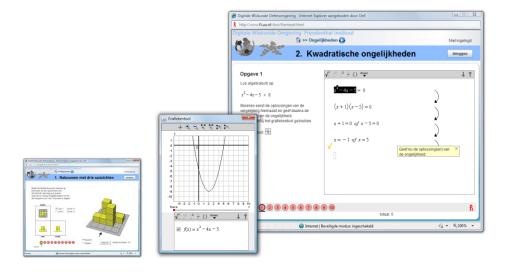
User Manual

Digital Mathematics Environment

Version September 2014



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1. Users

The DME allows for several types of users.

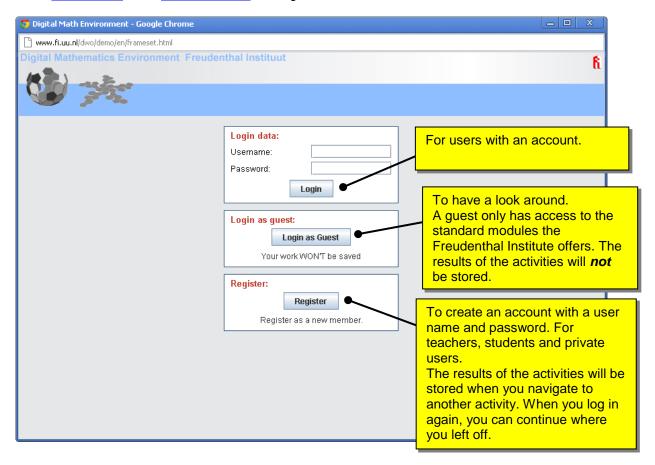
Guest

When you are logged in as guest, you can view the standard modules that are offered by the Freudenthal Institute and work on the activities in these modules. The results will *not* be saved.

User with account

If you have an account, you can log in as a user and use the same standard modules. The difference is that your results now will be stored when you log out or navigate to another activity. When you log in again, you can continue with the activities where you left off.

Go to www.dwo.nl, or to www.dwo.nl/en for English versions.





2. Accounts for the DME

Student account

A student can use all the standard modules which are offered by the Freudenthal Institute and all the modules which are offered by his or her own school. This second option is only possible when a student is attached to a class. The results are stored and on logging in again, a student can continue where he or she left off.

Teacher account

- When you log in as a teacher, you are responsible for your classes and you manage them.
- · You can create and delete classes.
- · You can create student accounts.
- You can add students to your class, remove students from your class and move students to another class.
- You can view the results and work of students in your classes.
- You can assign modules to your classes. You can also create new modules, which may or may not be based on existing modules and activities.
- Moreover, you have all the rights that a student has.

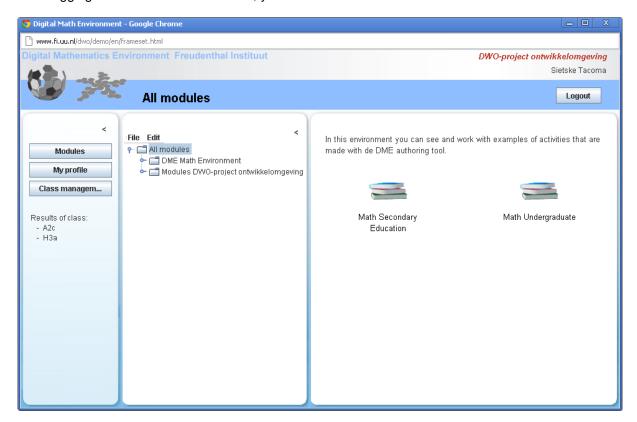
School admin account

- Besides student accounts and teacher accounts there is a third role available, which offers more rights for schools: the so called school admin.
- A school admin has access to an overview of all users (students and teachers) within the school and can use this overview to look up user names and renew passwords, if necessary.
- A school admin can also disconnect users from a school or remove users completely. Actually, an
 account can only be removed by the user himself, but the school admin can log in as any user of
 the school and thus remove his/her account.
- A school admin has an overview of all the classes in the school and can see which students are in which classes.
- A school admin can remove classes or change the teacher of a class.



3. A quick tour of the DME

After logging in as a teacher in the DME, you will see a screen similar to the one below:



The screen is divided in three parts:

In the leftmost part, the menu is shown. After clicking on an item in the menu, it will appear in the
rightmost part of the screen.

 In the middle part, folders and modules are shown in a structure which is comparable to the structure in Explorer. Besides the folder with Standard DME Modules there is also a folder with the school's own modules.
 When you click on a folder or module, its contents appear

in the rightmost part of the screen.



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Our module, its contents appear screen.

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👇 📹 Demo environment

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Opening and closing folders and modules in this structure can be done by clicking on •, or by double-clicking the name of the folder or module. With this folder structure, the modules and activities for one school can be organized in a comprehensive way.

- In the rightmost part of the screen, all the items that are selected in the left or middle part are shown. When entering the DME, you see the standard modules which are offered by the Freudenthal Institute. In the English version, these modules are ordered in a secondary education part and an undergraduate part. These folders contain both training materials and lesson series. In the Dutch version of the DME (www.dwo.nl), the modules are ordered in four folders. These are:
 - Showcase: The modules in this folder serve to give you an impression of the possibilities the DME offers. All modules in this folder are also available in the folders Training materials or Lesson series.
 - Training materials: Here you can find all kinds of modules, for all kinds of levels. These
 modules are further sorted by subject. The focus in these modules is on training skills,
 such as solving equations, visual-spatial ability and arithmetic.

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- Lesson series: Here you can find more extensive modules in which theory is incorporated and which have a clear structure. Many of these modules can be used as replacement of parts of the regular text books.
- Old modules: Of all modules which are shown here, a renewed version is available in the folder Training materials. These old modules will be removed shortly, so we recommend not using them anymore.

To prepare for working with the DME modules in the classroom, it is advisable to get an idea of which modules are appropriate for your classes and what the activities and exercises look like.

You can close the left and middle screen by clicking <.

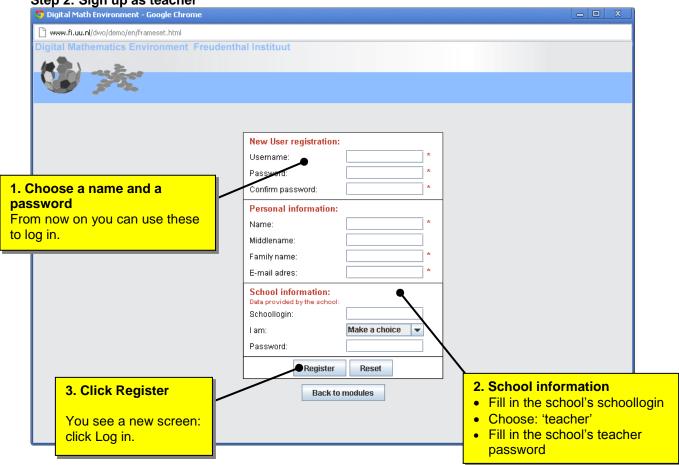


4. Working with the DME for the first time, preparation

Step 1: To the Digital Math Environment

Go to www.dwo.nl/en (or www.dwo.nl for the Dutch version).

Step 2: Sign up as teacher



After logging in you see the screen with the three columns.

Step 3: Creating a class

Class managem... Create class and next In the home screen, click

A pop up appears. Fill it in, for example:



Click OK. The class now appears in the right hand column:

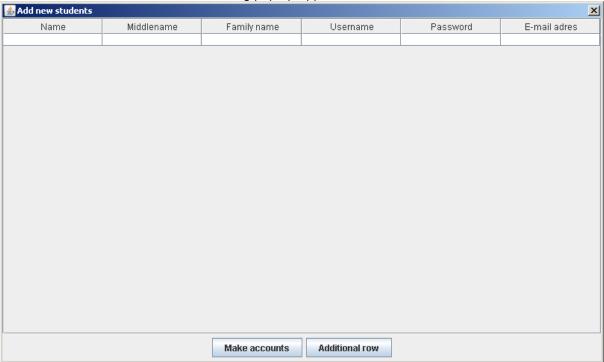


Click sand in the right hand column you see:





Click Add new students and the following pop up appears:



Step 4: Creating student accounts

Make an Excel document with the same columns as in this pop up. Probably it is easy to make such a document from the student list provided by your school.

Select all the data in your Excel document, choose 'copy' and click

Import from clipboard

Next click

Make accounts

Students can also create their accounts themselves. Appendix 1 describes how.

User names have to be unique. Usually the students' log-in data from the school meet this requirement. Another option is to use the students' student numbers, potentially preceded by (an abbreviation) of the school's name.

Check whether the list has been copied completely and whether all accounts have been created. It is important to check this well, because student work will not be stored for students who did not log in correctly.



Now when you click so you see all the students in the class:



In this overview you see all students' usernames and you can replace a student's password if necessary.

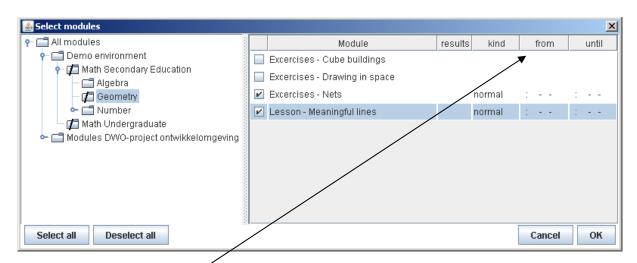
Moreover, you can move students to different classes here.

Step 5: Assigning modules to your class $\stackrel{\dots}{=}$

Now that the class has been created, you can indicate which modules should be available to the students in this class.

Class managem... In the home screen, click

Click # and a pop up appears. Select the modules you want to set visible for the students in your class.



You can also indicate a certain period in which the module should be available to the students. This is for example useful for tests.

The modules you select here will become visible for the students in your class. For different classes you can indicate different modules to be visible.

You can choose from the DME's standard modules, but you can also create modules yourself (see chapters 7 and 8).

If you assign many modules to your class, it might be useful to put the modules in the same tree structure as in which the modules are structured for you. You

Class managem... can set this by clicking next on the pencil $\ensuremath{\checkmark}$. The screen to the right appears. Here you can change the name of your

class and tick on the tree structure view.



time: 09:19 🖶 date: 09-10-2012 🗦 🔟

Cancel



Set date and time "from"

Yes

?



X

5. Working with the DME in the classroom

When the students are logged in, they see the modules you have assigned to them. A module usually consists of several activities. Often the students can just start to work themselves, but sometimes it might be a good idea to have a first look at the material together.

For most lesson series manuals containing practical hints are available.

Various types of tasks

In the DME-modules many different types of tasks occur. Sometimes students have to give one or more short answers, sometimes the answer should be obtained in steps. In other exercises, the students have to drag something to the correct position, using their mouse. Below you find several examples.

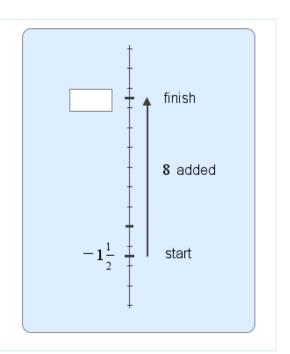
Jumps on the numberline

In these activities you make jumps on the numberline.

- You need to identify the value of the missing number in the white box
- Click in the white box to enter your answer
- When you are done, click on "ENTER" to check your answer
- Hint: You may think of a thermometer

Hint:

You can use the **F4-button** to make fractions, but you can use decimal fractions as well.



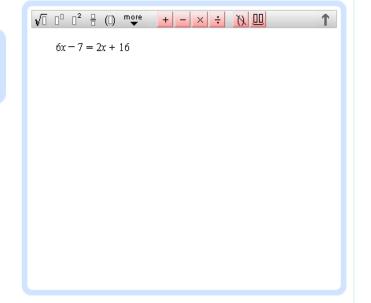
Equations Balance-strategy

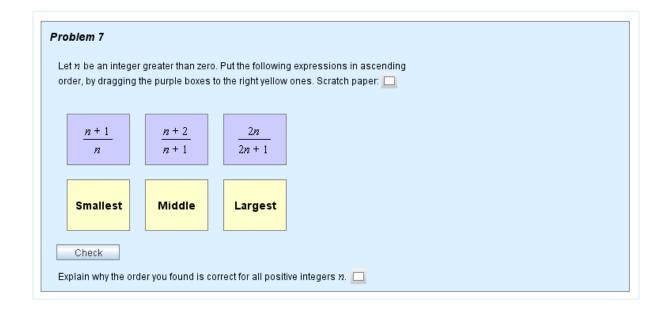
Problem 1

Solve the equation on the right with the balance-method. You just have to choose an operation to be performed on both sides of the equation. The calculation will be done by the computer.

- Use the red buttons to choose an operation.
- Fill in a number or expression
- · Press Enter to perform the operation

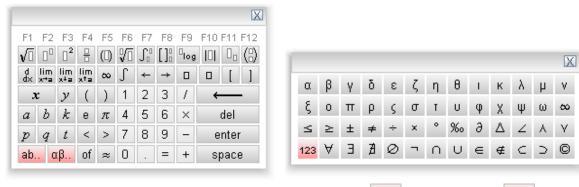
Simplify the equation with each step until you get: x = number and the equation is solved.





Use of keyboard and mouse

Under the button 'more', some more keyboards are available, containing less used mathematical symbols:



The extension with the Greek alphabet is obtained by clicking $\alpha\beta$... When you click β , you will find the well-known qwerty-keyboard.

The most important mathematical symbols can also be typed using the F-keys on the keyboard:



For making Greek characters, you can also use shortcuts:

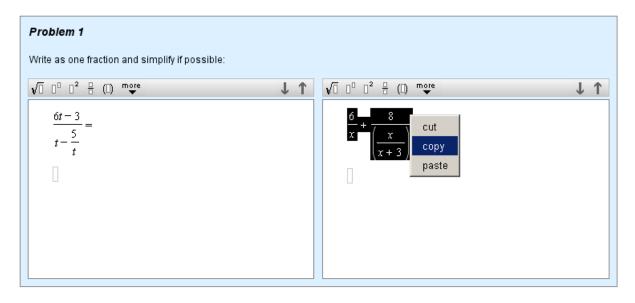
ALT a gives α

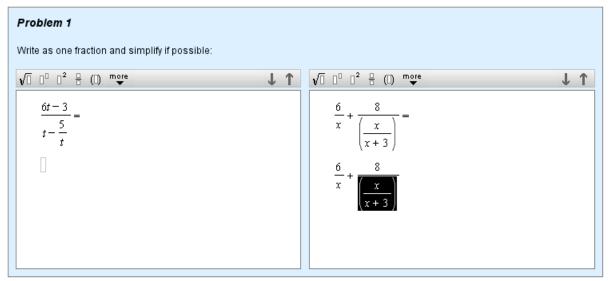
ALT b gives β , etc.

An expression or formula in the text can be selected using the mouse. Next, the expression can be copied to an answer box, using Ctrl-C and Ctrl-V or a right mouse click. In this way, students don't have to retype their expressions over and over again.



For example:





Practice and assessment

The DME offers a lot of practice material, with feedback on every step a student does. This is a powerful option, but there are some downsides. Sometimes the direct feedback provokes trial-and-error behavior. Moreover, students can start to 'lean' too much on the feedback, thereby unlearning to critically examine their own answers. Therefore we advise to also let your students practice with less or no feedback. This is possible in the DME, you can learn more about it in chapter 8.

Taking assessments in the DME is also possible. How you can create a test yourself, for example based on an existing practice activity, is described in chapter 8.



6. Viewing students' results

When you select a class in the left hand column of the home screen, you will get an overview of the results of the students in this class, like the one shown below. At the top, names of the modules the students worked on are shown.



In this screen you can:

- View the average score for each module. High scores are green and low scores are red.
- Copy the results to for example an Excel document, using the Copy button.
- Sort the scores by clicking on one of the arrows ▲▼.
- View the results for each activity. To do so, you zoom in on a module (

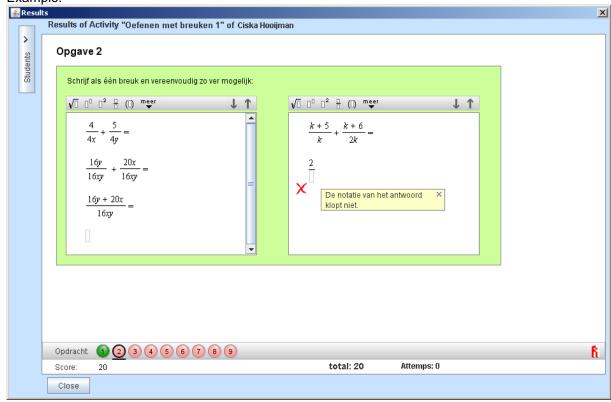




In this screen you can:

- Copy the results to for example an Excel document, using the Copy button.
- Sort the scores by clicking on one of the arrows ▲▼.
- View the student work for one activity. To do so, click on a score in the overview.

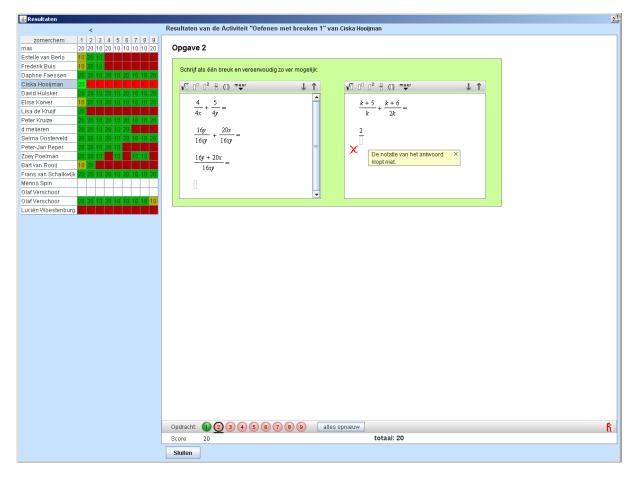
Example:



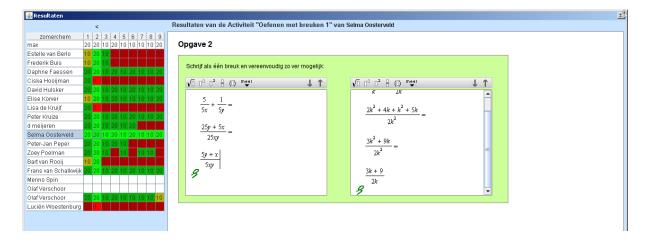




Click to see the names and scores of all students.



Now it is possible to see the student work of all students for one exercise. Just click on the name of a different student:



7. Copying or creating folders, modules and activities

In the school folder you can create new folders. This can be useful to store adjusted modules in or to organize the modules for your school in folders for each year or topic.

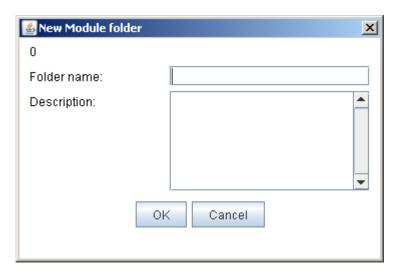
When students have worked on an activity inside the school's environment and somebody changes or deletes the activity, all student work will disappear. To prevent this from happening, it is advisable to create a personal folder for each teacher in which he or she can adjust and design activities.

Creating a new folder

Click on the school's folder, right click and choose New folder:



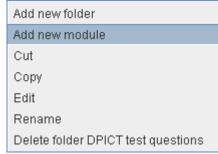
A pop up appears:



Now you can copy an existing module into this folder (using copy/paste) or create a new module with one or more new or existing activities.

Creating a new module

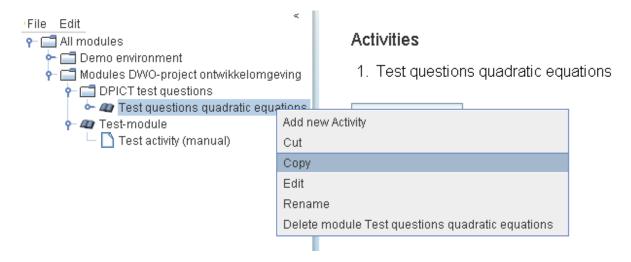
Right click on the new folder and choose New Module.





Copying an existing activity

To copy and paste an existing activity we again use the right mouse button:





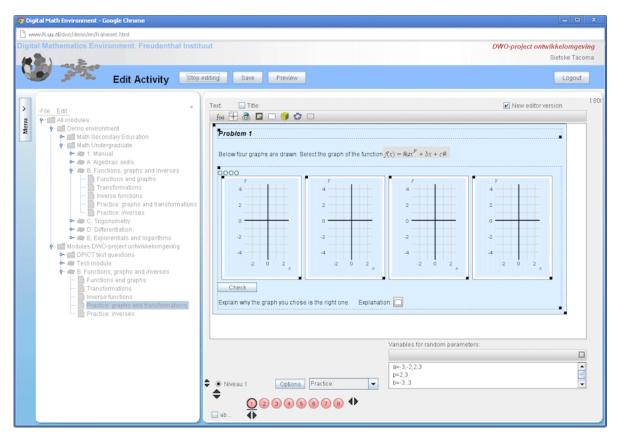
8. Adjusting the settings of an activity

Each activity has a number of settings, such as whether it concerns a practice activity, a self-test or a test. You can easily adjust the settings of an activity yourself. You are only allowed to do so inside the school's environment. Therefore, you first have to make a copy of the module and put it in your own environment.

Next select the activity. You see the series of tasks in the rightmost column.

Now click Edit (at the top of the screen).

The middle screen will be 'frozen' and in the rightmost screen the first exercise of the activity is shown in the authoring tool.



Probably at the bottom of the screen you see the following:



This is a practice activity. When you click 'Practice', the following five options appear:

Practice: Each step is checked. The possibility for correcting errors is unlimited, without deduction of points.

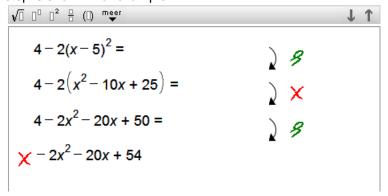
Practice game: Each errors costs 2 (out of 10) points.

Self-test: The answers will only be checked after clicking the 'Check' button after finishing all the exercises. For checking more often, points will be deducted.





When checking a self-test not only erroneous answers will be indicated, but also correctness of every step is shown. For example:



Test: The check button for tests is only visible for the teacher, so he or she is the only one who can check the test.

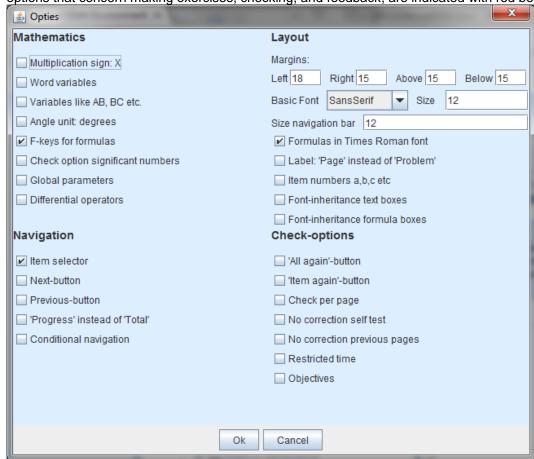
Practice endless: A button is added with which students can repeat tasks. This option is only useful for randomized tasks.

A chosen setting is active for all pages in one activity.

If you change the settings for an activity students already worked on, the student work will be lost. To prevent this, make a copy of the activity the students already worked on and edit this copy.

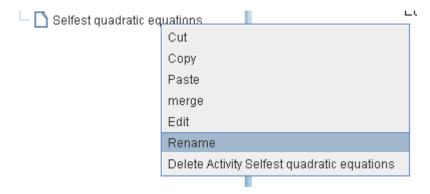
Options

When you click the button Options, a pop up appears with several options for the entire activity. The options that concern making exercises, checking, and feedback, are indicated with red boxes.

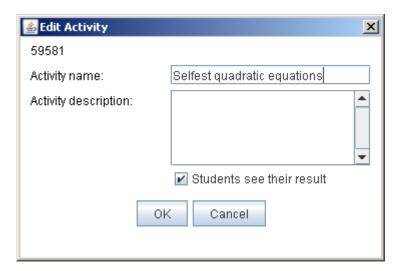


Change a self-test into a test

To change a self-test into a test, you first make a copy of the self-test. Change its status from self-test to test (see page 18). Change the name if necessary, by right clicking the activity and choosing Rename:



In the pop up that appears, you can change the name. Also tick off 'Students see their result'.



In accompanying texts for practice exercises or self-test exercises, often sentences like 'Press Enter to check your answer' occur. In final tests this is not possible, so it is advisable to adjust these texts.

If you want to change exercises more radically, consult the manual about the DME's authoring tool.



9. School administrator

When you log in as a school administrator, three additional buttons appear in the menu on the left:



School users

You see a list of all users that are attached to your school, both teachers and students . In this view you can remove teachers and students, change passwords and move students to a different class.

School classes

In this view you can see which class is attached to which teacher. Here you can attach classes to different teachers.

School configuration

In this view it is possible to set some specific settings for the school:

- ✓ Students choose their own class
- ✓ Teachers choose the class of their students
- ✓ Teachers are allowed to change modules

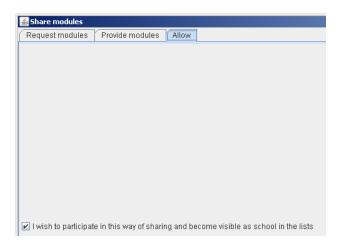
It can be wise to turn off the option **Students choose their own class**: it has happened before that a student switched classes to see what an assessment looked like in a different class. But take care: when this option is turned off, the students cannot choose their own class after creating their own account.



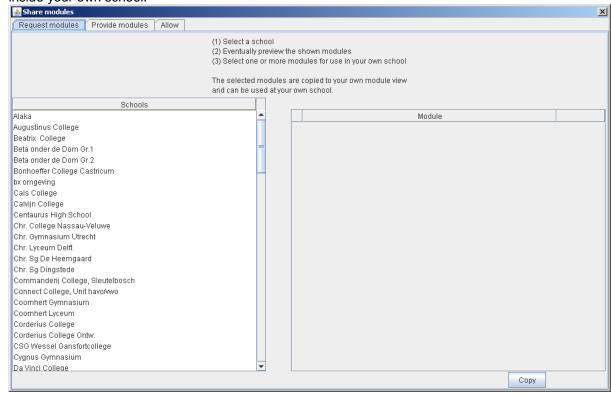
10. Sharing own modules with other schools

A growing number of schools design their own lesson material using the DME. Making good material takes a lot of time and therefore it makes sense that DME-subscribers work together in developing and sharing material. This is possible via the option **Share modules.**

- Right-click on your school's folder and choose 'Edit'. In the top right corner the button
 Share modules
 appears.
- First you will be asked whether your school agrees with this way of exchange: use modules or share modules with others.



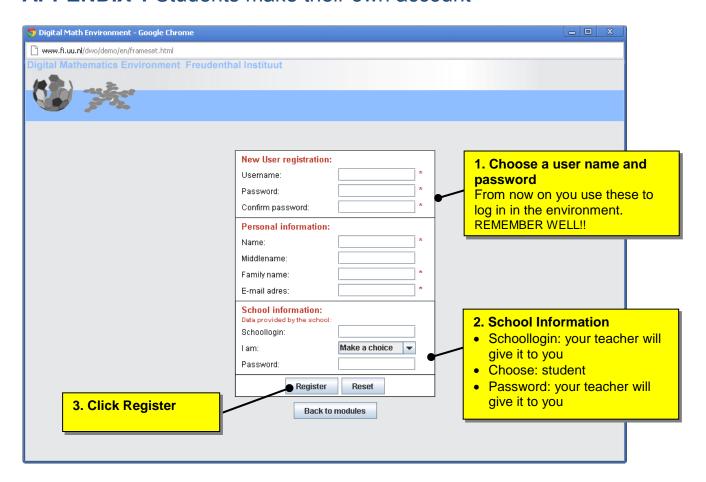
 Via Request modules you can get an overview of all participating schools in this exchange. By selecting a school in the overview, its shared modules appear on the screen. You can view these modules and possibly copy them to your own school's folder. After this, you can use the modules inside your own school.



Via Provide modules you can share a selection of your school's modules with all the other schools
or with a selected group of other schools. From that moment on, these schools can view these
modules, copy them and use them.

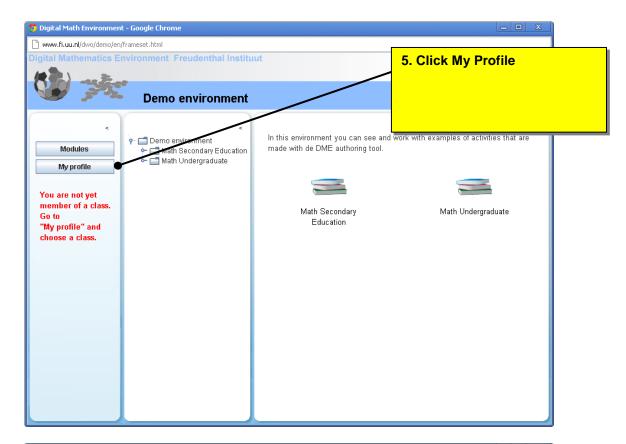


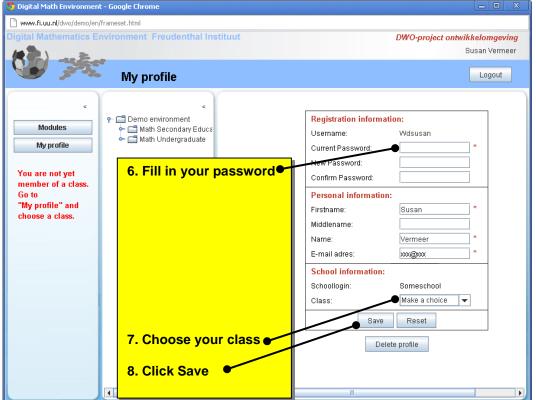
APPENDIX 1 Students make their own account











Now you can see the modules your teacher assigned to your class.

