Introduction of OER at the Medical University of Graz

Practical tips to introduce OER with a minimum of additional budget and efforts

***Abstract*— The two buzzwords Open Educational Resources (OER) and Massive Open Online Courses (MOOC) are in the scientific community now common terms which are very well known. This implies for universities that these two trends have become a part of their reputation. However, usually no additional budget is given to universities for the proper implementation of OERs. In our paper we outline a cost and resource efficient way to introduce OER and give some practical tips what has to be considered.**

Keywords*— *open educational resources, oer, mooc, open learning, cost effectiveness

I. INTRODUCTION

The two buzzwords Open Educational Resources (OER) and Massive Open Online Courses (MOOC) are in the scientific community now common terms which are very well known. This implies that for universities these two trends have become a part of their reputation. Or vice versa: each university not offering either OER or MOOCs is expected to come under pressure. This is especially relevant for public institutions financed by the state which also have the mission to provide knowledge to the general public.

However, with the introduction of OER and in consequence – but in connection with much more efforts – MOOCs many questions arise in relation to how this can be practically introduced. The most obvious questions are in connection with financing, content creation, licensing and implementation of distribution channels.

Since open access means that people from the general public are accessing resources, these people are not officially subscribed to the university hence the university will not receive money for them.

The next question is the creation of content suitable for the general public which is in close connection to licensing. What has to be considered before making content available for the general public?

And last but not least also the infrastructure is a topic of main interest, namely the distribution channels for the OER.

With all these questions we were confronted and we had to find answers to them. Within this paper we present a practical way how to introduce OER with a minimum of extra efforts and give practical hints what important issues have to be considered in order to avoid pitfalls.

II. STATE OF THE ART

In the area of research the term open access is commonly used, which means free access to scientific resources such as publication and research results. This is a huge issue for commercial companies – which usually are not interested in publishing their results due to competition – but also for publishers, which earn a lot of money with publications. Recently more and more initiatives have popped up to support open access on scientific research, which is especially driven forward by the scientists.

For the publication of papers the platform Open Journal Systems [1] shall be mentioned, which supports researcher to produce their own journals. Next to journals recently also more and more books are offered for free. Initiatives such as L3T (book for learning and teaching with new technologies) [2], Internet Technology and Society - ITUG [3], or the huge world public library [4] including articles, videos and books are excellent examples for this.

In the educational area the term open educational resources (OER) was established meaning more specifically access on content in connection with education. In comparison to open access OER is a quite new initiative [5] which goes hand in hand with the UNESCO initiative “free educational resources” which attracted people from all over the world in 2002 the first time. The specific part with OER is, that in education resources usually are not only used but also modified and adapted to individual and local needs of the students and teachers. This implies digital storage of the content and proper licensing making this possible. In the final consequence with OER also expectations are closely related such as integration of students into the content creation process and collaboration of teachers all over the world in order to exchange experiences and knowledge [6].

The next stage of OER and one of the three most important trends according to the MMB trend monitor [7] are MOOCs (Massive Open Online Courses). MOOCs contain OERs and provide furthermore a complete eLearning environment including video lessons, discussion forums, assessments and – most important – a continuously available course supervisor available for the participants and their questions. The first MOOC was started by Sebastian Thrun, a professor for artificial intelligence at Stanford University, USA. He reached with his online course more than 160,000 students and founded later on Udacity [8] a company which provides MOOCs for mathematics and computer science. Next to Udacity a lot of large MOOC platforms were founded in the last years, including Coursera (also founded by Stanford university) [9], edX (MIT) [10] and the Khan Academy [11]. Also in Austria the first MOOC – iMoox [12], an initiative by the University of Technology and the University of Graz - was started recently.

MOOCs can be specified by the following criteria [12]: online courses, no formal entry requirements, no participation

limit, free of charge and do not earn credits. Hence most MOOCs provide an informal acknowledgement in case you positively finished a course, however, in case participants want to receive an official and recognized certificate they have to pay.

III. A PRACTICAL WAY TO INTRODUCE OER

For the introduction of OER basically two strategies exist: (a) set up a separate branch next to your existing university teaching material or (b) re-use existing material and make it available also for the general public.

Strategy (a) is suitable if there exists a dedicated budget for the set-up of content and – even more important – also personnel to permanently maintain the content. If this is not the case strategy (b) is the only suitable solution. This was also the case at the Medical University of Graz (MUG). Concretely at the MUG OER were a part of a performance agreement with the ministry, however, no further resources were dedicated to the university in order to fulfill this goal. Since we think, that is the case with many public founded universities we will describe in this paper how we implemented strategy (b). For this strategy an obvious pre-requisite is that a university must already have existing eLearning resources and optimally a department supporting teachers with the production. Both is the case at the MUG: we have an existing learning management system based on the open source software MOODLE [14] and an own department called virtual medical campus responsible for the support of teachers in development of eLearning resources.

Basically the following steps have to be performed:

- Identify the need
- Identification of content which may be suitable also for general public
- Rights clearance
- Set-up of distribution channels

A. *Identify the need*

Before starting such an initiative the need should be clarified. Ideally the need is also expressed by the local students of the university because those are still the main target group in case no additional budget is available for OER. This will avoid the set-up of content which is only needed by external people which do not generate a direct financial input for the university. Such a need can be queried e.g. by a survey amongst the students. At the MUG two surveys were performed, one in autumn 2013 and one in spring 2014.

In autumn 2013 we made a survey on students who just started their human medicine study. The main focus of this survey was on usage of eLearning tools and social media, however, three questions of this survey were also relevant in connection with usage of OER resources. All in all we queried 355 students, 46.4 % male and 53.6% female, and received a return rate of 28.2% (99). The results for these three queries are given in Fig. 1, Fig. 2 and Fig. 3.

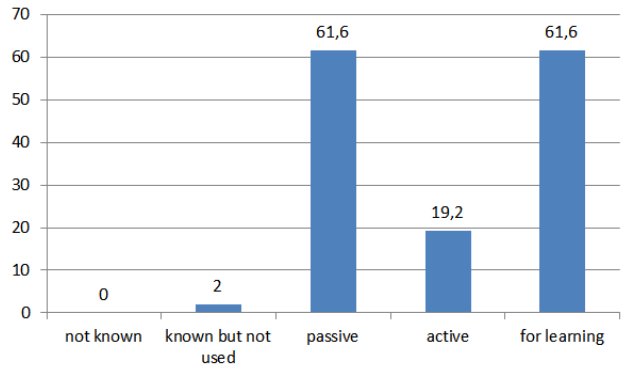

Fig. 1. How do you use Wikipedia? (multiple answers possible, answers in percent)

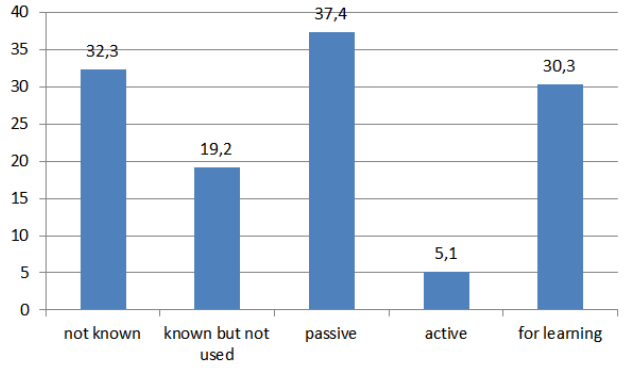

Fig. 2. How do you use other wikis (besides wikipedia)? (multiple answers possible, answers in percent)

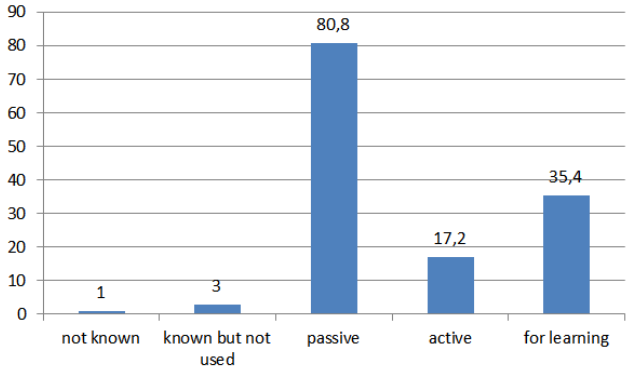

Fig. 3. How do you use YouTube? (multiple answers possible, answers in percent)

It can be seen, that all three media (Wikipedia, other wikis and YouTube) are mostly used passive meaning that our students mainly consume content but do not actively contribute. Furthermore, and this is relevant to the usage of OER, these media are also heavily used for learning. The highest rank here has Wikipedia, which is used by 61.1% for learning, followed by YouTube which is used by 35.4% for learning, and (nearly with the same value) “other wikis” which are used by 30.3% for learning. From these values a clear need on OER by our students can be derived.

In spring 2014 a survey on learning methods and procedures of medical students was performed amongst all

students of the diploma study human medicine. Totally 419 feedbacks out of 2.559 were received resulting in a return rate of 16.37%. From the received answers 51.6% of the students were female, 48.4% were male, the average age was between 29 and 25 years, and there was a fair distribution of students over all study semesters (1 – 12). The questions given in Fig. 4, Fig. 5 and Fig. 6 were also relevant in connection with usage of OER.

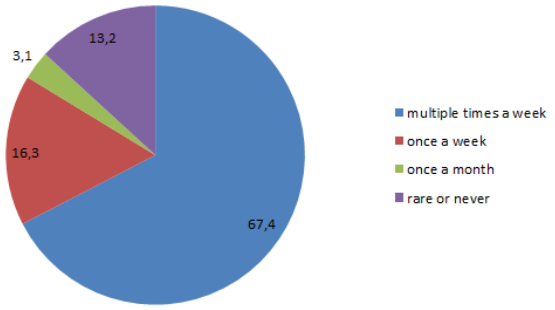

Fig. 4. I use electronic learning media … (one answer possible, in percent)

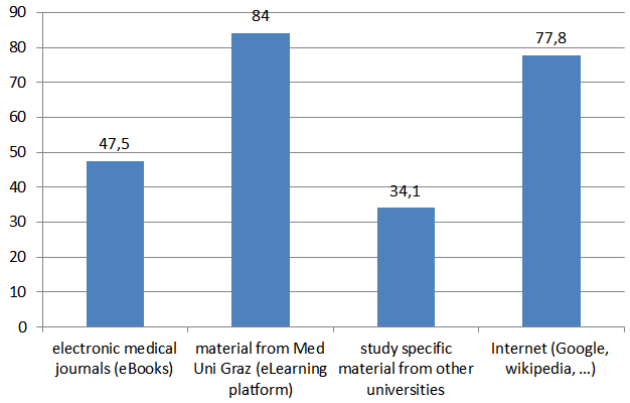

Fig. 5. The most preferred study specific media are … (multiple answers possible, in percent)

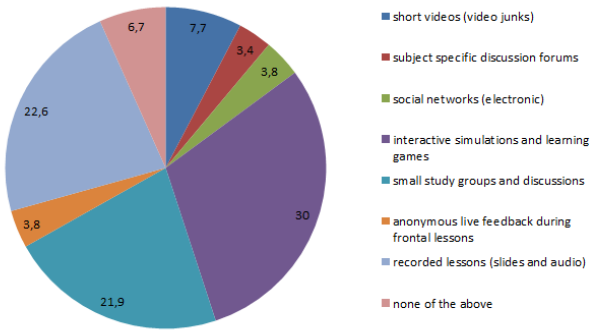

Fig. 6. The best potential for the usage of future technologies offer according to my opinion … (one answer possible, in percent)

From this survey it can be seen, that more than 67% of the students use electronic media multiple times a week for learning. More than one third of the students (34%) use electronic learning material (OER) from other universities, which underlines the relevancy of OER. The highest potential for future technologies are seen in interactive simulation and learning games (30%) and in the provision of recorded lessons (21.6%), the latter goes also in line with our findings from previous work, respectively [18], [19]. It also can be seen that nearly 22% want more lessons with small study groups. This is not surprising for us due to the fact that in medical education also a lot of skills have to be learned, which can be done most efficiently in small groups.

B. Identification of content

The next step is the selection of content which may be suitable for the general public. For the MUG this was content in relation to general health topics such as nutrition or inaugural lectures. According to our experience it is not useful to put every teaching content used at the university online. A rule of thumb may be that it should be content which is understandable by people with maximum high school level. Hence avoid content which is very specialized and only understandable by a small number of people with special knowledge.

This selection process may be hard since there may be very little material available fulfilling these criteria. In this case the only cost efficient solution is to find voluntary teachers who are willing to produce content especially for OER usage. At the MUG we could find a few persons doing so, the video production was performed by our department Virtual Medical Campus.

C. Rights clearence

Once having suitable content the next question is to clear rights. Since the content will be available for free – and usually also for modification - worldwide this is a crucial step. Mistakes could result in sews from copyright owners which could cost the university a lot. So this should be done carefully, on the other hand in a way which still guarantees at the end that some content will still pass this process.

Since the law is different in each country, we cannot give a patent recipe. What we can generally emphasize is the way we followed and this was the set-up of a license agreement with the teacher. In a first step we defined issues we wanted to be covered, e.g. distribution of content on our OER channels. In a second step this agreement was sent to our legal department in order to receive a legally correct document. In consequence this legal agreement was the basis for publishing OER content.

In our legal agreement two main issues are covered:

1) duration of provision and usage
2) Grant of usage rights

First the teacher has to grant the coverage and the duration of the provision. In our legal agreement the teacher grants on the media he provides (e.g. a video) are permanently provided (with no time limit) for the usage as OER.

Second the teacher grants certain rights to the Medical University of Graz. In more detail the teacher authorizes the Medical University of Graz, the free, non-exclusive, temporally and spatially unrestricted right to store the provided media, to

exploit in particular, in accordance with appropriate systems and platforms (iTunesU, YouTube, MOODLE), to reproduce, publish and distribute, as well as to send and publish by wire. Furthermore the teacher grants the right to make technical changes on the media if necessary as long as the content of the video is not changed.

Last but not least it is important that the teacher grants that he is the sole copyright owner of the media provided and that he did not violate the rights of third parties. This is especially important with video items where a vast number of copyright issues have to be considered such as music used, images and persons – with medical content especially patients are highly sensitive data - shown within the video.

As given above the law is different in each country and we cannot give a patent recipe here, however, we can only emphasize to cover the above issues in your own legal agreement in the form it is allowed and demanded by your local law.

D. Set-up of distribution channels

Last but not least the publication of OER has to be performed. Here many possibilities exist including set-up of a new platform, using the existing eLearning platform and extend it by an open access part or use public available platforms. The MUG went for the most inexpensive variant which is the last option and started to distribute OERs within the public platform iTunesU. iTunesU is a special sub section of the well-known iTunes [14] from Apple dedicated to Universities. In comparison to the iTunes store most available content there is free. Due to the usage of the platform is free for universities and the world wide usage of iTunes is very high it is an ideal platform for the distribution of OER. For starting a channel you need a good graphic designer who designs the look and feel for the university page. This includes the start page as well as the course structure with the icons. The final layout of the MUG is given in Fig. 1.

Fig. 7. : iTunesU channel of Med Uni Graz

Furthermore a person is needed who administrates the site. For this no programming skills are needed, however, the person should be familiar with web editing – especially under Mac - and it takes some time in order to understand all features offered by the iTunes course manager.

1) iTunesU authoring

iTunesU accepts as formats MP4, MP3, PDF, and all Apple formats such as Apple Quick Time. Other formats have to be converted. The first step is to define a basic structure. At the MUG we defined the following category pages:

- News
- Science
- Communications & Media
- Study and teaching
- Topics concerning Medical University in General
- Clinics and Institutes

Within this categories further collections can be defined holding the actual media (audio, video and documents), which is given in Fig. 8.

Fig. 8. Category pages and collections of MUG iTunesU page

When adding a new item, first the collection has to be selected where you want to add the item. Then the basic data has to be entered as given in Fig. 9.

Fig. 9. Edit basic data of a new item in Apple iTunesU

The new item is immediately visible after saving. Optionally the item can be added to one or more other collections. This is especially useful, if one item cannot clearly be assigned to one category. In this case a separate publish has to be performed to make the items also visible in the other

collections. It is also possible to passwords protect certain items in case access should only possible to dedicated persons. Last but not least the course manager also offers some statistics, e.g. a distribution of activities per country as given in Fig. 10.

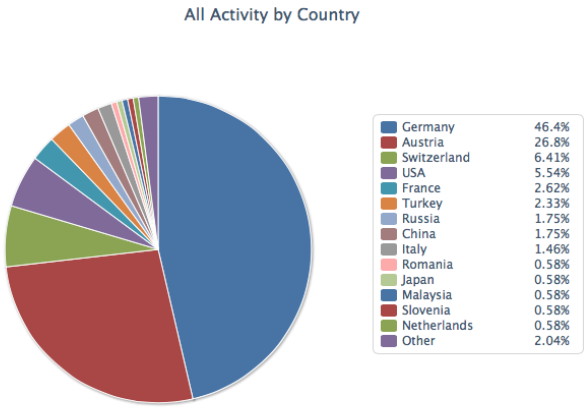

Fig. 10. Statistics of iTunesU course manager

2) YouTube authoring

iTunesU has one disadvantage: it is focused on the Apple world, users with Microsoft operating systems need to install the iTunes client in order to access the content. This was the main reason we decided to open a second public available distribution channel, which does not require the installation of special client software and which can be accessed with most existing web browsers: YouTube [15]. YouTube allows also the free creation of channels, however, does not provide such a sophisticated hierarchical structure such as iTunesU nor does it allow to upload other media than videos. Within YouTube the MUG currently runs three channels [16]: medical understanding, inaugural lectures and information for students – see Fig. 2.

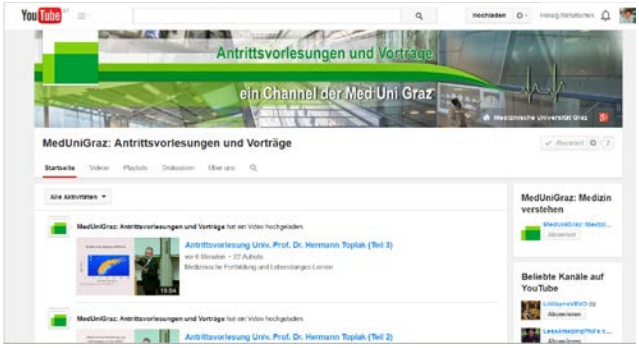

Fig. 11. : YouTube channel inaugural lectures of Med Uni Graz

YouTube authoring is quite straight forward and less complicated than iTunesU. In general someone has three possibilities to add content to his channel:

1) Upload own content
2) Subscription of channels (no single videos of foreign channels can be selected) and make these subscriptions public
3) Add other public videos to your channel (piece by piece)

For adding own content a form with basic data has to be filled in, furthermore search tags can be defined as given in Fig. 12.

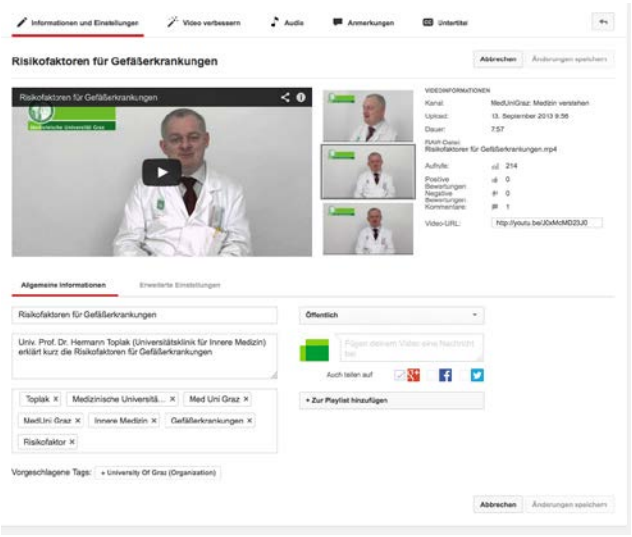

Fig. 12. Authoring interface of YouTube – add a new video item

Finally the licensing has to be defined, whereas YouTube offers the Standard YouTube license and a Creative Common license. Additionally comments can be allowed enabling other users to publish their opinion on the video. However, these comments cannot be moderated meaning, that all comments are immediately visible to the general public and cannot be deleted anymore. Since this includes a certain risk of misuse the MUG decided to turn this feature off. Last but not least YouTube also allows setting of age restrictions for each movie, which can be used for access restrictions on content which is for example not suited for children.

IV. Summary and Conclusions

We presented a cost efficient way how we introduced OER at the Medical University of Graz which can be applied also to other institutions. Specifically we followed the method to re-use already existing eLearning resources for OER. The pre-requisite for our method is obviously existing eLearning content which is according to our knowledge available on nearly all universities. Given this fact we proposed four steps: following steps have to be performed: First - Identify the need, second - Identification of content which may be suitable also for general public, third - Rights clearance and fourth - Set-up of distribution channels.

As conclusions we can state, that for the identification of the need survey are a suitable instrument, however, in most cases there is already a demand from the higher management and the ministry to offer OER. Especially in the latter case it should be clearly stated, that even though OER is free content – its production is not. Hence either an extra budget for personnel and infrastructure resources is provided, or this work can only be done next to the normal routine work as described above.

Even though the described method is cost efficient it still needs experienced personnel at the university for the production of eLearning content. At the Medical University of Graz we have an own department called Virtual Medical Campus which is dedicated to support teachers with the production of eLearning content for the studies offered at the MUG in individual projects. According to our experiences this is crucial for the successful introduction of eLearning at medical universities due to the fact that most teachers do not have a technical background. This may be different at technical universities, however, still teachers must have also a dedicated time for this task.

Furthermore, an important issue is the clearance of rights for all media offered as OER, since all these media can be accessed by the general public, hence also by so called "copyright hunter" – special agencies who have specialized on disclosure of illegally published media. We can only strongly emphasize to work out a legal agreement in close collaboration with the legal department of the university in order to avoid latter cases of suing.

OER are important bricks for the set-up of MOOCS. However, it should be clearly stated, for setting up a MOOC much more effort is needed than for OERs. With MOOCS a complete didactically logical lesson has to be designed including tests, interactive elements, communication and the permanent supervision of the course by qualified teachers. So this definitely cannot be achieved next to the normal work, but needs dedicated personnel and a budget.

REFERENCES

[1] Open Journal Systems, within Public knowledge project, homepage. <March 2014 / URL: http://pkp.sfu.ca/ojs/>

[2] L3T, book for teaching and learning with new technologies, open access book, homepage. <March 2014 /URL: http://l3t.eu/homepage/>

[3] ITUG, Internet technology and society, open access publications, homepage. <March 2014 / URL: http://l3t.eu/itug/>

[4] World public library, academic research collection, homepage. <March 2014 / URL: http://worldlibrary.net/Collections.htm >

[5] K. Mruck, G. Mey, S. Schön, H. Idensen, P. Purgathofer, „Offene Lehr- und Forschungsressourcen - Open Access und Open Educational Resources", Lehrbuch zum Lernen und Lehren mit neuen Technologien, 2. Überarbeitete Auflage, Sept. 2013. <March 2014 / URL: http://l3t.tugraz.at/index.php/LehrbuchEbner10/article/view/112 >

[6] M. Ebner, S, Schön, L. Heller, R. Mummenthaler, „Editorial: Wie gestalten wir die Zukunft jmit Open Access und Open Educational Resources?", Zeitschrift für Hochschulentwicklung, Jg. 8 / Nr. 4, November 2013. <March 2014 / URL: http://www.zfhe.at>

[7] MMB Institut für Medien- und Kompetenzforschung, MMB Trendmonitor I/2013, homepage. <March 2014 / URL: http://www.mmb-institut.de/>

[8] Udacity, MOOCs in mathemtaics and computerscience, homepage. <March 2014 / URL: https://www.udacity.com>

[9] Coursera, homepage. <March 2014 / URL: https://www.coursera.org/>

[10] edX, homepage. <March 2014 / URL: https://www.edx.org/>

[11] Khan Academy, homepage. <March 2014 / URL: https://www.khanacademy.org/>

[12] iMoox, homepage. <March 2014 / http://imoox.at>

[13] EUA, European University Association, homepage. <March 2014 / URL: http://www.eua.be>

[14] MOODLE, Modular Object Oriented Dynamic Learning Environment, homepage. <March 2014 / URL: https://moodle.org/>

[15] iTunes, Apple Inc., homepage. <March 2014 / URL: https://www.apple.com/itunes/ >

[16] YouTube, homepage. <March 2014 / URL: www.youtube.com>

[17] YouTube Channels of Med Uni Graz. <March 2014 / URL: http://www.youtube.com/user/medunigraz01medizin / http://www.youtube.com/user/medunigraz02vortrag / http://www.youtube.com/user/medunigraz03studium>

[18] 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.

[19] 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.