

PAT Workbench Annotation and Evaluation of Text and Pictures in Multimodal Instructions

Abstract

The PAT Workbench is an online tool to investigate the design of multimodal instructions (MIs), i.e., instructions that contain both pictures and text. The benefit of including pictures in information presentation has been established, but the characteristics of those pictures and of their textual counterparts and the relation(s) between them have not been researched in a systematic manner.

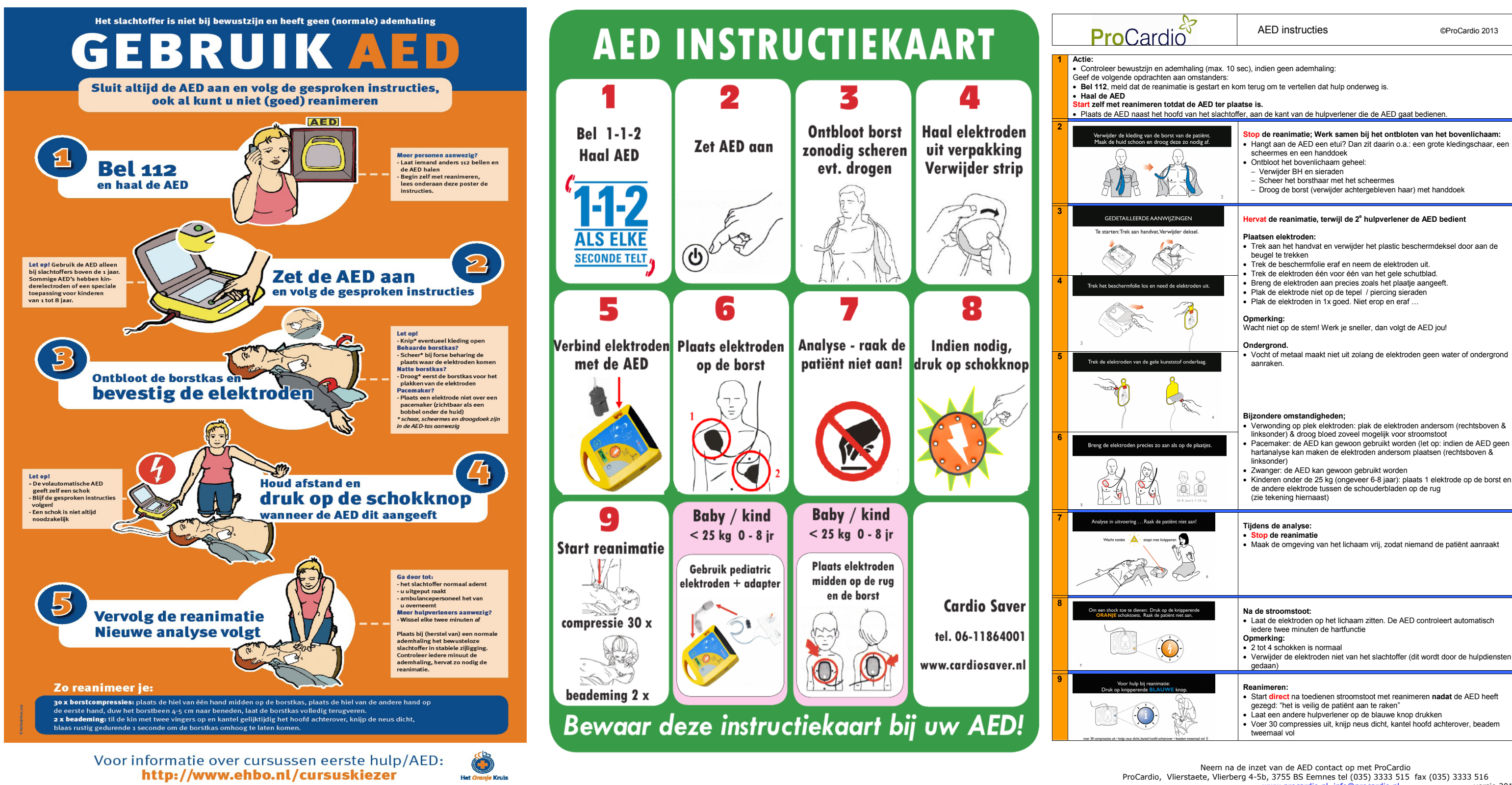
We present the **PAT Workbench**, a tool to store, annotate and retrieve MIs based on a validated coding scheme with currently 42 categories that describe instructions in terms of textual features, pictorial elements, and picture-text relations.

The PAT Workbench currently facilitates collaborative annotation and inter-annotator agreement calculation. Future work on the PAT Workbench includes expanding its functionality and usability by (i) making the MI annotation scheme dynamic for adding relevant features based on empirical evaluations of the MIs, (ii) implementing algorithms for automatic tagging of MI features, and (iii) implementing automatic MI evaluation algorithms based on results obtained via e.g. crowdsourced assessments of MIs.

Introduction

The PAT Workbench is an online tool to systematically investigate the design of multimodal documents. It is implemented as a web application written in PHP using the CodeIgniter Framework. Data creation and manipulation is facilitated through a MySQL database, which allows an efficient design of connections between concepts such as users, user groups, group assignments, documents and annotations. Documents are not stored in this database, but in a separate directory structure where each document is linked by its identification code to its entry in the database (which contains the metadata).

Currently, we focus on **multimodal instructions in the first-aid domain**.



PAT Workbench

- Menu Topics:**
 - Admin, Search, Add, Collection, Assignments, Coding Manual
- Functionalities:**
 - Detailed MI search system with filtering options
 - Function to upload MIs to the workbench
 - Annotation panel to annotate MIs using the PAT coding scheme
 - Assignment panel to create and manage annotator collaborations
 - Revision history for annotators
 - Function to add annotated MIs to the MI corpus
 - MI browser to select MIs for viewing
 - Web-friendly manual for annotating MIs
 - Documentation at the levels of installation/use, code, and database

Home



Adding MIs



PAT Goals

Evaluate and optimise the use of text and pictures in MIs

- Annotation (semi-automatic)
- Evaluation by readers and users
- Automatic evaluation
- Automatic generation of MIs
- Formulation of authoring guidelines

PAT Corpus Development

Collectors/Annotators: MA students in Communication and Information Sciences at RuG

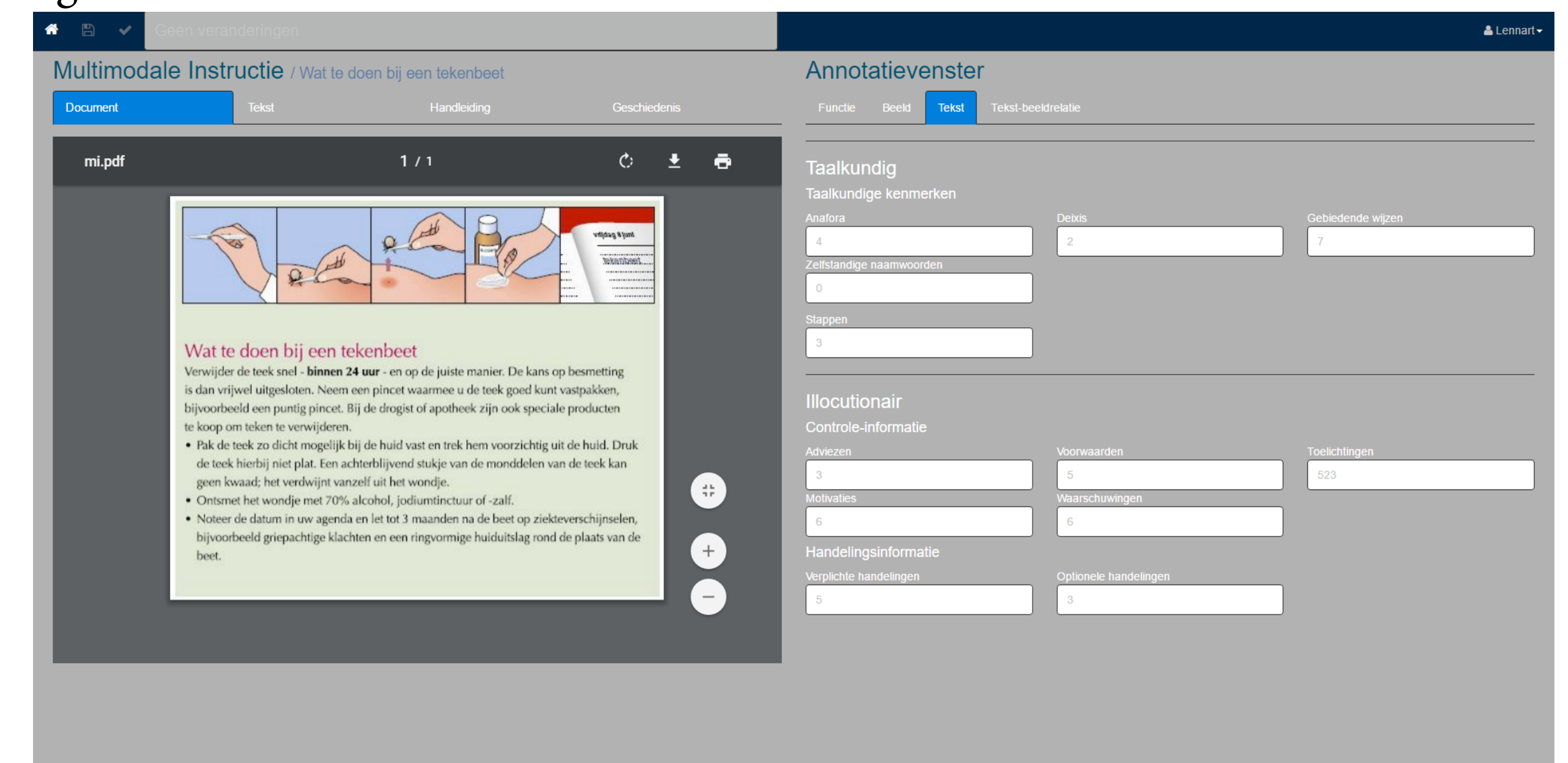
MI corpus: Currently 192 first-aid MIs, to be expanded each year

Annotation: 42 categories for text, pictures and their relations

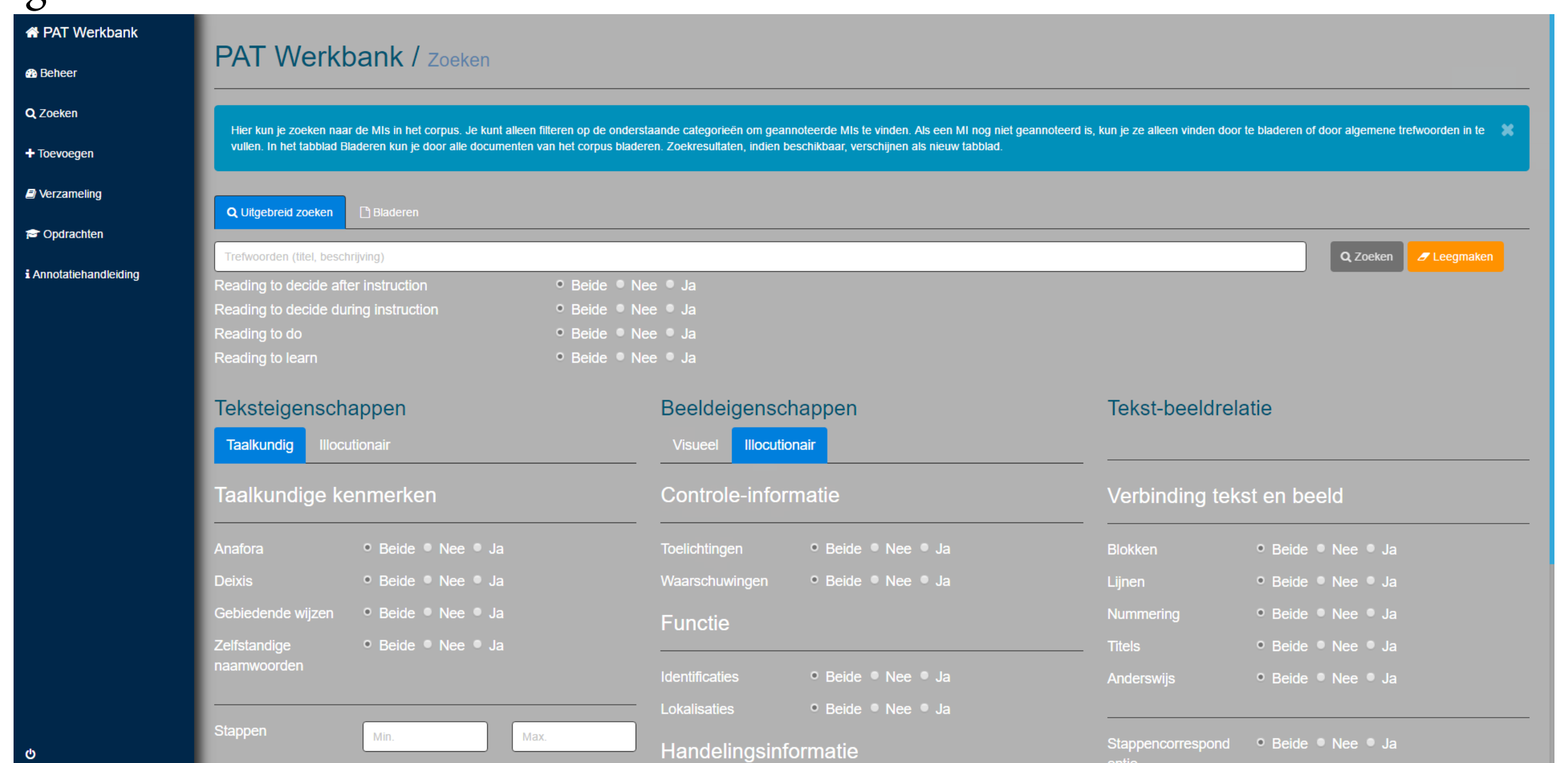
Annotation Scheme

Attribute	Subcategories	Examples
Meta data		Title, description, user group (children, adults, medics), source, function (to do, to learn, to decide).
Text	Syntactic aspects	Imperatives, address (formal/informal), deixis, pronouns, etc.
	Illocutionary aspects	Actions, warnings, checks, motivations, etc.
Picture	Visual aspects	Type (foto, drawing), pictograms, text, indices, arrows, time.
	Illocutionary aspects	Actions, warnings, function (identify, locate), checks, human appearance.
Picture-Text relations		Step correlation, reference (numbers, icons, lines), text references.

Annotating MIs



Searching MIs



Future Work

- Annotation of document structure and segmentation
- Automatic annotation
- Automatic crowdsourced-based evaluation
- Improved administrator panel
- Dynamic annotation scheme
- English Interface