Sustainable construction and use of test questions with item banks

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Special Interest Group Digitaal Toetsen SURF
Your Hosts

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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
THEORIE-EXAMENS

U heeft helaas geen tegoed meer om examens te maken.

1 geslaagd  X niet geslaagd  X niet afgerond  1 nog niet gedaan
Welk verkeersbord waarschuwt je voor slecht zicht door sneeuw, regen of mist?

Jouw antwoord: X

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 ijzels of sneeuw. Beide borden kunnen ook als matrixbord boven de rijbaan aan de weggebruikers worden getoond.
What are item banks?

They are not new, but are important!

In jargon: **item banks**

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**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.
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 blueprint 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**: easier to control access 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**: easier possibilities for re-sits and feedback opportunities.
11. **Utility**: investment in already existing items is more effective returned.

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**Why item banks?**

**Formative**

**Summative!**
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
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 would 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

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Preparation</td>
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<tr>
<td>2</td>
<td>Formulate the objective and investigate the feasibility of the item bank.</td>
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<td>2</td>
<td>Familiarise yourself with assessment.</td>
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<td>2</td>
<td>Plan</td>
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<tr>
<td>3</td>
<td>Create an action plan that describes:</td>
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<td>3</td>
<td>the purpose;</td>
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<td>3</td>
<td>Design</td>
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<td>3</td>
<td>Organise the questions.</td>
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<tr>
<td>3</td>
<td>Organise the steps in the procedure and assign roles and privileges.</td>
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<tr>
<td>4</td>
<td>Pilot</td>
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<tr>
<td>4</td>
<td>Develop the items.</td>
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<td>4</td>
<td>Set up the item bank and try it out.</td>
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<tr>
<td>5</td>
<td>Real-life deployment</td>
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<td>5</td>
<td>Start using the item bank.</td>
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<tr>
<td>5</td>
<td>Make the item bank future-proof.</td>
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