

*Replacing Paper Based Assessments*  
*with*  
*Games Based Assessment*

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## Research Procedure

- i) Sample collected with SmartKid online, SmartKid Maths and AnimalClass games. All data is completely anonymous.
- ii)  $N \sim 300\ 000$   
subsamples  $n_1=49080$ ,  $n_2=102\ 352$ ,  $n_3=147\ 675$
- iii) Goal is to show how
  - conceptual change can be mined out from game data
  - state of learning can be estimated from change
  - change can be applied in real world
- iv) National and cultural differences are show as observations, there is no ranking between the countries in this study.

# Materials in use

[www.skillpixels.com](http://www.skillpixels.com)

SKILL  
PIXELS



## SmartKid™ family

- complete virtual school



SmartKid

### Maths



SmartKid

### Nature

Coming 1H  
2015

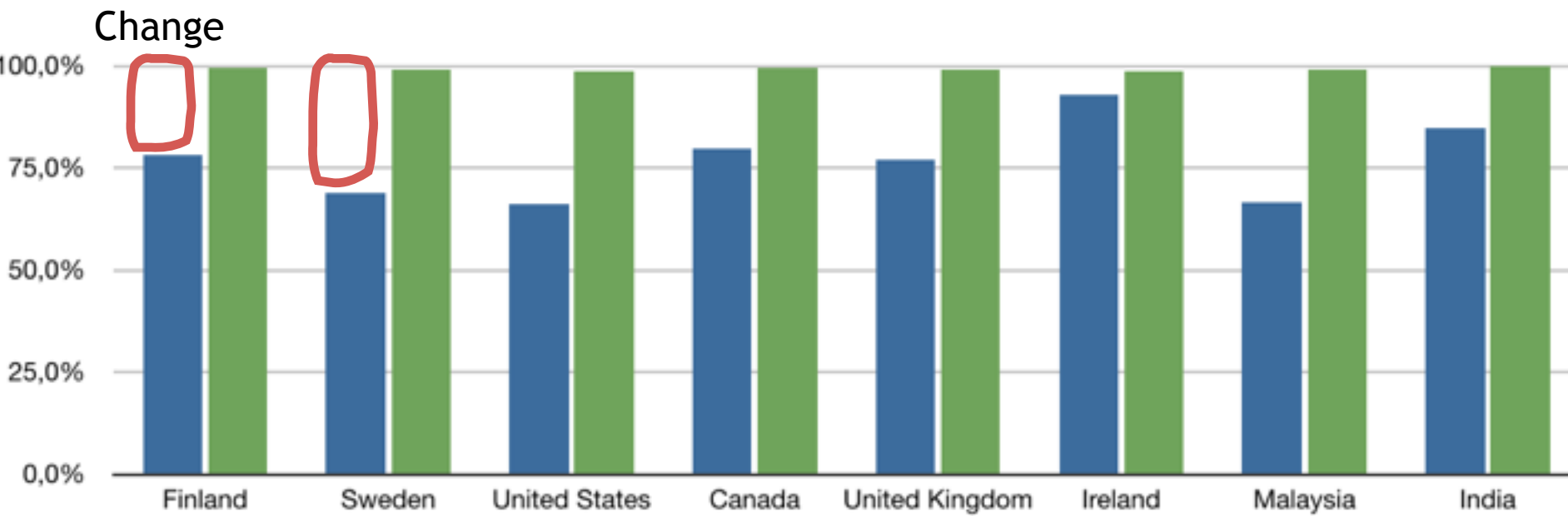


SmartKid

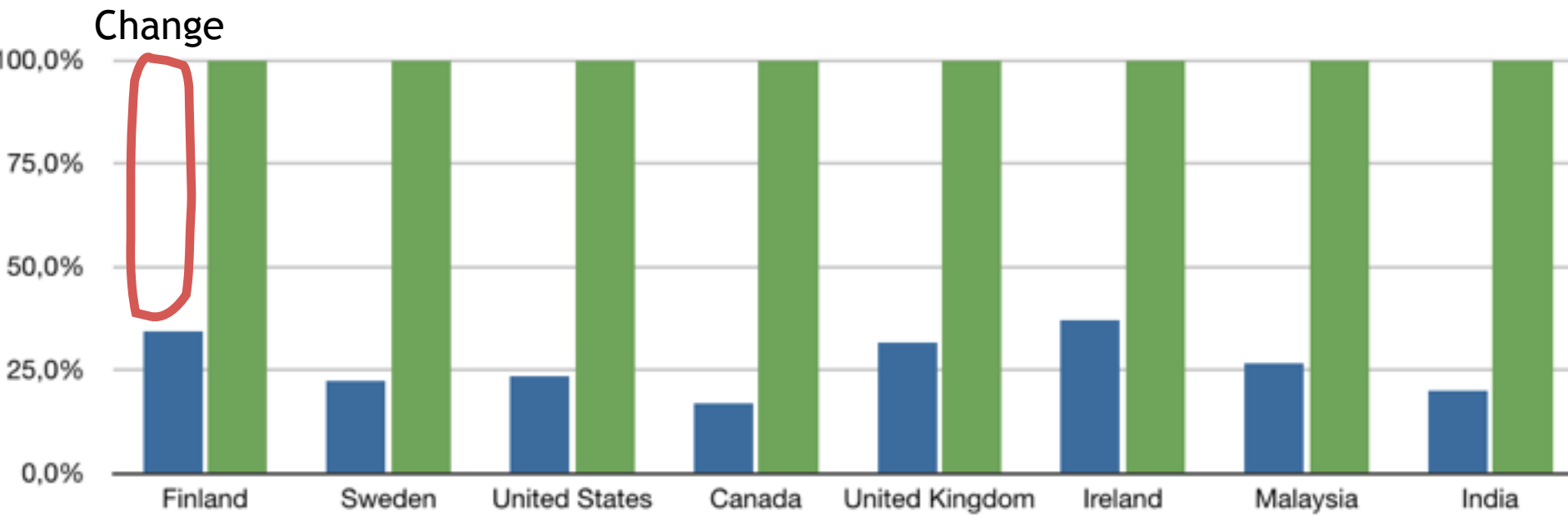
### GEO

Coming 2H  
2015

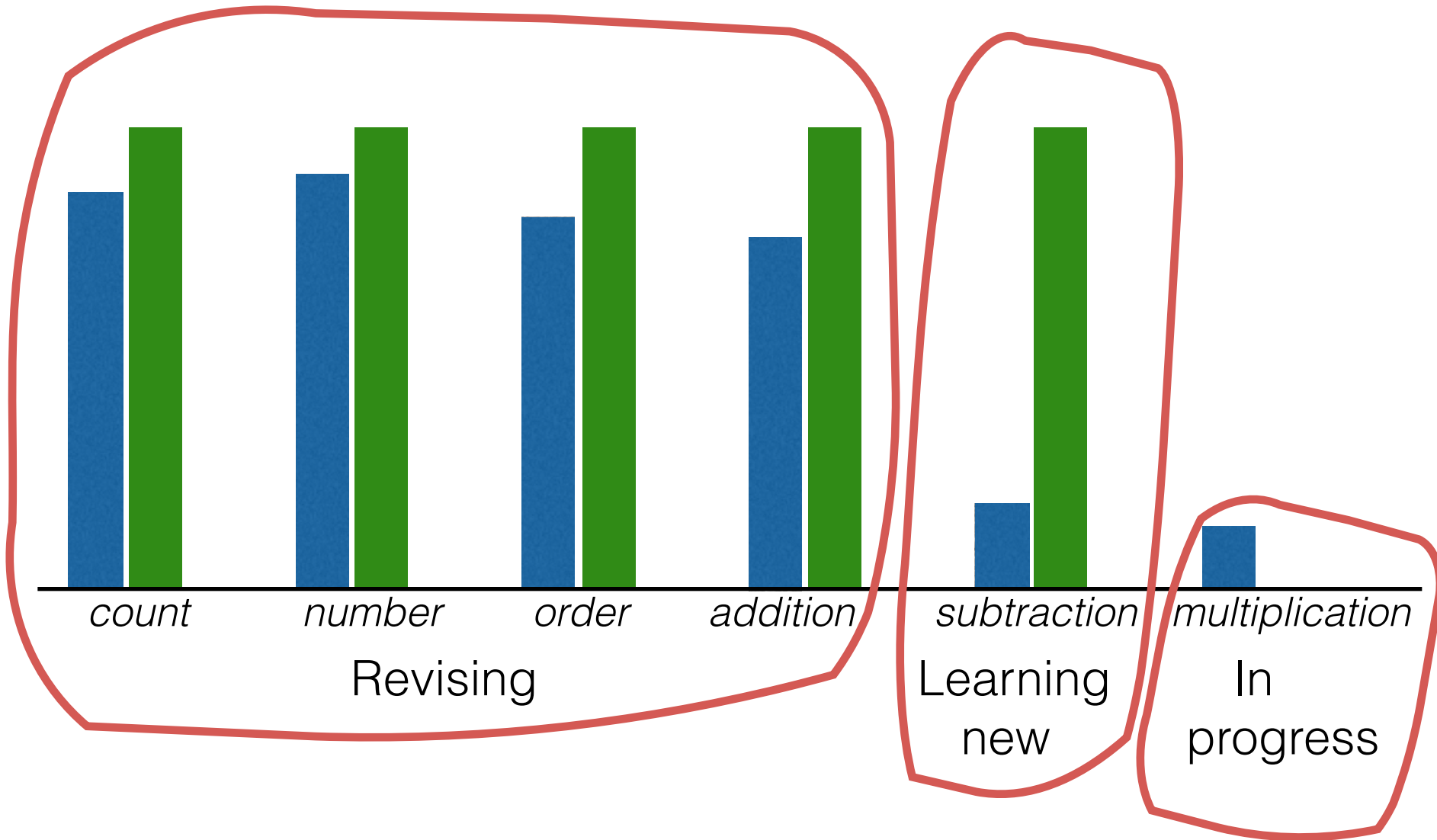
# Conceptual Change in case of familiar content



# Conceptual Change in case of unfamiliar content

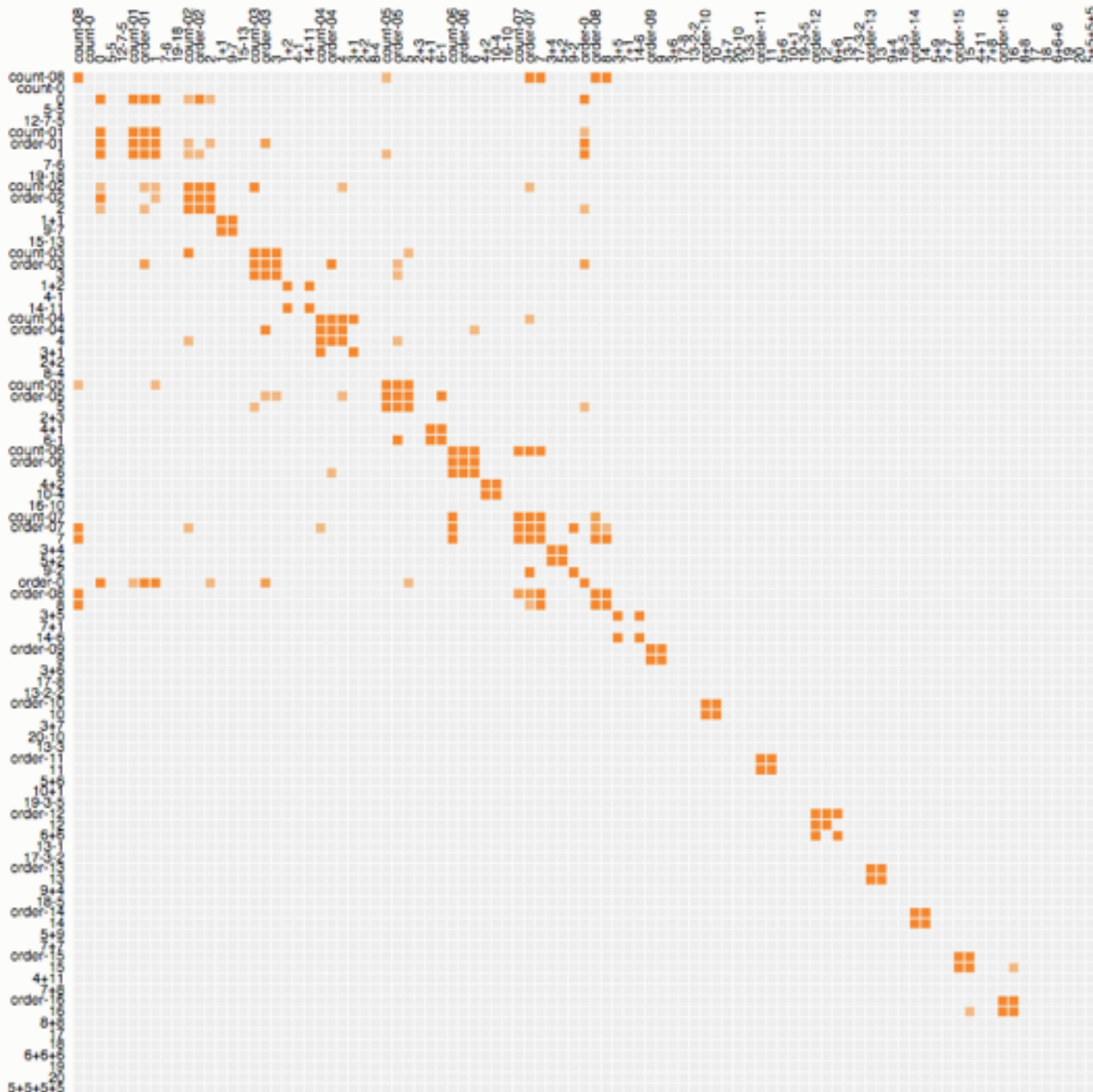


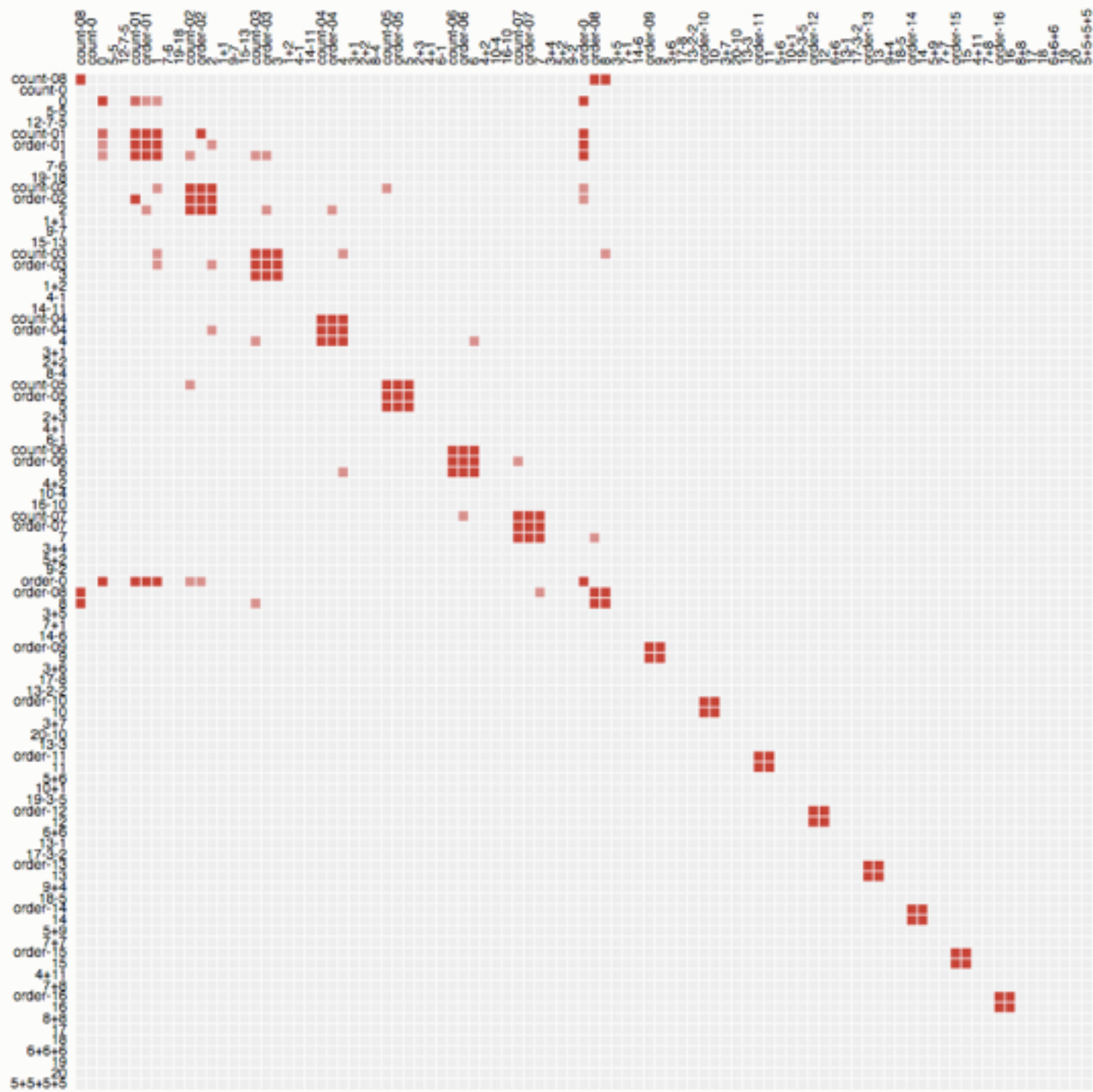
# Applications for individuals and groups



# Conceptual Change in details

## Finnish data





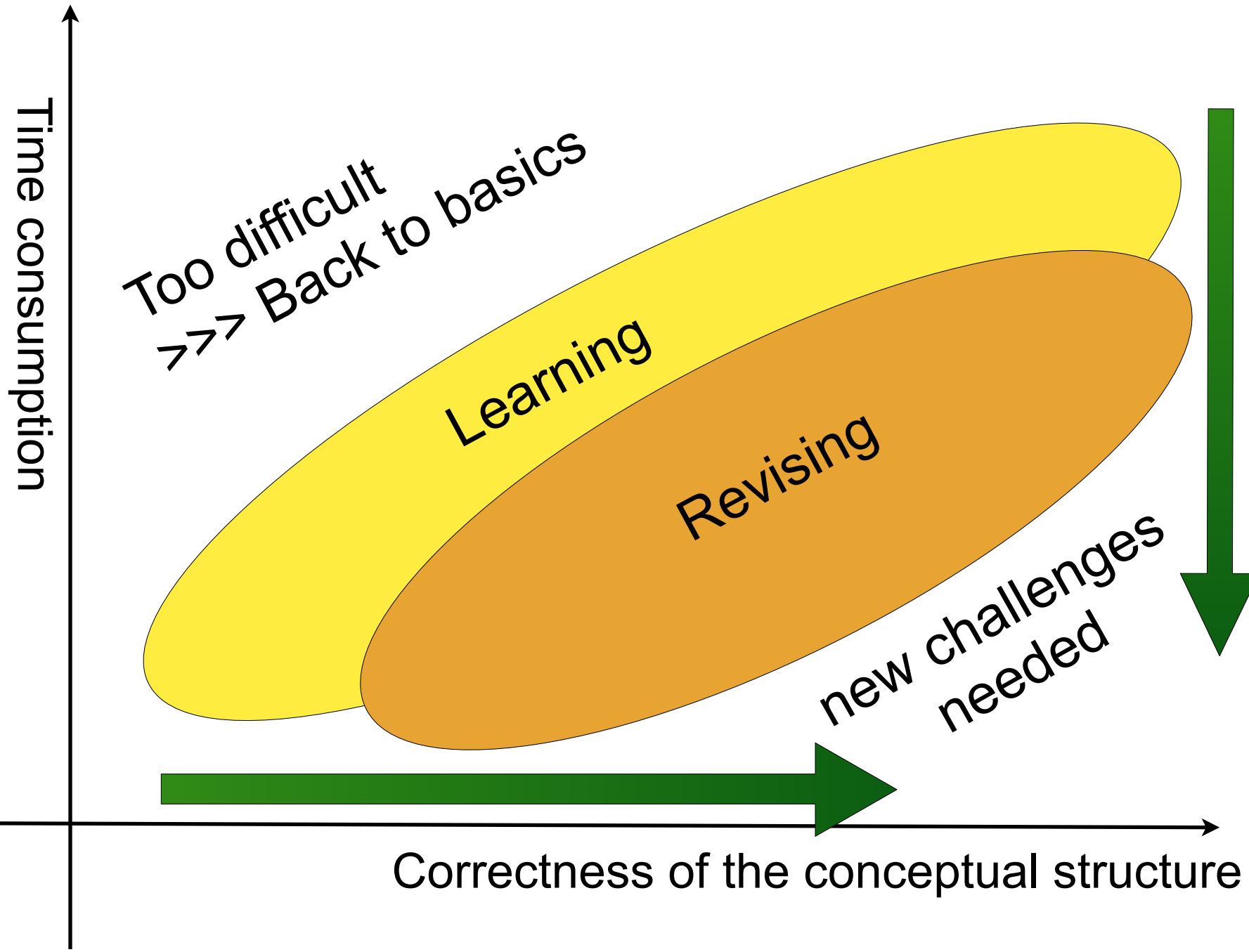
**Conceptual  
Change in  
details**

**US data**









# *Games Based Assessment*

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