

# Sustainable construction and use of test questions with item banks

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Special Interest Group Digitaal Toetsen SURF

# Your Hosts

Silvester Draaijer (VU)

Marga Korporaal (UvA)

# Overview

- Intro
- Point on the horizon
  - Important steps when developing and using item banks
  - Some success/fail factors
- Handbook in practice
  - Marga Korporaal, Universiteit van Amsterdam







Motor

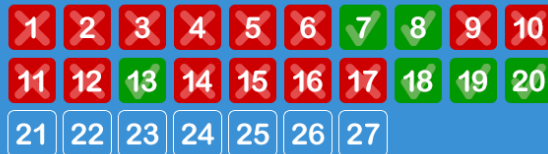
Je tegoed: 0 examens

UITLOGGEN

HELPDESK

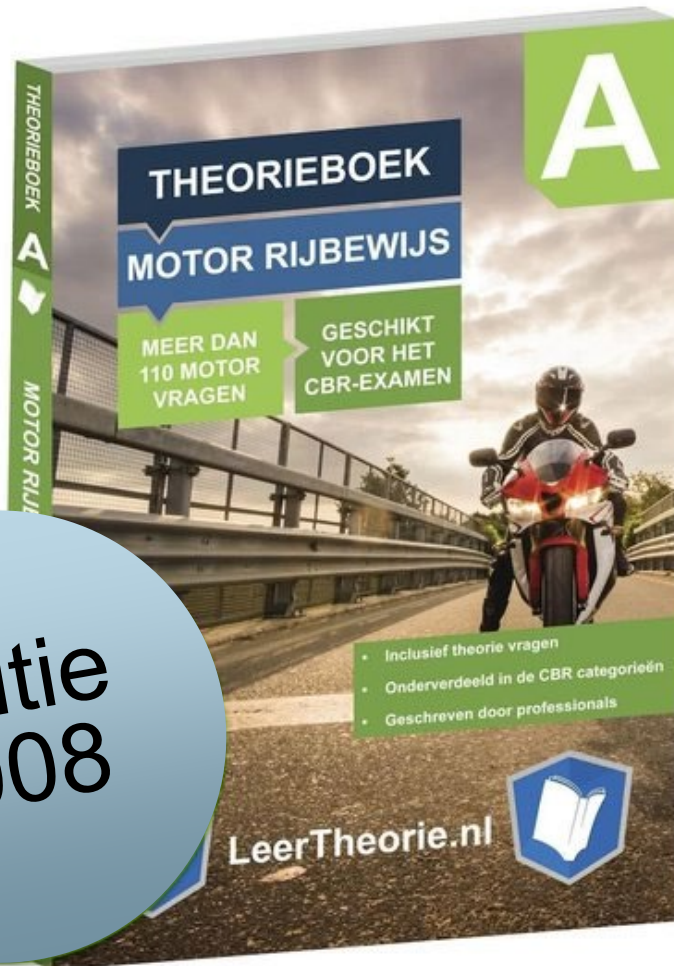
Tegoed opwaarderen

## THEORIE-EXAMENS



U heeft helaas geen tegoed meer om examens te maken.

1 geslaagd 1 niet geslaagd 1 niet afgerond 1 nog niet gedaan



Editie  
2008



# Theorie leren

een product van:



Motor

Je tegoed: 0 examens

UITLOGGEN

HELPDESK

Tegood opwaarderen

## THEORIE-EXAMENS

1 2 3 4 5 6 7 8 9 10

11 12 13 14 15 16 17 18 19 20

21 22

U heeft helaas

Motor

Je tegoed: 0 examens

## RESULTATEN van examen 1

### VRAGEN

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Volgende vraag bekijken

Volgende fout beantwoorde vraag bekijken

Stoppen

Motor



Welk verkeersbord waarschuwt je voor slecht zicht door regen of mist?

Jouw antwoord: ☒

- A Verkeersbord 1.
- B Verkeersbord 2.
- C Verkeersbord 1 en 2.

Bord 1 waarschuwt je voor slecht zicht door sneeuw, regen of mist. Bord 2 waarschuwt je voor gladheid door ijs of sneeuw. Beide borden kunnen ook als matrixbord boven de rijbaan aan de weggebruikers worden getoond.

Examen 1  
vraag 3 nakijken

Volgende vraag bekijken

Volgende fout beantwoorde vraag bekijken

Stoppen

Motor



Je wilt rechtdoor. Moet je de auto voor laten gaan?

Jouw antwoord: ☒

Correct is: ☒

JA

NEE

Je bent het verkeerslicht zo dicht genaderd dat stoppen redelijkerwijs niet meer mogelijk is, daarom moet je doorrijden. De auto is afbuigend verkeer op dezelfde weg en hoeft je daarom niet voor te laten gaan.

Examen 1  
vraag 7 nakijken

# What are item banks?

They are not new, but are important!

In jargon: **item banks**

## Definition

An **item bank** is a collection of items for a particular assessment objective. An item bank has a certain structure, usually hierarchical and based on metadata.

An **item bank system** is a digital system used to store and manage collections of items. An item bank system may contain multiple item banks.





# Assessment system



# Overview

- Possibilities for item banks for formative and summative purposes.
- What is needed to develop item banks?
- The online version of the Handbook Item banks.



# Why item banks?

Reap the possibilities that covid-19 situations opened up for digital assessment

1. **Psychometry**: increasing the reliability and validity of assessment.
2. **Accountability and Transparency**: inspection of itembank for blue print and item quality.
3. **Assurance**: better control and less flaws, for example by workflows and item versioning..
4. **Sustainability**: items are teacher-independent controlled, no loss if teacher leaves the institution.
5. **Exam safety**: easy to assemble multiple versions of a test to reduce fraud.
6. **Exam safety** heasier to contral acces to items, bypassing e-mail circuit.
7. **Efficiency**: re-use of items decreases costs per test..
8. **Educational quality**: re-use allows teachers to spend more time for their teaching job.
9. **Educational quality**: multiple opportunities for practice for students and differentiation in level of difficulty.
10. **Educational quality**: easiers possibilities for re-sits and feedback opportunities..
11. **Utility**: investment in already existing items is more effective returned.

Summative!

Formative



# Why Item banks?

It is also FUN ;-)

- Develop and discuss in expert groups:
  - Be intrigued by (wrong) answers that colleagues and students give
  - Be intrigued by how many interpretations simple lines of text can elicit
  - Deepening understanding of subject matter knowledge
  - Deepening understanding of students



# Handboek



## Handbook Item Banking

*An itembank in 5 steps*

*SURF, Versnellingsplan Updated: 2022-02-17*

Step-by-step plan

Going deeper

- Technology
- Item bank size
- Cost and Benefits
- Organisation, Workflow, Security
- Item bank structure
- Quality of items,
- Legal aspects such as ownership of items and use of copyrighted materials)



# Point on the horizon:

Make an Item bank ....

🏍️ as an individual

🚚 🏍️ 🏍️ with subject matter colleagues

🚚 🚚 🏍️ 🏍️ 🏍️ with colleagues of your educational programme

🚚 🚚 🏍️ 🏍️ 🏍️ with multiple educational programmes

🚚 🚚 🚚 🏍️ 🏍️ 🏍️ 🏍️ With your whole institution





# What are the challenges?

- 🚚 Agreement about 'the domain' – the narrower and more explicit the better
- 🚚 Agreement about question format and feedback
- 🚚 Agreement about numbers of items to produce and in what pace and with what extent of quality assurance
- 🚚 Meta-data 'never fits'
- 🚚 Meta-data 'Garbage in – Garbage out'
- 🚚 Time and money for exploitation phase



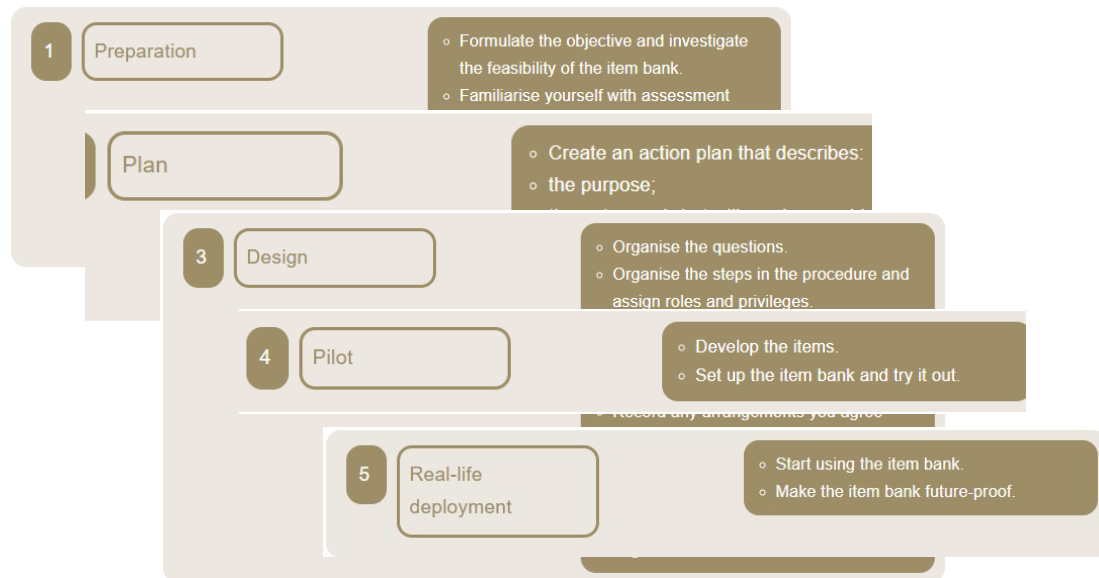
# What are success factors?

- 🏍️ Take **time** at the **start**, make an estimation of feasibility, find a balance between a strict project management approach and natural growth. Choose an approach that fits your situation.  
Appoint a **commissioner** and make sure that ownership is arranged well from the start. Without a principal or agreements about ownership, the chances of failure are high.
- 🏍️ Before developing the item bank, decide **which steps** you want to take and what results you want to achieve in each step.
- 🏍️ **Define the purpose** of your item bank and give it a clear role in education. Stick to this. Promote this vision regularly.
- 🏍️ Be **realistic** and **manage expectations**: The ideal item bank is not created in one day and may never be created at all. You cannot think up the ideal set-up from behind your desk. Dare to try things out.
- 🏍️ **Look around** you, a lot has already been developed. Don't reinvent the wheel. Involve experts.

And more ...



# Develop in stages



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