

## Introduction

For three years we are using Moodle in a group of nine public secondary schools in the city of Enschede in The Netherlands. We are changing our approach from a “*teacher centred cohort handling*” into a “*student centred / choose your own modules / but study also with others in a peer learning group endeavour*”. We are now halfway in that development. ☺



## Design history

Since in The Netherlands the microcomputer became available for normal schools, we are trying to use this tool in the Dutch educational school system (Teachip 1981 / COI 1982 / INSP 1986 / PRINT 1988). For fifteen years we tried to construct systems that could replace the role of the teacher as instructor. In this era we believed that good education was cutting a domain in small pieces and feed students the pieces one by one in the right order. (CAI /CBT) Standards in this era reflect this very much individualised vision on education: AICC. The danger of this approach was - and still is (SCORM) - that the computer takes over the complete control of the student. Any kind of self initiative is killed. The most painful test - in this period - was to switch the computer off and look what the student could do “on his own”.

Seven years ago – together with the rise of the visual internet (WWW) - we realised that we were on the wrong track, so we introduced the combination of live classrooms with ICT:

**“Good education is about sharing artefacts (lecture notes, assignments) between teachers and students and then organise their communication” (Tielemans 1993).**

The focus was now shifting to student control and we tried to find groupware that could support this: at last we created a small set of web forms on top of the groupware tool Lotus Notes/Domino: TeLeTOP (1998). With these forms teachers created on a central grid screen a kind of To-Do list for their students<sup>1</sup> with visual cues where assignments were organised.

<sup>1</sup> The main trick of that timetable was that it “cued” academic professors to create a more structured organisation of assignments in a course scheme than they ever had done before. This trick was realised by simply cueing column names like before, after and during the core activity.

But in this TeLeTOP system the teacher was - and still is - the originator of these learning activities: the choice of the student is limited to the decision *to do or not to do* the published assignments, *to react or not to react* in the forums etc.

In the summer of 2002 I moved to a group of nine schools, that was reconstructing their educational approach: breaking down the classroom walls, burning the blackboards and offering students learning gardens with three helping teachers. Originally I had the intention to improve “my own” VLE (called TeLeTOP) for that context. Soon we realised that while changing the classroom structure so dramatically, we needed a tool which we could tune more for our new school system and we shifted to Open Source Moodle: it has also like TeLeTOP<sup>2</sup> a visual central screen where the student in one glance can see the organisation of the proposed educational scenario for a course or a workgroup.

00		Vooraf	Datum en plaats	Activiteit
10		Doornemen Hoofdstuk 1 Lesgeven Doornemen Handleiding Oriëntatiepracticum	Donderdag 8 september 2005, CU B101, 13.45 - 15.30 uur	Bijeenkomst 1: kennismaking, introductie, verdeling stagescholen.
20		Hoofdstuk 2 Lesgeven	Donderdag 15 september 2005, CU B101, 13.45 - 15.30 uur	Bijeenkomst 2: Lesgeven
25		Ophalen opdracht 1	Voor dinsdag 20 september 2005, 17.00 uur	Opdracht 1 inleveren
30		Hoofdstuk 3 Lesgeven	Donderdag 22 september 2005, CU B101, 13.45 - 15.30 uur	Bijeenkomst 3: Differentiatie en Zelfstandig Leren

The beating heart of each TeLeTOP course is the **central Roster** scheme. It is a timetable / to-do list with weeks in rows, and column headers with fill-in cues like: before the session, during the session (here: activity) and work to do after the session.

In the cells of the roster you see in one glance the short hands for these To-Do's as hyperlinks (if you click on them you can read the full description of the tasks.) If there is a “bring in student assignment”, the student sees the clear brown/green deliverable arrow icon. But only assignments can be placed in this scheme.. For other activities (like news, forums, quiz, workgroups, course-info, web links, the teacher must describe where to go: he must *refer* the students to buttons in the left column. Of course – if you are html handy – you can create a html-link to these buttons in the scheme, but this is always handmade, so it is difficult to maintain later...

In Moodle you can *really link* all kind of resources and activities from the big activity cards (see next paragraph) by choosing - in editing mode - from a list of preformatted resource-types and task-types and then just filling in the details in preformatted forms.<sup>3</sup>

<sup>2</sup> Dokeos is the first BlackBoard clone that added recently a visual presentation of the course: the learning line.

<sup>3</sup> In Moodle you can also place more global activities/ resources in blocks in the left (and here not used:) right columns, like our proudly added small **course overview block**, and the calendar box with announces and private messages.

Moodle offers much more visual styling power:

- In the central column of the standard homepage of a course you can create sections where you can divide the course in *educational logical* activity chunks, visual grouped around resources on a single card under a thematic (card) title.<sup>4</sup>
- The outline option in each section gives the teacher extra power to visualise his proposal for his students: how to study/work with this set of resources: some minor resources and/or activities can be grouped - visually - under a main topic. (This way it becomes a kind of “design by Gestalt”)
- Moodle offers activities where students have more room to reflect on and construct knowledge or idea sets instead of only consume documents filled with knowledge: Tools like journals, glossaries and Wiki’s are made for this, but also exercises and workshops, used in the right way (See the O’Reilly Moodle book) are great for that, although it is still the teacher who must choose to offer these opportunities.<sup>5</sup>
- So, Moodle offers more and more support for additional visual tuning, lets resume:
  - in the centre of the screen you can outline the day by day stream of a course in sections (logical chunks),
  - on the left and right you can offer more global and course independent support activities & resources in blocks, (you can agree on/standardise in your institute how to differentiate: what kind of resources you put on the left and the right)
  - You also can decide/agree on to put in the top section (section zero) these activities and resources which students need during the whole course period.<sup>6</sup>
  - There are also more and more alternative visualisations for parts of Moodle which enlarge this central screen expression power for the teacher:
    - Week-, Topic- and Social-format for courses get new company: project-, SCORM-, LAMS-, single activity- and hybrid-formats.<sup>7</sup> (*for students there is also now a “I was here” format*)
    - For the start page of your Moodle website you can also insert new formats (like CMS format) and with a little coding you can easily add your own set(s) of front page-format(s), for example for the centre column choice list on the settings page of the main index page.

With CSS techniques you can – even on the same server – offer different themes for different courses, even with complete different views<sup>8</sup> on the same course materials and activities. (You even can tune themes for users with different wishes: for example for 508 reasons)

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<sup>4</sup> Maybe is the section of Moodle (“the activity card”) the first workable alternative for the reusable learning object dream? ...What if we could import/export complete sections from a central store (CMS) ...What if students could assemble their own courses that way.. (OU sets here a new e-learning standard?)

<sup>5</sup> One of my dreams is that students can paste self chosen activities in these sections, which are technically separated from the teacher initiated activities ...What if students could enrich their own courses with self chosen activities, like: “I prefer this time to do the assignment alone or: join me, I propose to do this as a group..” (OU sets here again new e-learning standard?)

<sup>6</sup> During runtime students can choose to see only the activities of one section/activity card, but it will be presented always in combination with section zero. (*I modified section zero for this reason –see picture on page 2 - to take as little room as possible on the top by showing the resources and activities in a horizontal row instead of a vertical list.*)

<sup>7</sup> I prefer for SCORM, Lams and IMS/LD the Hybrid option of Moodle 1.6: here you can import a complete SCORM course as replacement for the centre sections column of Moodle, but you can still arrange “the soc. constr.” Moodle activities around that centre in the blocks on the left and the right. So you end up with the best of both worlds: individual SCORM activities or dedicated flows in LAMS or IMS/LD, but still as teacher able to do the final tuning for your own courses in the blocks..

<sup>8</sup> *One remark here: since we have the HTML-editor in Moodle, we drift away from structured resource design like we had in the beginning. (With openings for maximum CSS control or an XML multi-publish approach, but again, we lost that..)*

But Moodle is still very teacher centred, which is a burden for our own school project. Let me explain this a little. As I said before, we are reconstructing our school buildings so we can create learning-gardens for 60 self-steering students with 3 teachers as their coaches (and older students as tutors) instead of small classrooms with cohort-timetables.

In the beginning of our project these students were given study guides and blank timetable

Format: Thema-indeling ?

Period: 2004 - 2005: kwartiel 2

Geen  
2004 - 2005: kwartiel 1  
2004 - 2005: kwartiel 2  
2004 - 2005: kwartiel 3  
2004 - 2005: kwartiel 4  
2005 - 2006: kwartiel 1  
2005 - 2006: kwartiel 2  
2005 - 2006: kwartiel 3  
2005 - 2006: kwartiel 4

Verplicht: Nee ?

Vaksleutel: ICT1 ?

sheets: they had to choose which activities they wished to do on which day and at which hour. They were also free to work longer on some subjects than on other ones. After several try-out weeks the teachers became a little streetwise and reintroduced old rules, like: you are not allowed to start a new activity from next week if you did not finish all the activities of this week, etc..

This kind of rules work against our project intentions so we changed Moodle a little to give the students more of their freedom back.

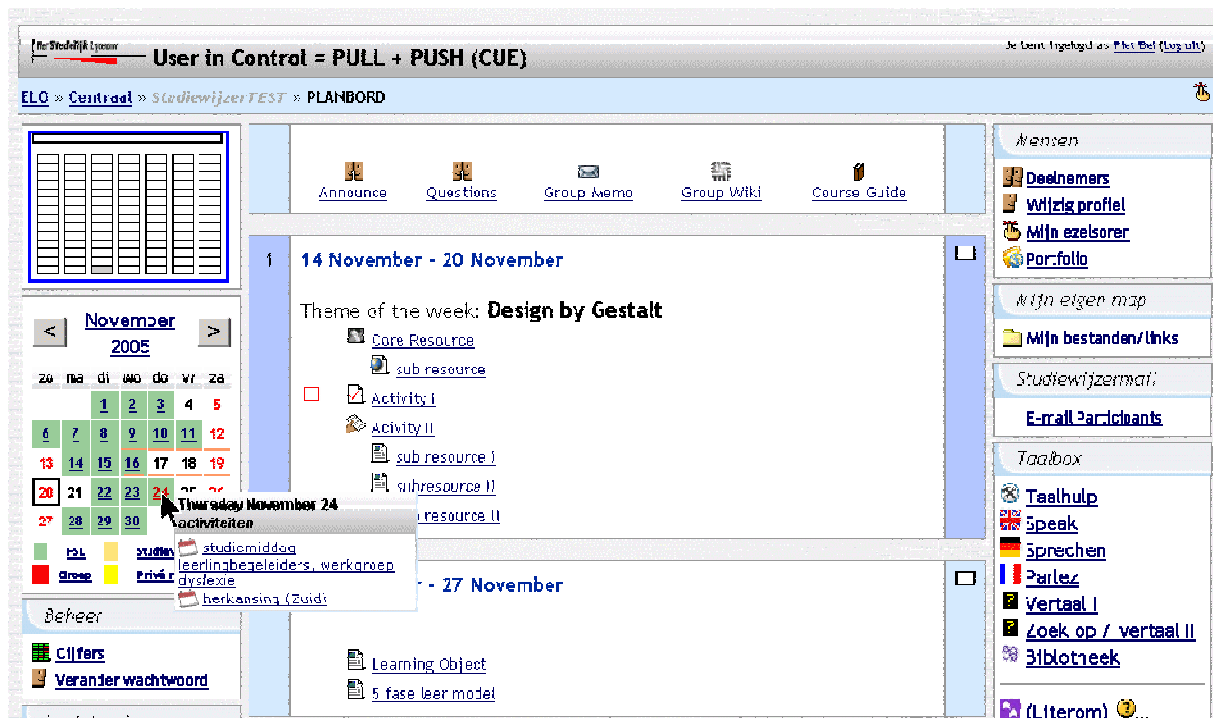
To prevent complete chaos we tuned their freedom just a little:

- We cut the academic year in four (or six) parts to give them a chance to keep overview of the work that has to be done in a specific timeslot. We offer our courses in these timeslots: students will see courses for seven or more learning domains, each period.<sup>9</sup>
- This choice for fixed periods has also big consequences for the further part of our educational design: If we want to promote to our teachers that their students should work in periods and start the next period with a fresh head and a clean To-Do list, it must be possible for all students to finish the previous period on time. (of course on different levels, depending of their capacity and preferences.)

### Students in control

- We gave up the rigid timetables, so students can divide their time as they wish: invest more time in courses they find difficult or prefer more, invest less time in a course they find too easy or too boring. (It is to teacher to “talk them in”)
- When students are spreading their time over their courses in the way they think it is best, they also need a kind of monitor: we offer the overview box (discussed later)
- Teachers are invited to mark activities as core activities and they always find that difficult: everything is important: to help them we changed Moodle again:
  - On the activity settings form teachers can mark activities as core and students see then a red box in front of that activity. (see picture)  
(If teachers mark everything red it looks stupid on the activity overview ☺)
  - If the student finishes a red marked activity, the red box gets a green checkmark.
  - The other activities and resources on the card/in the section are for the hungry students with extra time in that period. Depending of there preferences they can spend this extra time in the course of their choice.
  - If all the core activities are finished, we wanted to change the colour of that section as feedback for the student: Instead of marking the big card on the home page we constructed a small block to represent all the sections of all the courses in this period and change the colour there (see next paragraph.)

<sup>9</sup> We changed Moodle to support this: the admin can organise **two independent** period-systems on the course overview page and fill in the start and end-date for each period. Teachers can then choose on the modified settings page in a dropdown menu in which timeslot their course will fit. They still can choose to be independent of the time slot, but then they cannot profit from several extra options. (see later)



Dreaming of students in control of their own learning and teachers as their wise advisors and monitoring coaches there are several supporting tools the students need:

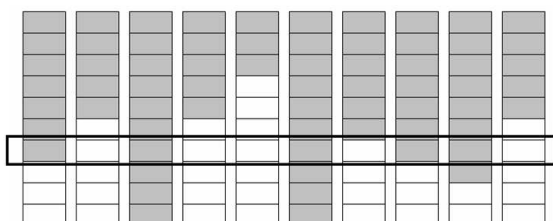
- **Tools to keep overview of courses and assignments:** our red or green checkmarks in the sections - one not finished red one is visible above - and the course overview box with all the courses and activities together, always visible on top left: some students call it “the eye of God”..<sup>10</sup>
- **Tools to make time-related notes:** the calendar in Moodle is already offering this: in the picture above you see for example two announcements for November 24. And students can also add their own private notes in this calendar. And the email and/or the RSS in the forums can be used as human initiated reminders..  
(if students use email/RSS-readers on a daily base.)

<sup>10</sup> This student has seven courses in this period, the weeks are the small white bricks from bottom to top for each course. One brick – week one in course three - is still grey, meaning that in that section a core activity is still open. (if the student moves with his mouse over the bars, he sees which course it is and he can click on it to jump to that course.)

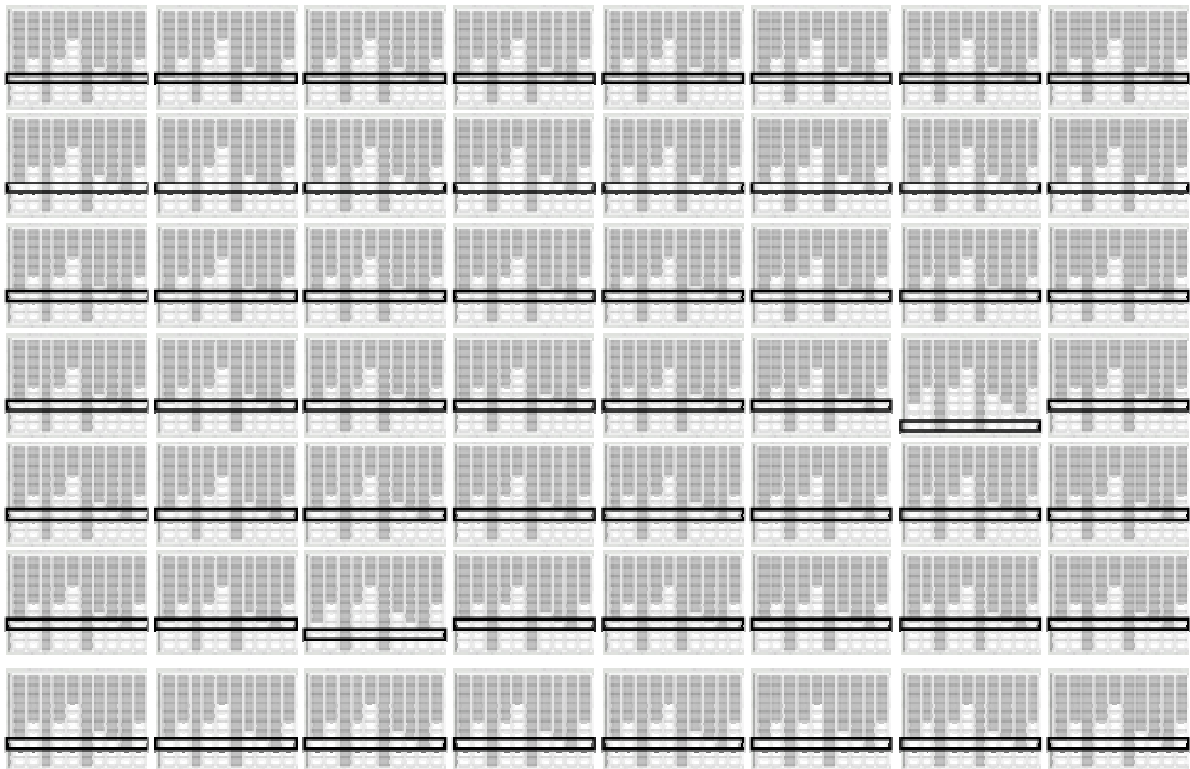
Another example is visible below: 10 courses, counting weeks from bottom to top (yes in opposite direction of the Moodle weeks, because it is in a sidebar: I follow the rules of Donald Norman in “Design of every day things.”)

“We are now in week four says”, the slide bar, and the student did not start yet with at least two courses 3 and 6 which have core deliverables: a course with a week with **no** core activity would become automatically white.

What we are missing for this tool is a clear MOODLE WIDE educational view on finalisation of activities: when are ongoing activities like forums and Wiki’s finished? when the teacher sets a deadline and/or the students marks the activity as “please grade me”?(see later on)

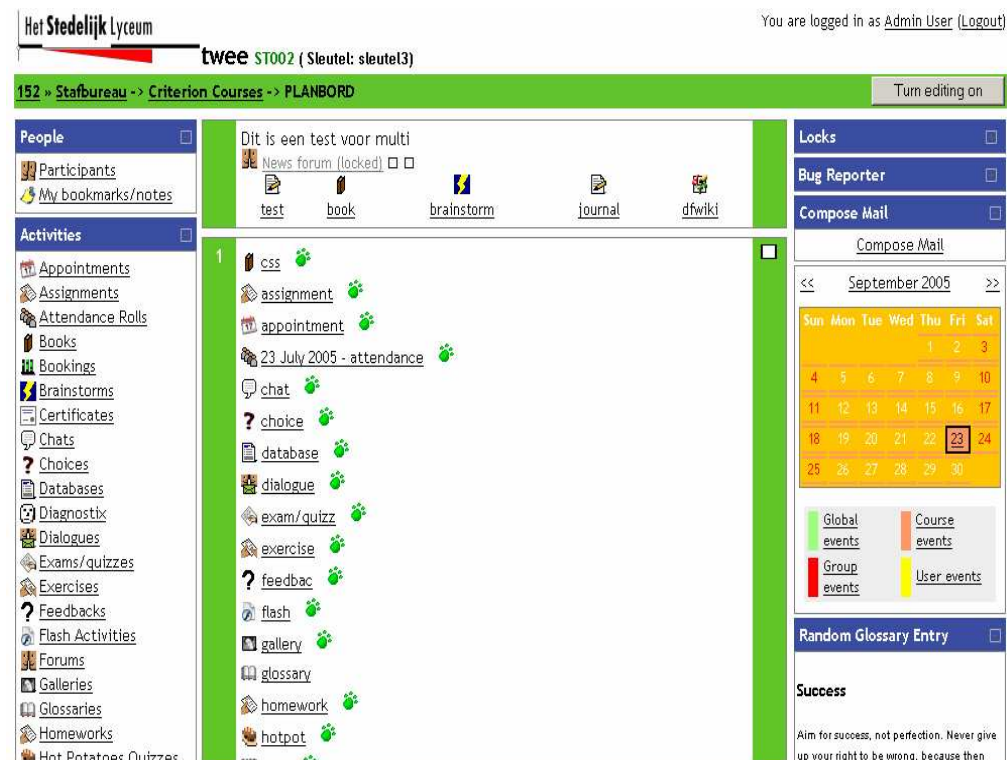


- **Tools to make notes, related to activities on the course pages:** we still use a - with every new release of Moodle by ourselves tuned - version of William’s bookmark tool: students can mark with the finger button (visible on the right in the navigation bar) any page in Moodle and also add a small note in a categorised notebook: in the people box they see this notebook and can jump to all the pages (in all his courses) with a note. (*we disabled the file store option, because we offer the “my files block” for that purpose.*)
- **Tools to store private files and web links, accessible from anywhere on the www and shareable with other students in a course:** we use “Humbolt my files” for this.
- **Tools to store final results / electronic artefacts in subject related folders:** we are developing our own small portfolio, where we ask students to store files in folders with some comment fields, the student can make files and folders public, can ask specific users to deliver comments, we can export these sets as an XML tree with, but are still missing a visitor friendly, student initiated, presentation layer.
- **Tools to communicate with others about the course:** forums are there to ask questions & find scientific truth and Wiki’s to construct knowledge together. We offer also a kind of **course internal memo** tool, and teachers can also open/offer the dialogue module and can choose an e-mail-block as real (still internal) e-mail tool.
- **What is missing are tools to ask/offer more specific help:** only a student who goes to the forum and asks publicly for help, will become visible for the teacher. (Unless the dialogue module is used for asking help, but still then it is disconnected from the place where the help is needed.) When a teacher visits our modified courses he sees a button instead of the private student graph in the course overview box. If he pushes that button, he will see in a pop-up screen the actual graphs of his complete class/group:
  - Students who did not deliver an assignment this week, have graphs with slide bars in older weeks: here one on the bottom left, one in the middle right.



With this tool you get warnings when students are getting – far - behind: these are only negative cues. But you wish that you got cues to help/advise them in an earlier phase. As a teacher you can scan the forums for questions and look at the activity logs and wonder what specific students are (not) doing. But it is difficult to get a good impression of students who need a little help, when they are not moving and typing inside your VLE.

Inspired by the “I was here format”, which is still a passive registration of student movements - and only visible for the student himself - I was wondering if we could combine the bookmark with other student choices...



If a student is working on a specific task, why not offer him an extension of William’s bookmark tool? Suppose: he activates the bookmark tool and can choose:

- “I was there” and do not need it anymore (active version of footprint image)
- Make a private note for himself (finger image)
- Make & share a note with fellow students (finger image, visible for others)
- Choose the “ask for help option”, choose between students/teachers or both, then fill a note with his question: as soon as someone of the chosen target group enters Moodle, he/she gets a message (with a link to that page), powered by the Moodle message system. (a red flag becomes visible behind the activity *and* in navigation bar of activity page)
- When someone visits the activity page to offer help, he can click the finger image and add a comment in the note and the flag becomes yellow/orange
- When the question holder reads the help he can choose:
  - to accept the help (flag becomes white, but stays clickable for others)
  - he can reject the help (flag becomes red again)
- Or as final choice for the student: please give me a mark for this task: green flag?

Other wishes:

Using Moodle for three years now, we developed several wishes for additional activity modules. By adapting several of the existing modules, we created our own modified versions, like “the poll with limit”. This tool can be used to allow students to select their own working groups, for example when there are limited numbers of members needed for each group. Some of these modifications were integrated in the main Moodle, so we could give them up, some we gave up by our selves, like the subsection module, others are still on our wish list:

- (Still under construction) We are working on a module that asks questions and can group the answers in categories: questions and rules for mapping of the answers are read from an XML file. We hope that this becomes part of the core quiz of Moodle.
- I like the D3E tool very much and wish for years (see the forums) to have it as a module in Moodle: at last we hacked the Moodle forum to do this and in the simple, not connected way like in the Ubiquitous version, but it is not teacher-proof enough.
- Inspired by the D3E idea to have one resource on the left and one activity on the right, I still have this wish to combine from a dropdown menu two activities and or resources in two windows side by side in one Moodle screen, as a kind of super-module (WITHOUT USING FRAMES, OF COURSE)
- Students can in our version make PDF-prints of the central page of a course (with checkmark status) or: “of all the sections of my current courses for this week, with checkmark status.” (Another Moodle patch allows to print all the .html/.txt resources)
- Moving to bigger, more open activities and students which better reflect on their own work and learn to evaluate the products and activities of others, we need more tools which integrate the RUBRICS and the self/peer-reviews like the exercise and the Workshop do in Moodle. (Redesign the core of Moodle? Get inspired by iPeer?)

Talking about redesign of Moodle

Most of the wishes and modifications in the previous part of this text are local wishes. I wish now to utter my worries about the latest developments: more and more Moodle users come with clever hacks to make Moodle more sensitive for conditions: three of the nicest ones I will summarize here:

1. The first modification is the possibility of showing different resources or activities to different groups in a Moodle course.
2. The second one is the option to show activities and/or resources in time-slots.
3. The last one - a more sophisticated one - is the option to hide the visibility of a resource or an activity depending of the finishing of other activities. (A very interesting option for case based learning.)

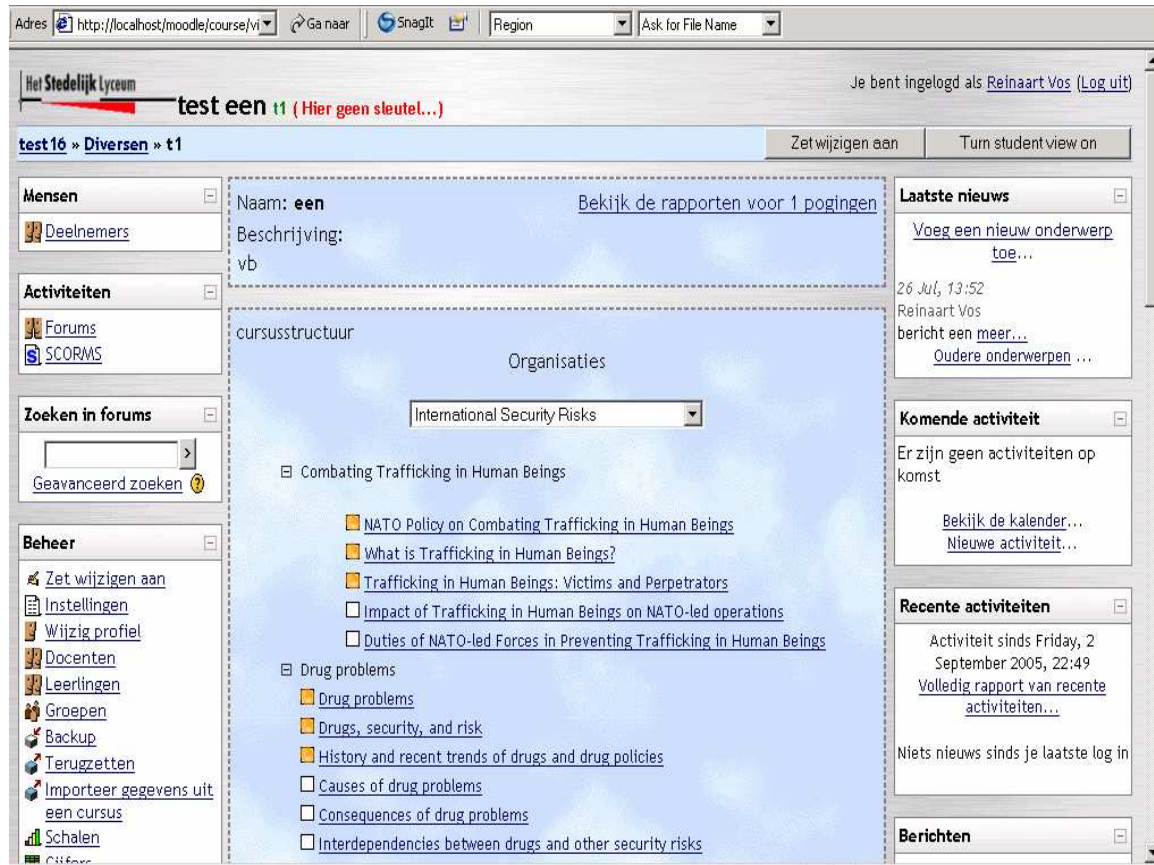
Although I like them all, and will use them, I fear that lots of user/designers will loose the overview, because they have to remember all the combinations of conditions they are using in their growing course design. Combine this with the upcoming implementation of roles and you end up with a mess. One discussion that came up was to build from scratch a role/rule engine for this. Luckily this discussion moved to a good end: to build IMS/LD into Moodle.

The only discussion that is left is how deep it must go:

- The simplest solution is to do it the SCORM way: offer a IMS/LD script as a small module that starts as an activity in the section and gives the final score to the Moodle grade book or offer a big IMS/LD script as a replacement for the course format.



A SCORM example of this “replace the course format” with a complete SCORM course is shown below. This has the advantage for the user that he/she can combine an (individual!) SCORM course, or a (group/individual) LAMS course, or a (group/individual) IMS/LD course with additional Moodle activities in the side blocks, chosen and arranged by the teacher himself. “*Teachers are arrangers, not composers of educational music.*”

The screenshot shows a Moodle course page for 'test een t1' (Hier geen sleutel...). The page is viewed by 'Reinaart Vos'. The course structure is displayed under 'Organisaties' with a dropdown menu set to 'International Security Risks'. The main content area lists several topics and activities, including 'Combating Trafficking in Human Beings' (with sub-topics like NATO Policy, What is Trafficking, etc.) and 'Drug problems' (with sub-topics like Drug problems, Drugs, security, and risk, etc.). The left sidebar contains navigation menus for 'Mensen', 'Activiteiten', 'Zoeken in forums', and 'Beheer'. The right sidebar contains 'Laatste nieuws', 'Komende activiteit', 'Recente activiteiten', and 'Berichten'.

- The second option is to rebuild the core of Moodle from scratch and then integrate not only the IMS/LD engine but also the IMS/QTI engine in the new Moodle core. This way you can offer complete control over a Moodle course.

People who propose this option fear the lower performance of the soap interfaces when you learn Moodle to use a web services interface against a QTI engine and an IMS/LD engine. I am not technical enough to have an opinion in this question, I am only an educational dreamer, lost in code:

- Coppercore is such an engine for IMS/LD: ask Colin Tattersall on <http://www.coppercore.org> for more information.
- JISC is working with Moodle and an engine for IMS/QTI: the engine was APIS, ask Gustav Delius (<http://moodle.org>) for more information.

All our above mentioned adaptations and extensions for Moodle are free available for you to use, test and improve ☺ ..to make Moodle a better product for educational support.

*The core set of our changes - checkmarks, graph, pdf-print buttons and forum change - I gave already on CD to Martin Dougiamas on the UNFOLD-conference in Portugal. Feb 2005*

Greetings and best luck with your endeavour  
Ger Tielemans,  
Enschede, The Netherlands