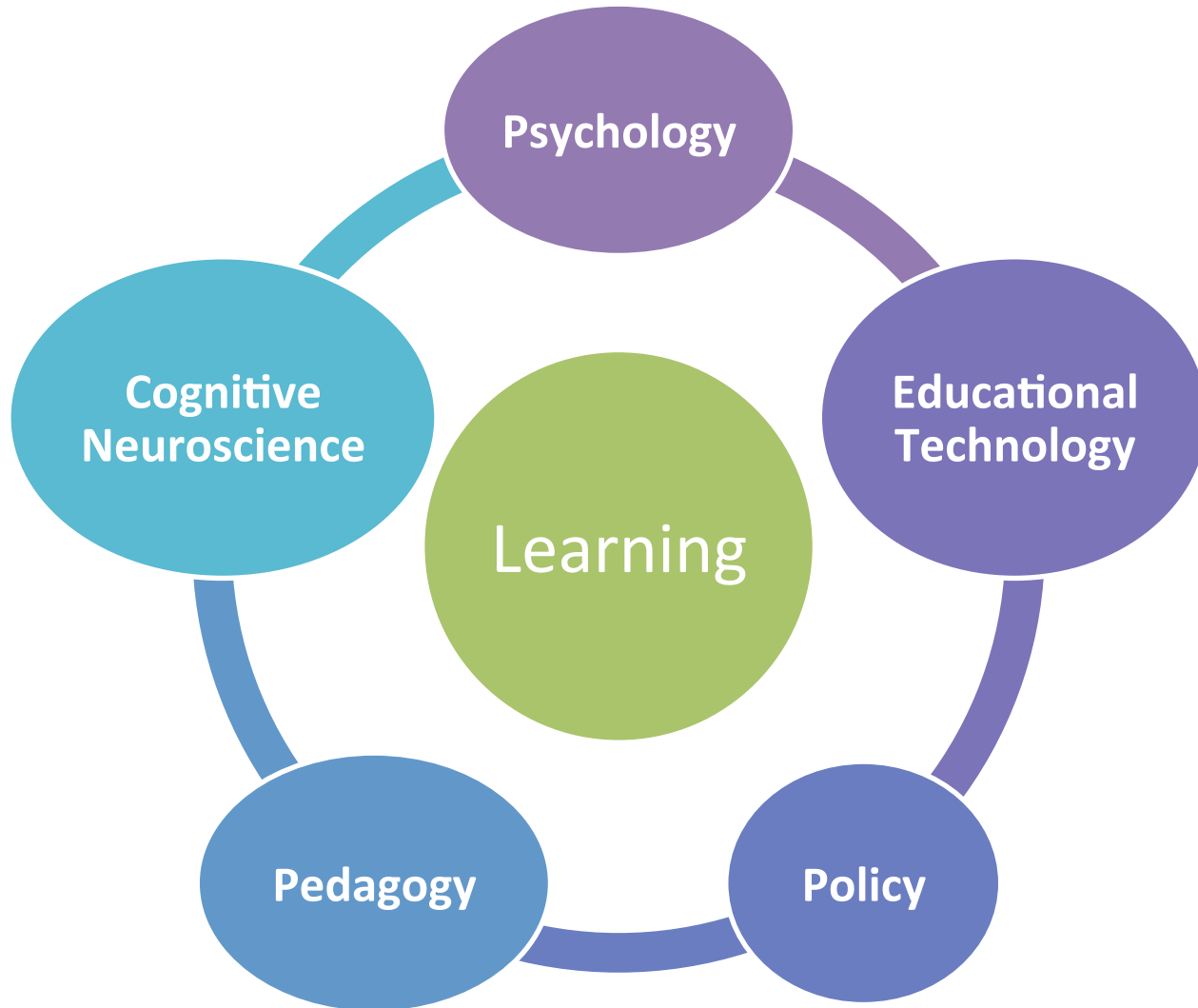
Source: OECD, PISA 2012 Database; Tables V.3.1 and V.3.6.

Performance and equity

- ◆ Strength of the relationship between performance and socio-economic status is above the OECD average
- ◇ Strength of the relationship between performance and socio-economic status is not statistically significantly different from the OECD average
- ◆ Strength of the relationship between performance and socio-economic status is below the OECD average



Multi-disciplinary studies of learning in both BNU and UH



MISSIONS

1. To decode student Innovative learning

- Innovative learning: high quality:
Effective, Fun and Sustainable
- Individual level
- School level
- Domain specific / Domain general
- From neuron to classroom

2.Evidence-based Innovations of Student learning

- Brain and Wellbeing improvement
- Domain specific learning assistance
- Better public understanding

MAJOR AREAS AND PROGRESSES

Area 1. Academic Achievement and wellbeing: Brain, Cognitive and environment interaction

- Cross cultural comparisons on developmental trajectories and the mechanisms
- The roles of Non-academic curriculum and activities

The On-going Project



National Key Laboratory of Cognitive Neuroscience and Learning

Open-project application form

Category: key project (X) regular project ()

Project title: Interplay Between Neurocognitive and Socio-emotional Skills in School-aged Children

Applicant Name: Mari Tervaniemi Phone: +358 50 4150213

Institution: CICERO Learning, University of Helsinki

Address: P.O. Box 9, 00014 University of Helsinki, Finland

Postcode: 00014 Email: mari.tervaniemi@helsinki.fi

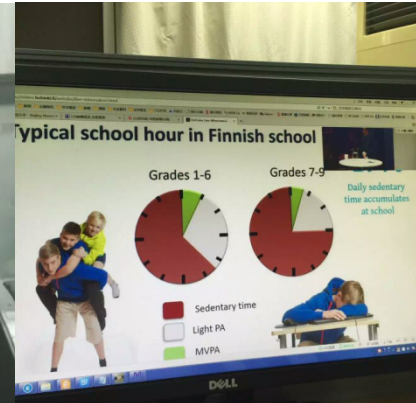
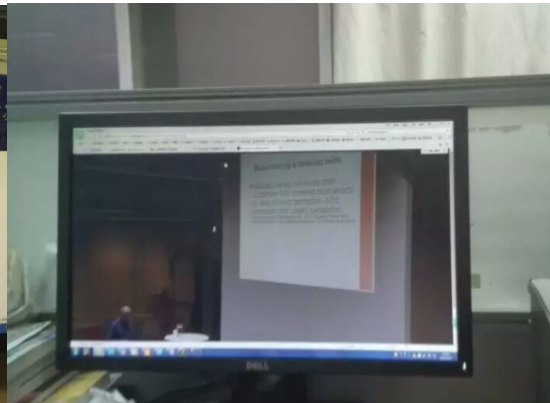
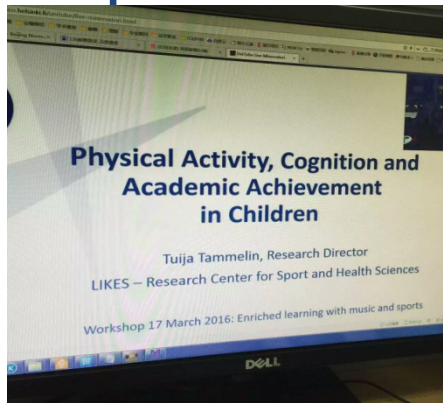
Name of the Collaborator in BNU: Professor Tao Sha

Application Date: January 25, 2016

- State key laboratory for cognitive neuroscience & learning, BNU:
RMB 100,000
- UH: Euro 5000 on travel

Activities

- **On-line Seminar: Enriched learning with music and sports**



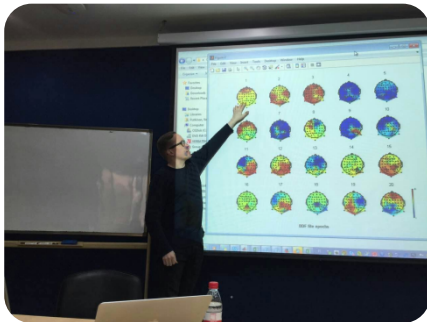
- **Skype lecture: EEG/ERP study**



- **Field visit:** primary school P.E. and music class



- **Hands-on training in Lab :**
paradigm demo., testing, data collection & analysis



Another project in preparation

- Cross culture comparison of learning and wellbeing
- Instrument sharing
Cognitive Abilities: BNU
Wellbeing and motivation: UH
- Fund application:
discussions on sources and possibilities

Lab & Platform



Cognitive-Behavior Laboratory



Eye tracking Laboratory



Transcranial Magnetic Stimulation



Near-infrared Imaging Technology



Adult EEG/ERP Laboratory



Children EEG/ERP Laboratory



Magnetic Resonance Imaging



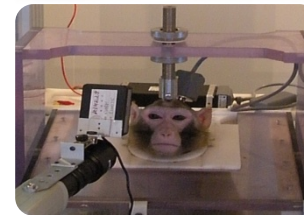
MR compatible EEG



Molecules Genetics Laboratory



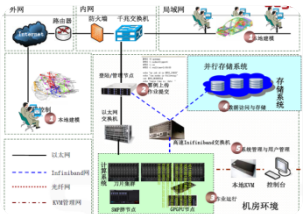
Brain-Computer interface



Awaking Behaving Monkey Lab



Rodent Laboratory



High Performance Computing Platform



Neural Information Processing & Engineering Lab



Anesthesia Monkey Electrophysiological Lab



Patch Clamp System (rats)

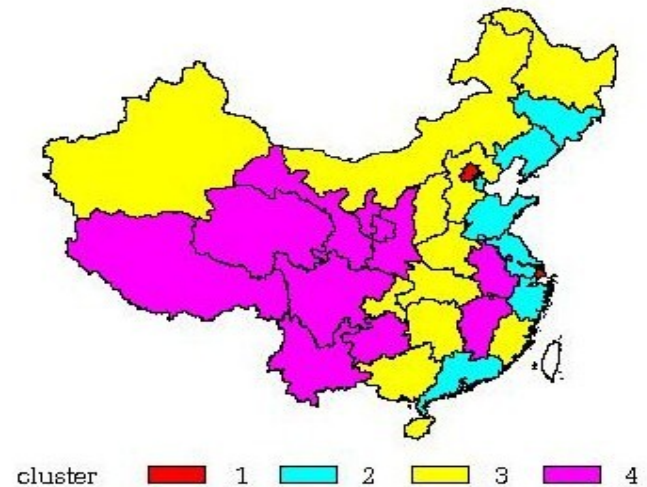


IDG/MCGOVERN INSTITUTE FOR BRAIN RESEARCH AT BNU

In 2006, “**National Children’s Study of China (NCSC)**” project
sponsored by the MOE & MOST

- The first national study on psychological development of children and adolescents in China.
- The first investigation on psychological development in 31 provinces, cities and autonomous regions with a national representative sample

- 100 districts and counties as prim sampling units
- 95,520 children and adolescents & their primary care-givers



Cognitive Abilities Tests (6-15)

- Visual Perceptual-Spatial
- Attention,
- Memory
- Reasoning

Academic Achievement Tests (6-15)

- Mathematics
- Reading

Social Adjustment Questionnaires (9-15)

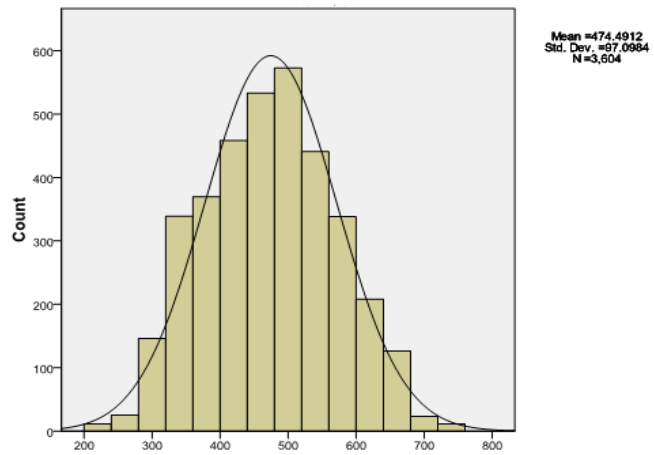
- Emotion
- Behavior
- Self- cognition
- Social cognition

Environment Questionnaires (9-15)

- Family
- School
- Community

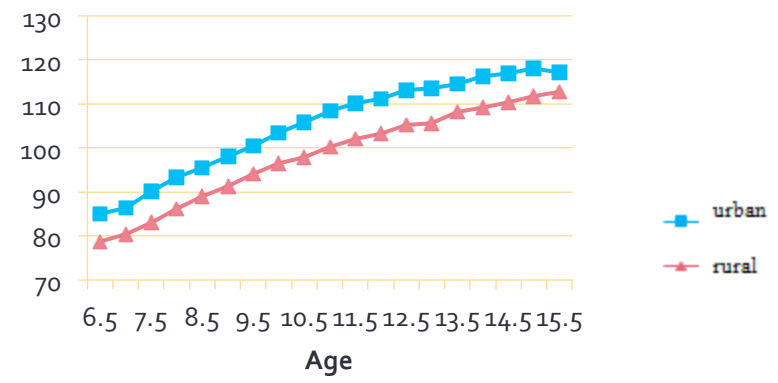
- **Established the first national norms**

- for all the Chinese children aged 6-15
- for male and female
- for urban and rural areas
- for four regions



Distribution of mathematics CEEB score of grade 5

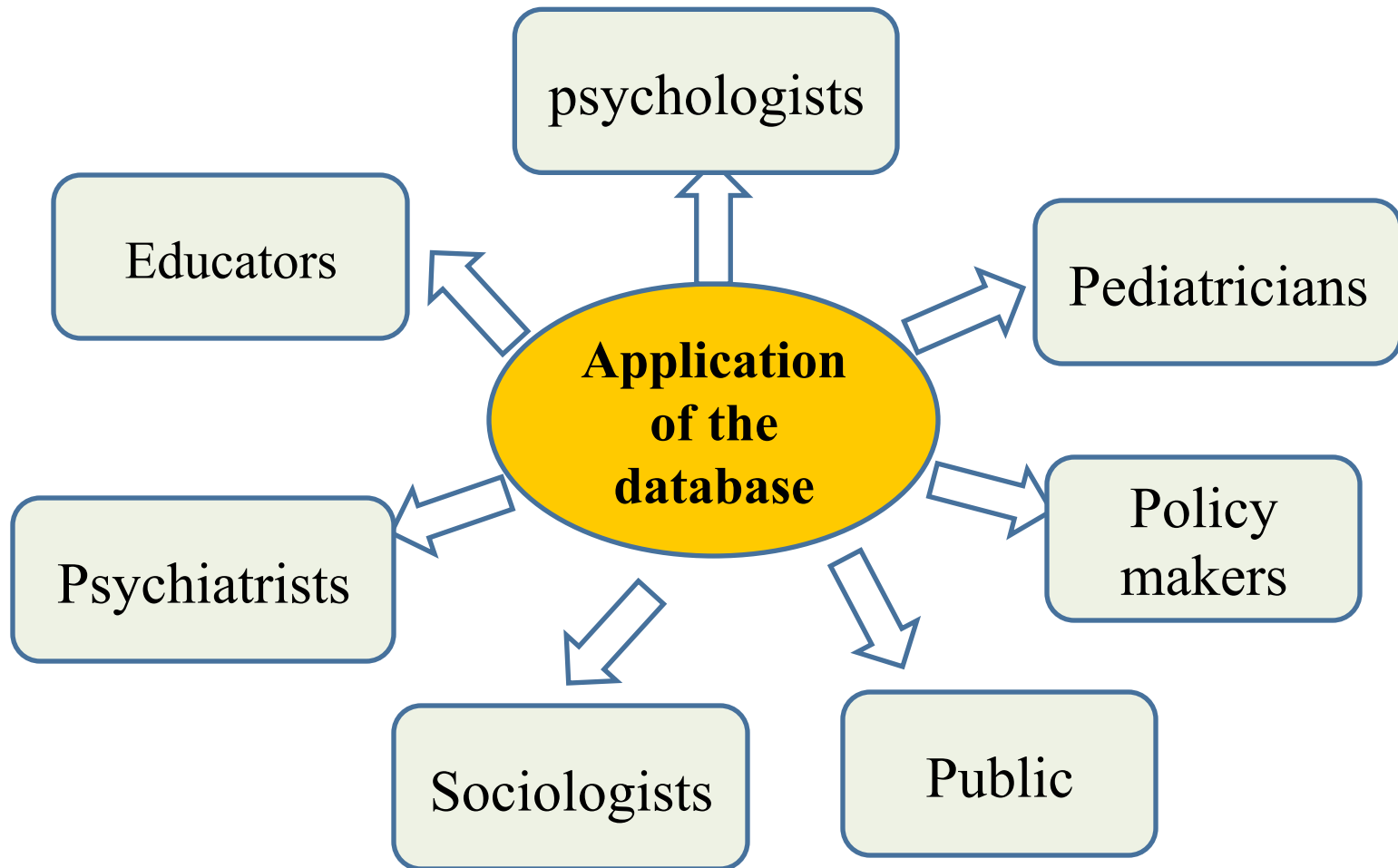
Total scores of cognition



The norms will be used to

- Describe and compare the status
- Understand the differences among sub-groups
- Identify the children with special needs

The first national database



Area 2. Assessment and Web-based platforms for Key components of academic achievement and wellbeing

Quantitative

- Academic subjects: math, language, STEM
- Cognitive: Cognitive control, fluency, regulation
- Non-cognitive: personality, motivation, wellbeing

Digitalized recording and profiling of learning process

Area 3. Resources and support for innovative learning

- STEM
LUMA center as an example
- Learning disabilities: on line training resources
Student Cognitive and non-cognitive Skill
Student domain-specific knowledge and skill
Teacher training materials

Initiation in Area 3

- Joint Conference in June on STEM
BNU will have a delegate to attend the conference

NEXT STEPS

1. Research Collaboration

- Implement BNU -UH supported project
Mari will visit BNU from May 23-27
Data collection will begin from September
- To locate fund from China or Finland for the cross-culture longitudinal study on students learning and social-emotional adjustment
- To start collaboration between BNU and LUMA center
- To identify the topics and teams for collaborations on assessment each side

2. Joint efforts with other Chinese universities

BNU invited 4 institutions in China

- East China Normal University
- Shanxi Normal University
- Tianjin Normal University
- Zhejiang Normal University



East China Normal University

Facts:

- **Location:** Shanghai
- “Project 211” and “Project 985” Universities
- **Number of students:** 14,405 undergraduate; 15,771 graduate students; about 5,000 international students
- Psychology Ranking-3; Pedagogy Ranking-2

Coordinator: Weiguo Pang

- **Professor;** Secretary -general, Shanghai Psychological Society; Vice Dean ,School of Psychology and Cognitive Science;
- **Research fields:** Self-regulated Learning; Creativity and Intelligence; Instructional Design; Problem-based Learning



Shanxi Normal University

Facts:

- **Location:** Xi'an
- “Project 211” Universities
- **Number of students:** 23,191 undergraduate; 3,328 graduate students; about 3149 international students

Coordinator: Weiping Hu

Professor; Director, Center for Teacher Professional Ability Development; Director, Key Laboratory of Modern Teaching Technology, Ministry of Education.

Research fields: Curriculum and Teaching Methodology; Primary and Middle School Students Ability Development and Training; Creativity



Tianjin Normal University

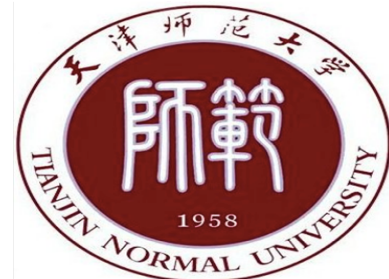
Facts:

- **Location** :Tianjin
- **Number of students:** 17,600 undergraduate;
17,400graduate students ; about 900 international students

Coordinator: Xuejun Bai

- **Professor;** Chair-elect, Chinese Psychological Society ;
Dean, School of Education Science; Dean, Institute of
psychology and behavior.

Reach fields: Cognitive Development and Learning



Zhejiang Normal University

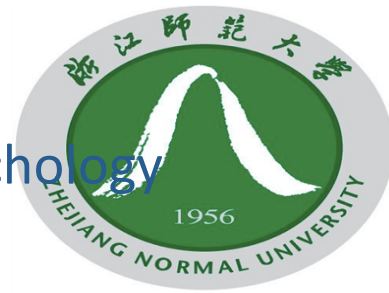
Facts:

- **Location:** Jinhua, Zhejiang
- **Number of students:** 25,300 undergraduate 5,300 graduate students
- ; about 2000 international students

Coordinator: Weijian Li

Professor; Vice President; Psychologist , Chinese psychological society

Reach fields: School Education Psychology; Applied Psychology



Each member university:

- To identify specific areas for collaboration
- To identify specific Finland partner(s)
- To coordinate efforts

Thanks !