How to minimise teachers' administrative efforts to zero with virtual lessons

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1 Introduction

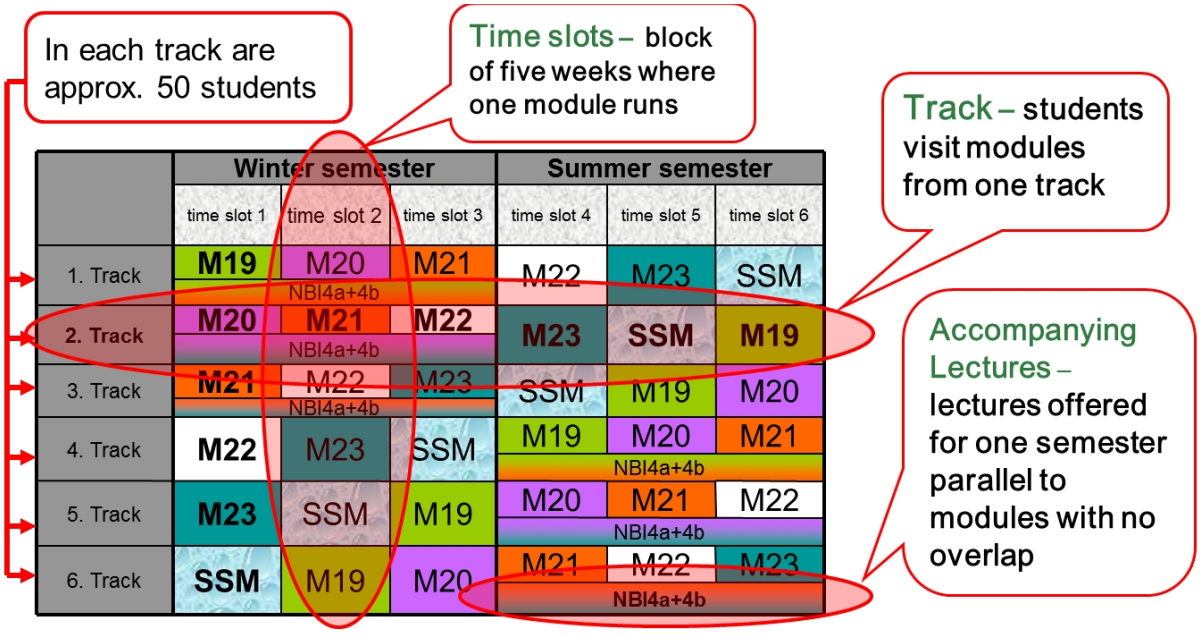
The Medical University of Graz (MUG) is active in eLearning since the year 2002 where the Virtual Medical Campus (VMC) was first launched [1], [2], [3]. In the same year also a new modular based curriculum for the diploma study of human medicine was introduced. Within this curriculum it was foreseen to perform a part of the lessons purely virtual. However, in the first years the virtual lessons had to be handled manually, meaning that teachers had to monitor continuously the tasks which were performed by the students and had to calculate manually a mark for the overall module which consists of a large number of lessons.

A clear goal for the automated virtual lessons was to automatically enroll students for the virtual lessons within the modules they have applied, to actively present them all tasks to be performed in connection with the virtual lesson within our learning management system VMC/Moodle and finally to transfer all the results back to our central administration system [4] and automatically calculate a mark. Teachers should concentrate on the update of the virtual teaching materials and the continuous support on individual questions raised by students during executing the virtual lesson.

The first satisfying technical realization of such a system we introduced in October 2010 using Moodle 1.9 and a specially developed interface called MOMOS V1 (MEDonline Moodle Interface) [5], [6]. This first implementation worked well from a teacher's point of view, hence the virtual lessons were really fully automated by means of enrollment, presentation of the tasks to the students and the calculation of marks. However, the administration of the MOMOS interface was very tedious and could only be done by a programmer and database expert. With the introduction of Moodle2 in October 2012 we also developed a new interface called MOMOS V2 which now allows a comfortable administration of the virtual lessons and without the need of a programmer and database expert.

2 Modular based curriculum

In order to understand the realization of the MOMOS V2 interface and the virtual lessons the basics of the modular based curriculum of human medicine of the Med Uni Graz must be briefly explained. The curriculum for human medicine consists of modules and accompanying lectures. The entire academic year is organized in six time slots, each with duration of 5 weeks. Furthermore the entire study year is organized in so called tracks, each track holding either 50 or 100 students, depending on either 6 tracks or 3 tracks are offered, see the graphic below.



Usually students apply for one track and remain there. They pass the study year within a track along the 6 time slots. In each time slot one module is offered. Modules represent a special topic of the curriculum and are usually performed by two clinics or institutes who can cover all the topics. Modules themselves consist of many correlated lessons of different types. Amongst them are also virtual lessons. If virtual lessons reside within a

module the maximum duration will be 5 weeks, it can be also less when the starting date of the virtual lesson is not right at the beginning of a time slot. In case virtual lessons reside within an accompanying measure, the virtual lessons can last up to one semester, again depending when the start date is set in MEDonline.

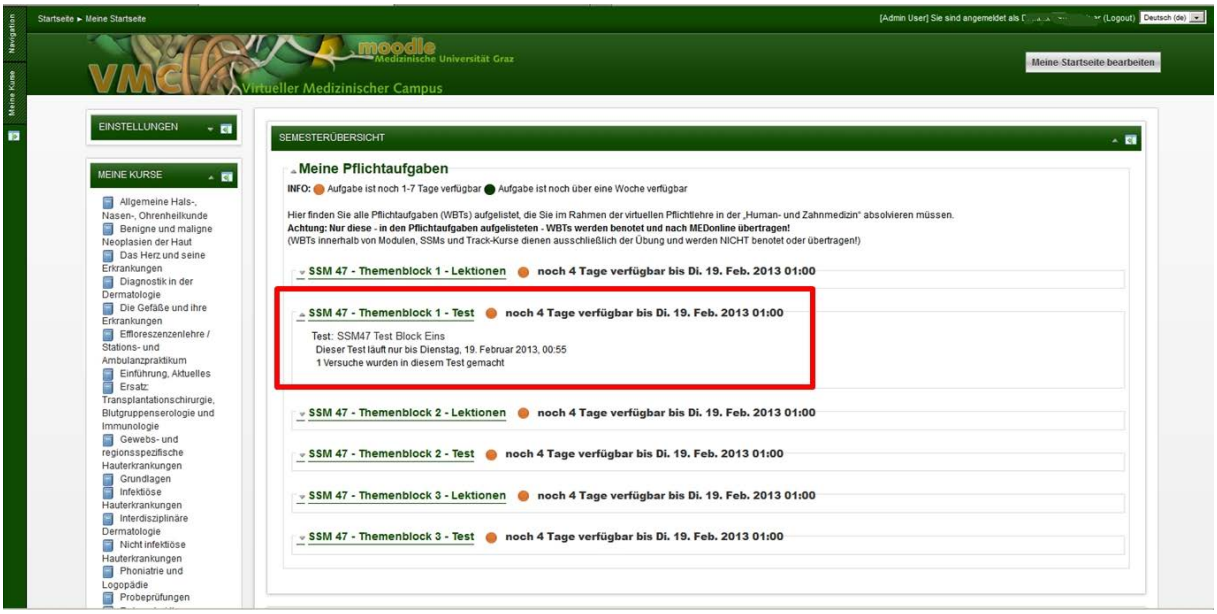
3 Realization of Virtual Lessons

Before a virtual lesson can be executed its content must be created. At the Med Uni Graz virtual lessons consist at least of a lecture part and a WBT. The lecture part is preferably a so called eLecture [7]. eLectures are recorded lessons where usually slides and audio is offered. In case the teacher also shows e.g. experiments also video parts are added. eLectures are usually offered in connection with highly interactive content e.g. animations, videos or virtual microscopes [8], [9]. For the development of the virtual content the teachers are supported by the department virtual medical campus whose affiliates are specialized on the development of interactive content and eDidactic. Once the content is created, teachers will not have further efforts besides a regularly update and the continuous availability per E-mail during virtual lessons are running in order to answer individual questions.

The planning of virtual lessons is done with the normal planning of the modules within our central administration system MEDonline. Virtual courses are only formally distinguished from classroom lessons by having no specific room assigned but instead “virtual”.

3.1 Virtual lessons from the student’s view

Students are enrolled to modules and accompanying measures by a central administration department using MEDonline. If the module contains virtual lessons all students will automatically receive so called virtual tasks within our eLearning platform VMC which they have to fulfil until the end date of the module. All active virtual tasks are displayed on the start page of our LMS VMC/Moodle. An example is given in the graphic below.

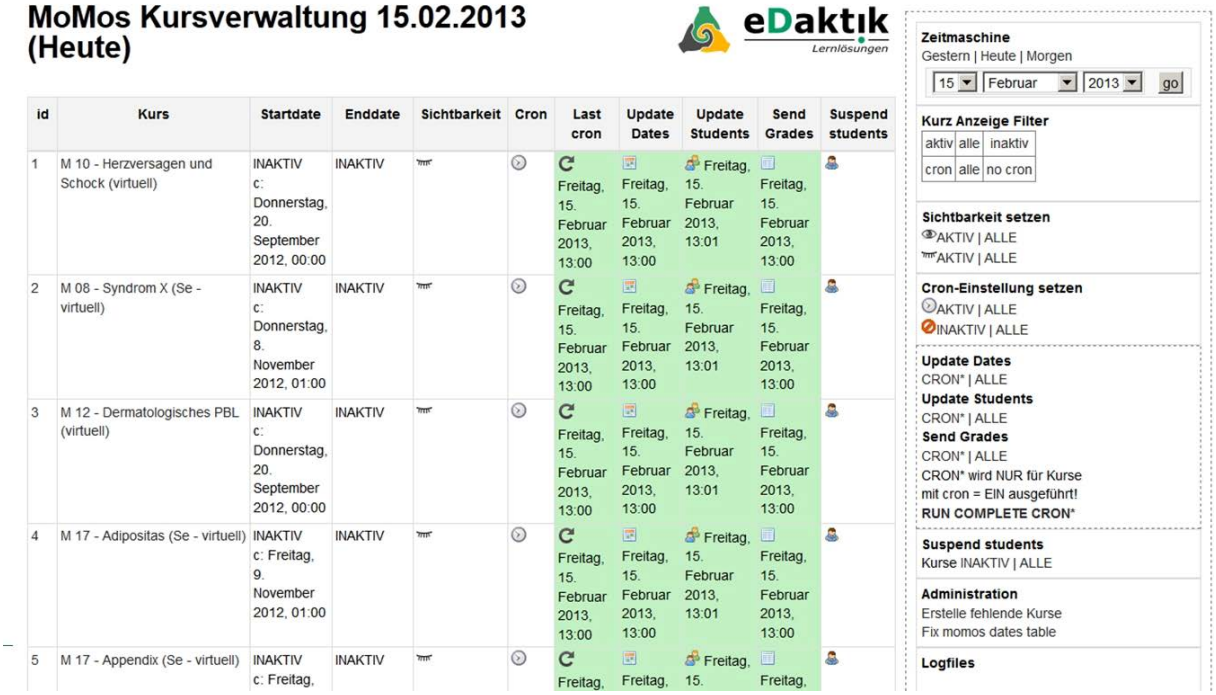


Students can see via the interface all open tasks, if they have already executed it or if it is still open, and a clear deadline until when they have to fulfil it, i.e. the number of days this task is still open.

All results are synchronized daily to MEDonline, where students can check the automatically calculated grade in combination with the other (classroom) lessons of the corresponding module. After the deadline the virtual task will be closed and the grade will be finalized.

3.2 Administration of virtual lessons

In MOMOS V2 we completely redesigned the admin interface which is now very user friendly and can be used now also by persons not having programming and database skills. In the graphic below the course overview interface is visualized.



MoMos Kursverwaltung 15.02.2013 (Heute)

eDaktik Lernlösungen

id	Kurs	Startdate	Enddate	Sichtbarkeit	Cron	Last cron	Update Dates	Update Students	Send Grades	Suspend students
1	M 10 - Herzversagen und Schock (virtuell)	INAKTIV c: Donnerstag, 20. September 2012, 00:00	INAKTIV			Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:01	Freitag, 15. Februar 2013, 13:00	
2	M 08 - Syndrom X (Se - virtuell)	INAKTIV c: Donnerstag, 8. November 2012, 01:00	INAKTIV			Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:01	Freitag, 15. Februar 2013, 13:00	
3	M 12 - Dermatologisches PBL (virtuell)	INAKTIV c: Donnerstag, 20. September 2012, 00:00	INAKTIV			Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:01	Freitag, 15. Februar 2013, 13:00	
4	M 17 - Adipositas (Se - virtuell)	INAKTIV c: Freitag, 9. November 2012, 01:00	INAKTIV			Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:00	Freitag, 15. Februar 2013, 13:01	Freitag, 15. Februar 2013, 13:00	
5	M 17 - Appendix (Se - virtuell)	INAKTIV c: Freitag,	INAKTIV			Freitag,	Freitag,	Freitag, 15.	Freitag,	

Zeitmaschine
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Kurz Anzeige Filter

aktiv	alle	inaktiv
cron	alle	no cron

Sichtbarkeit setzen
AKTIV | ALLE
AKTIV | ALLE

Cron-Einstellung setzen
AKTIV | ALLE
INAKTIV | ALLE

Update Dates
CRON* | ALLE
Update Students
CRON* | ALLE
Send Grades
CRON* | ALLE
CRON* wird NUR für Kurse mit cron = EIN ausgeführt!
RUN COMPLETE CRON*

Suspend students
Kurse INAKTIV | ALLE

Administration
Erstelle fehlende Kurse
Fix momos dates table

Logfiles

From the administration point of view once a study year the virtual courses have to be set up. This is done by the department virtual medical campus, teachers do not have any additional work. Since this work has to be done only once a year also from the administration point of view the efforts are minimal.

4 Experiences and Conclusions

An important finding in connection with virtual lesson was to give incentives to all stakeholders included in the process, hence to students, administration and also teachers. For students the incentives are quite obvious and include time saving and independency, learning speed can be adjusted individually and different learning styles can be addressed. For the administrative people the usability of the new MOMOS V2 interface was significantly increased. With MOMOS V1 only people with programming skills could maintain the virtual courses, with the new interface these special skills are not needed anymore. We realized that it is also very important to find incentives for teachers, as the most obvious one – time saving – is not always the one they are looking for. Hence the Med Uni Graz supports virtual lessons additionally by provision of points for the habilitation and grants in addition also monetary compensation for creating and performing the virtual lessons. This is only fair due to teachers have to be there to answer individual questions of students and also have to regularly update the virtual content. Last but not least we think it is very important to support teachers with the creation of virtual content. The Med Uni Graz has an own department with affiliates specialized in the development of interactive content and eDidactics. This service is especially needed for teachers having no technical background which is for teachers in medical education very often the case.

From the evaluation results several conclusions can be drawn. First the majority (56%) of the students want to keep the histopathology exercise as a virtual lesson. This is a smaller part than for the last evaluation in summer semester 2012, where 73% voted for keeping the virtual lesson, however, for this evaluation we had only a return rate of 22% so the results are not 100% comparable. From the comments for improvement we could further derive, that many students tried to execute the eLectures from a MacBook. But the format we used for parts of the eLectures was not working on this platform. This will be corrected now.

62% of the students found the additional face-to-face lesson helpful in order to put individual questions. Since this was a clear wish of the evaluation performed in 2012 we expected a higher percentage, however, this result still expresses a clear wish to offer this lesson from now on permanently.

The service to write E-mails to the teachers was only used by 14% of the students. This can maybe explained by the highly self-explanatory content.

At least 47% of the students expressed that they might need this content also later in their study, which is still a high number and also justifies the quite high effort in order to implement the eLectures. It has to be said, that this is a self-assessment of students, since they cannot really know right now which will be needed again later on.

More than 84% executed the virtual lessons from home, which is not really surprising. But also 12% used mobile devices, which is a significant increase since the evaluation in 2012 were only 2% used mobile devices. This reflects the clear global trend that PCs are more and more replaced my mobile devices and tablets.

48% have a wish to further extend the virtual lessons. This percentage is not very high, however, it has to be added that from the comments it can be clearly derived that virtual lessons are wanted in order to replace pure frontal lessons in large groups rather than to replace exercises in small groups.

Last but not least a 3/4 majority (75%) of the students clearly explains that virtual lessons – i.e. eLectures - are very helpful for them in order to increase their learning success and for preparation for exams.

Comments from the open questions such as “thanks that you undertake all these efforts in order to provide us with these learning videos”, “virtual lessons are a great idea and shall be kept in combination with an ask your teacher lesson. The offer of virtual lessons shall be further extended”, “The virtual exercise is a good idea and well implemented. They give more flexibility on the time budget at home which is anyway tight” highly motivate us to continue with this service also in the future.

5 References

[1] Staber R, Smolle J, Bauer P, Hye F, Thallinger S, Neges H, Reibnegger G.: „Virtueller Medizinischer Campus Graz: eine e-Learning Umgebung wird 5 Jahre alt“. GMS Med Bibl Inf. 2007; 7(3):Doc43. ISSN 1865-066X, <URL (22 June 2011): http://www.egms.de/en/journals/mbi/2007-7/mbi000095.shtml >

[2] Smolle J, Staber R, Hye F, Jamer E, Macher S, Neges H et al.: “E-Learning in the First SEMESTER of an Undergraduate Medical Curriculum.”, 2006. EDEN conference proceedings. Ref Type: Electronic Citation Ref ID: 9210, <URL (22 June 2011): http://www.eden-online.org/contents/conferences/submit/upload/Smolle.doc>

[3] Smolle J, Staber R, Jamer E, Reibnegger G.: „Aufbau eines universitätsweiten Lern- Informationssystems parallel zur Entwicklung innovativer Curricula - zeitliche Entwicklung und Synergieeffekte“. In: Tavangarian D, Nölting K, editors. Auf zu neuen Ufern - E-Learning heute und morgen. Münster New York München Berlin: Waxmann, 2005: 217-226. Ref ID: 9019

[4] Campus Online, homepage. <URL (13 February 2013): http://campusonline.tugraz.at/>

[5] H. Rehatschek, Gernot Hölzl, M. Fladischer: "The set-up and implementation of fully virtualized lessons with an automated workflow utilizing VMC/Moodle at the Medical University of Graz". International Journal on Emerging Technologies in Learning (iJet), ISSN 1868-8799, Voulme 6, Issue 4, December 2011, pp. 47 - 51.

[6] H. Rehatschek, G. Hölzl, M. Fladischer: "The set-up and implementation of fully virtualized lessons with an automated workflow utilizing VMC/Moodle at the Medical University of Graz". In proceedings of the 14th conference on interactive collaborative learning (ICL), pp. 5 – 9, ISBN 978-1-4577-1746-8, 21 – 23 September 2011, Piešťany, Slovakia.

[7] Rehatschek H., Aigelsreiter A., Regitnig P., Kirnbauer B.: "Introduction of eLectures at the Medical University of Graz - Results and Experiences from a Pilot Trial", iJet - International Journal: Emerging Technologies in Learning, Volume 8, Special Issue 1 "ICL 2012", ISSN 1868-8799, pp.29 - 36, January 2013.

[8] H. Rehatschek, F. Hye: "The introduction of a new virtual microscope into the eLearning platform of the Medical University of Graz". In proceedings of the 14th conference on interactive collaborative learning (ICL), pp. 10 – 15, ISBN 978-1-4577-1746-8, 21 – 23 September 2011, Piešťany, Slovakia.

[9] H. Rehatschek: "A Virtual Microscope Integrated into an eLearning Platform". Within magazine Check.point eLearning, special edition online educa 2011, p.3 and p. 7, ISSN 1613-4710, November, 2011.

[10] eDaktik GmbH – Moodle Services, homepage. <URL (28 February 2013) http://www.edaktik.at/>

[11] H. Rehatschek, A. Aigelsreiter, P. Regitnig, B. Kirnbauer: "A Cost-effective Approach to Produce eLectures: Experiences from a Pilot Trial", In the proceedings of the 18th international conference on technology supported learning & training (online educa), ISBN 978-3-941055-16-2, pp. 192 - 197, 28 - 30 Nov. 2012, Berlin, Germany.