IEA Coding Software
Coding Expert

Presentation prepared for the
IEA General Assembly in Hong Kong
October 2007
Content

1. Coding
2. Modes of Coding
3. Why a new coding software?
4. Who was involved?
5. Process of Computer Aided Coding
6. Modular software concept
7. The Coding Expert Manager
8. The Coding Expert Client
9. The Coding Expert Trainer
10. Next steps
1. Coding

- Also known as scoring, marking, or rating
- Assign a code, i.e. a number to a constructed response item
  - Simple answer (word or figure; 0,1)
  - More detailed response (partial credit; more options; e.g. 0,1,2...)
  - Essay (Many dimensions)

Requirements:
- Coding instructions
- Training guidelines with examples
- Logistics procedures
- Control procedures
2. Modes of coding

- Paper and pencil
  - Implemented in many IEA studies
  - Many copies
  - Training procedures
  - Logistics and control

- Computer Aided Coding (Implemented at the DPC for national projects since 5 years)
  - Scanned material
  - Software for
    - Coding
    - Training
    - Logistics
    - Control
3. Why a new coding software?

- **Provider**
  - Lack of support and change of activities
  - No room for improvement

- **Technical problems**
  - Usability (Screen display)
  - Speed problems
  - Lack of stability
4. Who was involved?

- Coding unit
  - Content
  - Testing

- Software unit
  - Programming
  - Testing
  - Interface with data entry and scanning
  - Progress Report and discussion of revisions and next steps every fortnight

- Data management unit
  - Workflow
5. Process of Computer Aided Coding
6. Modular Software Concept

The Coding Expert software consists of three modules:

- Administrator module: Coding Expert Manager
- User module: Coding Expert Client
- Training module: Coding Expert Trainer
7. The Coding Expert Manager

Main Functions:
- Coder administration (who is coding)
- Item definition (what to code)
- Code plan definition (how to code)
- Rule definition (who is coding what and how)
- Management of logistics
  - Creating packages (input for coders)
  - Delivering packages (CD of ftp)
  - Control return (ftp or e-mail)
  - Statistics
7. The CE-Manager

Definition of projects, items, and rules
7. The CE-Manager

Item Definitions
7. The CE-Manager

Item Definitions

- M031009 [GEORGIA NEEDS PAGES TO SEND LETTERS (1)]
- M031016 [WHAT IS THE PRIZE WINNING NUMBER (1)]
- M031030 [12.36 MINUS 9.7 (1)]
- M031041 [TRIANGULAR TILES TO COVER THE FIGURE (1)]
- M031068 [TIME DON, ROB, LYNN TO LEAVE SCHOOL (1)]
7. The CE-Manager

Code Plan and Code Definitions
7. The CE-Manager

Code Plan and Code Definitions
7. The CE-Manager

Advantages:

- No handling of papers during coding
- Sophisticated package management
- Handling of different coding purposes
  - Coding for the data base
  - Coding of multiple marking items (within and between coder reliability)
  - Coding of training items (comparisons)
  - Coding of transcribed items (occupations)
- Batch processing for packaging (over night)
- Import/export functionalities (code plans, rules)
- Basic statistics to monitor the process
8. The Coding Expert Client

Main Functions:

- Coding
- Transcription
- Recoding of problematic responses or missing codes (single station or network)
- Creation of return files (codes)
8. The CE-Client

Image Window, Code Plan Window, Assigned Codes

Gisela möchte an 12 Freunde Briefe schicken. Für die Hälfte der Briefe braucht sie je 1 Blatt, für die andere Hälfte je 2 Blätter. Wie viele Blätter braucht sie insgesamt?

Antwort: 18

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>Akzeptable Antwort</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Nicht akzeptable Antwort</td>
<td>Abgeschnitten, nicht lesbar</td>
</tr>
<tr>
<td>71</td>
<td>Leer</td>
<td>Andere nicht akzeptable</td>
</tr>
</tbody>
</table>

Assigned codes

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<td>10</td>
<td>18</td>
</tr>
</tbody>
</table>
8. The CE-Client

**Advantages:**

- No handling of paper during coding
- Coding by item or any other order pre-defined in the manager module
- Sorting function by file size (missing data)
- Help function
- Annotations possible
- Recording of additional information (time per code)
9. The Coding Expert Trainer

Main Functions:

- Display and compare training material on screen
- (Pre-)define master codes
- Display coder agreement
- Display coder annotations and discuss code plan for improvements
9. The CE-Trainer

Image Window, Master Code, Code Comparisons
9. The CE-Trainer

**Advantages:**

- Immediate comparison of results during the training sessions after coding rounds
- Detection of problematic items
- Detection of problematic coding instructions
  - Categories missing?
  - Instructions ambiguous?
  - Instructions too complex?
- Detection of deviating coders
  - Harshness
  - Leniency
  - Systematic deviations
10. Next steps

- Calculation of agreement indices in the system
- Create links to the bookkeeping system
  - Generation of invoices for coders
  - Controlling
  - Approval system
- Explore possibilities and conditions to make modules available for others
  - Most likely for the client module
  - Training module also possible, but would require some effort for modification
  - Manager module is tailored for the IEA DPC environment
Many thanks for your attention!