

***The nature of expertise and ability
differences
in various professional educational
programs***

**Who remembers visual images most easily?
*Part: Empirical results***

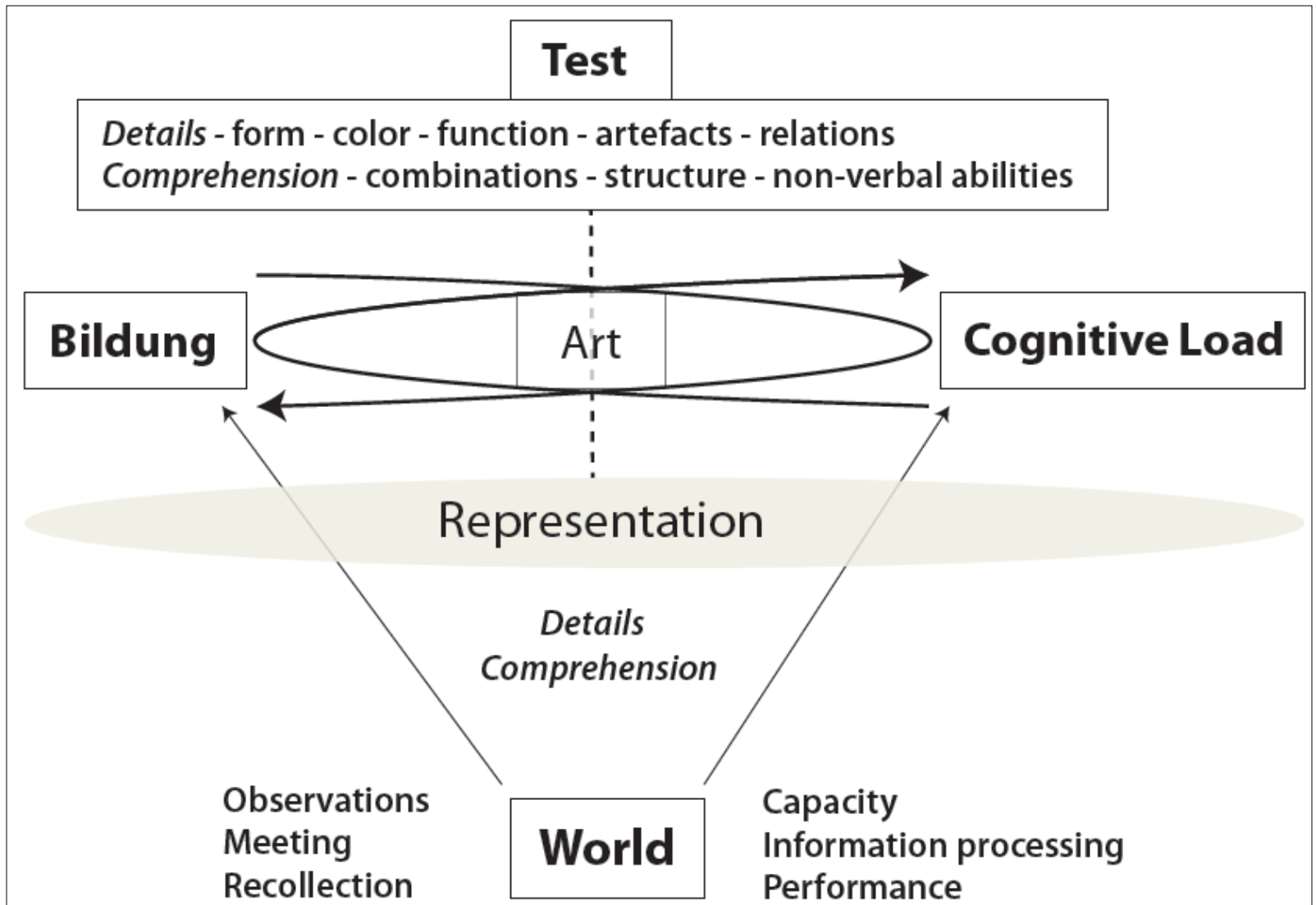
*Glenn-Egil Torgersen (FHS), Herner Saeverot (UiB) &
Nils Ingar Arvidsen (HiØ)
Presentation/short-paper*

*NERA 41st Congress, Reykjavik, Iceland, March 7th to 9th
2013*

Introduction

- **Project:** The Noble Bild of Bildung: *The nature of expertise and ability differences in various professional educational programs*– Strategic Educational Management (SEM)
- **Problem:**
Do students have different basic cognitive capacities and skills depending on various professional studies?
- **Purpose:**
Identify possible deep-cognitive abilities of students at different educational programs
- **Implications:**
 - (1) Support of strategic educational management and curriculum development.
 - (2) Basis for the development of a model *Bildung Load Theory* (BLT) - Integration between classical Bildung theory and cognitive load theory (CLT)

BLT - model



Method

- Sample

Gender	PSY	ED	MIL	ART	Total
Female	70	120	9	41	240
Male	30	73	88	29	220
Total	100	193	97	70	460

Association between tests #
($r = .14^{**}$, $p < 0.01$)

- Measures

Working Memory Visual details
(photography)

20 Statements (Yes/no)

Mean(SD)

Total 12.11(2.41)

Female 11.83(2.60)

Male 12.41(2.15)

Nonverbal intelligence
Raven (RAPM)

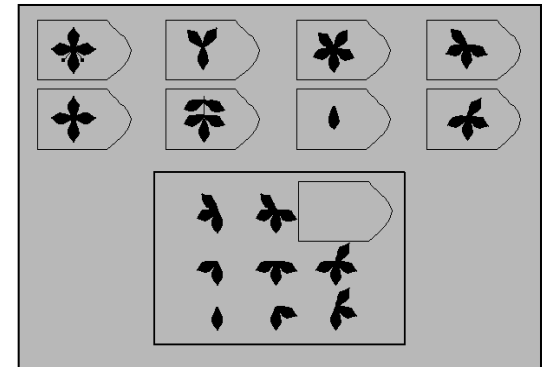
12 Matrices

Mean(SD)

5.57(2.40)

5.13(2.25)

6.05(2.47)



Results

- Overall:

Male students perform significantly better than female students

	WM Visual Details	Nonverbal intelligence
Female (n=240)	11.83 (2.60)	5.13 (2.25)
Male (n=220)	12.41 (2.15)	6.05 (2.47)
Average (N = 460)	12.11 (2.41)	5.57 (2.40)
F	6.71**	17.32***

Results

Overall: There are significant differences in nonverbal abilities between different professional programs

	WM Visual Details	Nonverbal intelligence
PSY (n=101)	12.05 (2.55)	5.88 (2.24)
ED (n=198)	12.08 (2.56)	4.82 (2.37)
MIL (n=97)	12.41 (2.10)	6.59 (3.34)
ART (n=72)	11.64 (2.50)	5.74 (2.12)
Average (N = 468)	12.07 (2.46)	5.56 (2.39)
F	1.37 (IS)	14.13***

- **Art students remember visual details less than others**
- **Educational students perform worse on non-verbal intelligence tests than others**

Analysis:

- Art students remember information that expresses *situations* better than others
- Art students remember information that expresses the *quantity and number* in a picture less than others

Conclusion

- **There are small differences in basic deep cognitive abilities and skills depending on various academic studies**
- **There are significant differences in nonverbal abilities between different professional programs**
- **Male students performed better than females**
- **Art students remember visual details less than others**
- **Educational students perform worse on non-verbal intelligence tests than others**
- **Military students perform better than others on both tests**

Implications

- **Art students perform worse on visual memory and learning students on nonverbal intelligence: Strategic curricula and practical education should take this into account**
- **There are small differences in basic deep cognitive abilities and skills depending on various academic studies: A general BLT model is applicable for various professional programs**

References

- OECD. (1999). *Measuring student knowledge and skills*. OECD programme for international student assessment.
- Rice, J. King. (2003). *Teacher quality: Understanding the effectiveness of teacher attributes*. EPI Books.
- Unsworth, N. & Engle, R. W. (2005). Working memory capacity and fluid abilities: Examining the correlation between operation span and Raven, *Intelligence*, 33(1), 67–81.
- Wiley, J., Jarosz, A. F., Cushen, P. J. & Colflesh, G. J. H. (2011). New Rule Use Drives the Relation Between Working Memory Capacity and Raven's Advanced Progressive Matrices. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 37(1), 256–263.

Corresponding authors

- **Associate Professor of Education, PhD in Psychology, Glenn-Egil Torgersen**, Norwegian Defence University College, Akershus fortress, Oslo Mil/Akershus 0015 Oslo. Mobile +47 99 09 21 88, Mail: ikt.pedagogikk@halden.net, Examiner of Education, Bergen Academy of Art and Design.
- **Professor of Education, Dr.philos., Herner Sæverot**, Faculty of Psychology, Department of Education, University of Bergen. Pbox 7800, 5020 Bergen. Mobile + 47 41 61 61 82, Mail: Herner.Saverot@psych.uib.no, Guest Professor, Bergen Academy of Art and Design.
- **Associate Professor, Nils Ingar Arvidsen**, Østfold University College, Remmen, 1757 Halden. Mobile +47 99 33 64 13, Mail: nils.i.arvidsen@hiof.no