

# MANUAL OF THE CONFIGURATION TOOL ('SETTINGS')

*This manual explains how to set up the basic system data such as students, courses, competencies and how to define external data sources.*



## 1. REGISTRATION

In the settings of a research project, we decided not to provide a self-registration for users. Users who are potentially interested in trying the system and its features can contact us. From the project we then make the basic registration setup. This includes setting up a new school since the rights and access management basically refers to the school id. In addition we make basic settings like setting up an administrator account and add settings like the school level / grades and terms. The administrator, either a central administrator of a school or just one interested teacher, can log into the configuration tool and start with adding teachers (if applicable).

Teachers are defined by Username, password, firstname, surname, the groups (i.e., classes) and subjects (i.e., courses) they are assigned to. This assignment is important for the rights and access management as well. Teachers can access all information for the groups they are assigned to (i.e., to all students and all subjects), whereas teachers can only access the information of a particular subject if they are assigned to it.

## 2. BASIC FEATURES

### STEP 1: ADDING STUDENTS

The first step is to create the students. Open the students manual and enter the relevant data. In the current release students have a username (userid), and are defined by firstname and surname. In addition the teacher can select a school level for a student (i.e., the student's grade). Optionally the teacher can upload an icon or a photo for the student.



### STEP 2: CREATING GROUPS

Groups define a set of students; this can be a regular class or certain sub-groups. Groups are defined by a name, and by an icon. In addition, the user can optionally define the serial position of a group in the other tools, e.g., the OLM. Finally, the teacher can select the members of a group on the basis of all students assigned to a specific school. Optionally, the user can select the school subjects that are associated with a group.

## STEP 3: DEFINING SUBJECTS

In Lea's Box subject refers to a typical school subject (such as maths or biology) or any other set of competencies (e.g., cross subject meta abilities). Subjects are defined by a name, an icon, and optionally the serial position of subjects in the other tools. Moreover, a teacher can select one or more school levels with which the subject is associated. Optionally a teacher can select the related competencies. This however, is likely not the most user friendly approach, thus competencies can be assigned in competency module.



## STEP 4: DEFINING COMPETENCIES

Competencies and competence models are likely the most complex concept in this Learning Analytics system. Specifically since the Lea's Box system is dealing with two distinct types of competence models. On the one hand, the tree-like hierarchical models of the OLM, and on the other hand, the combinatorics structures and spaces of the CbKST approach.

Competencies are defined by a name, a description and they are associated with one or more school levels. In addition, a user can define a tree structure by adding the id of the parent of a competence. The following diagram illustrates the idea. This is, of course, not a very user friendly approach, but in the context of this research project and given the scope of the project, a functional solution.

Top Level Competence (id: 1)

Child Competence (id: 2) > parentid = 1

Child Competence (id: 3) > parentid = 1

Competence (id: 4) > parentid = 3

Competence (id: 5) > parentid = 4

Child Competence (id: 6) > parentid = 1

Equally, the field ,prerequisite allows specifying a comma separated array of id of competencies that are the prerequisites for a given competence. This enables the modelling of competence structures in the sense of CbKST.

Further fields are the serial position, and finally, when defining a competency in the configuration tool, they can be directly associated with a subject (when it was added previously to the database). In addition competencies can have a weight (field 'competence influence'); this is a value between 0 and 1 and is used by the system, particularly the OLM. Basically, this value describes the impact or importance of the competency for the learner model.



On the basis of these configurations, the primary system features for recording learning, tracking activities, and the OLM analytics can be used. When external data sources shall be linked with the system, the following steps need to be done.

### 3. EXTERNAL DATA SOURCES

#### STEP 1: DEFINING DATA SOURCES

A Data source is simply specified by a name and by linking a subject. When creating a data source, a secret token is automatically generated. This token must be passed by the external tool when calling the Lea's API. The call is defined as:

<http://css-kmi.tugraz.at/mkrwww/leas-portal/api/pushin.php?secrettoken=X&studentid=X&datasourceid=X&activityid=X&value=X&minvalue=X&maxvalue=X>

The parameters required are a secret token (provided by the project), which is necessary for security reasons, the identifiers of the data source, and the activity, a value (e.g., aa test score) and a minimum and maximum value to define the possible range of values. By this means, the system subsequently can interpret various data types, for example percentages, Boolean values, or open values such as the time on task.

## STEP 2: DEFINING ACTIVITIES IN THE DATA SOURCES

Activities refer to sub-part of a data source; imagine an external source is Moodle. This LMS may include a course including several quizzes and activities. These, in turn, may be linked to different subsets of competencies of the particular course. In Lea's Box, activities are defined by a name, the serial position, and a weight. This weight (field 'activity influence') is a value between 0 and 1 and is used by the system, particularly the OLM. Basically, this value describes the impact or importance of the activity for the learner model. In addition, activities can be associated with competencies, subjects, and the respective data source.

Please note that activities can be also defined as internal entities that can be recorded by teachers. This is one of the key functionalities of myClass, for example.

## STEP 3: DEFINING EXTERNAL STUDENTS

Usually, external tools use their own identifier logic and formats. To match these id with the internal student ids of the system, there is a module to simply specify the student, the id in an external tool and the respective data source.

## 4. DEFINING COMPETENCE STRUCTURES

Defining and specifying competence structures is a prerequisite for CbKST-type analyses, e.g., in form of Hasse diagrams. To facilitate this task, there is the module Competence Structures. When adding a new structure, the user can first select a subject, subsequently all competencies of this subject are listed. With each competency a drop down menu is displayed showing the competencies. This menu includes checkboxes. The user can now tick those competencies that are prerequisites for the respective competency (this can be one or many). When all prerequisites are set, the created structure can be saved with the submit button.

