Library's Knowledge Resources for students and teaching staff in digital universities from EADTU[115]

Gema Santos-Hermosa

Learning Resources Support Service. UOC Virtual Library. Open University of Catalonia, Spain
Chair of the Knowledge Resources experts' group of EMPOWER-EADTU. http://empower.eadtu.eu/
msantoshe@uoc.edu

Paul Bacsich

SERO Consulting, UK
paul.bacsich@sero.co.uk

Christos Rodosthenous

IT Officer. Open University of Cyprus (OUC), Nicosia, Cyprus
christos.rodosthenous@ouc.ac.cy

Evagelia Lappa

Phd, MScEcon, Health Information Scientist, Hellenic Open University (HOU)
evlappa@med.uoa.gr

Marlies Bitter-Rijpkema

Assistant Professor, Welten Institute, Open Universiteit
marlies.bitter@ou.nl

Fred Truyen

ICT Services. KU Leuven, Belgium
fred.truyen@kuleuven.be

Abstract

Arising from work on a Vision and Strategy Appraisal of the UKOU Library Services, and with facilitation from EADTU, a comparative study was done of four distance teaching university library services functions in terms of support to students and teaching staff: FernUniversität; Open Universiteit Nederland (library services supplied by Maastricht University); Universitat Oberta de Catalunya; and Athabasca University. All participants agreed to share conclusions with each other, with the UK Open University, and with other members of EADTU.

The workshop presented at OOFHEC 2016 will begin with brief presentations on the comparative study process and overall conclusions. Other members of the Working Group who took part will give brief highlights of their institutional summary reports.

---

[115] Related to the OOFHEC2016 workshop titled "Library benchmarking for student and teaching staff support in digital universities"

The majority of time at the workshop will be used for small-group working. Precise topics will depend on delegate types and numbers but the following are likely to be of interest:

    1. Extending the comparative study to other institutions active in distance and blended learning

    2. Integrating such studies with existing national/international review schemes for libraries, and how to update such schemes to cater for "digital libraries"

    3. How to ensure that that the library contributes to good results in benchmarking/review schemes at institution level, in particular E-xcellence and OpenUpEd.

Keywords: libraries, digital libraries, knowledge resources, benchmarking, review, appraisal

1. Introduction

Education is a key driver of economic and social progress, and governments around the world are looking to improve their education systems. The future of education in the twenty-first century should not be based just on increasing the number of students, but on improving the quality, diversity and relevance of the educational programmes offered. Universities are reconsidering their policies and institutional practices - and increasingly innovating teaching and learning in higher education.

The University libraries are a key part of all this change: specifically, they are "catalysts" of innovation in teaching and learning, in the sense that favours the transformation of higher education. Libraries are offering services to support teaching and learning in order to provide knowledge resources tailored to each educational need.

In the following sections, three views about this topic will be presented:

- **International reports about innovation in teaching and learning.**
  Three recent reports will be analysed mainly from the libraries point of view; that is, about the important role that libraries can play in the change and innovation of universities.
- **Benchmarking report of Libraries Student Support Services.**
  A comparative study of four distance teaching university library services (FernUniversität; Open Universiteit Nederland - Maastricht University; Universitat Oberta de Catalunya and Athabasca University) in terms of support to students and teaching staff.
- **Current experiences from libraries as for Knowledge Resources into learning.**
  This last section includes some reports from the institution and libraries of the EMPOWER Knowledge Resources members. They provide the practice which is, currently, being carried out by some libraries from EADTU.

2. International Reports of Innovation in Higher Education and libraries

Some recent international reports about the key trends, challenges and technological developments in Higher Education have pointed out the important role of the knowledge resources and libraries to improve the learning environments.

The first report (Sursock, Adams, Alozie *et al.*, 2015) is from the European University Association (EUA) and collects how 451 universities from 46 countries of the European Higher Education Area (EHEA) perceive the

evolution of their teaching and learning through their responses to the survey Trends 2015. The study, seventh in a series of reports published by the EUA, takes as its starting point the results obtained in 2010. The objectives of this new edition are to know to what extent learning and teaching are an institutional priority and how widely spread is the model of student-centred learning in Europe. Regarding the changes identified, they include the wider ICT development, the growing strategic importance of internationalization and the attention to the institutional positioning in rankings.

The main value of this report is the overview on learning and teaching that it provides in Europe, also linked to various institutional developments. As for the libraries, the survey includes three questions related to them:

- Was the development of libraries one of the themes addressed in your institution? (Question 17).
- Does the institution obtain feedback from student or assessments of the learning environment (e.g. classrooms, libraries)? (Question 31).
- Which of the following information technologies, systems or tools - such as access to the online library - offers the institution to its students? (Question 42).

The main results regarding the role of libraries in teaching and learning in Europe are based on three key areas: information technology, finance and improving the learning environment.

ICTs are an important institutional priority that affects all aspects of universities, including teaching and learning, research, libraries and student support services. Technological advances also lead to changes in organizational structures and include how to link libraries (digital) with the centers for learning in relation to the monitoring of students and graduates, and the analysis of learning. Moreover, financing difficulties and the premise of "doing more with less" make it necessary to introduce efficiency measures such as sharing services like libraries. Finally, changes in the learning environment also involve the improvement of libraries and an infrastructure investment.

Before moving to the next report, it is worth mentioning how "universities in the next decade" will focus on 'lifelong learning', 'student-centered learning' and the development of management and data analysis. In this future scenario, libraries also play an important role, thus their learning support services are in line to help students to 'learn to learn' and to develop transferable skills; essential for independent learning, both within the university and throughout life. With respect to the management and analysis of data, libraries become increasingly an agent in this process.

The second report (Sharples, 2015), conducted by the Institute of Educational Technology at the Open University in the UK, explores new ways of teaching, learning and assessment for an interactive world; in order to guide the teachers and policymakers in productive innovation. It proposes ten areas of innovation that currently are being carried out and have a growing impact on education: crossover learning, learning through argumentation, incidental learning, context-based learning; computational thinking, embodying learning; learning by doing science with remote labs; adaptive teaching; and emotions of analytics or assessment stealth.

Although libraries are (sadly and not unusually) not explicitly mentioned in this report, there are matters directly related to their areas of expertise, such as specialized information search and management of knowledge resources. From the Innovation areas listed above, there would be several where the library can intervene and work with teachers, educational technologists and designers in order to strengthen them. For example, they can provide an "alternative" environment outside the classroom ("cross-learning"), suitable for students seeking information and that allows them to interact with other resources in order to create their own context of learning ("context-based learning"). The library also provides other knowledge resources, flexible and adaptable to different study routes and particularities of each student ("adaptive learning"). These learning resources can be basic (manuals, books, educational materials, etc.) or complementary (articles, video tutorials, simulations, etc.) and become a potential source of competitive advantage and value in teaching the subjects.

The third study (Orr, Rimini & Van Damme, 2015) published by the OECD Centre for Educational Research and Innovation (CERI) is about the impact of Open Educational Resources (OEE) in educational systems and how they become a ubiquitous element of the education policy. This report aims to highlight the state of development of OER as well as demonstrate that they can be a relevant tool for innovation in teaching and learning.

Some support for OER initiatives mentioned in this study are Digital New Zealand, led by the National Library of New Zealand - where 160 partners collaborates- to facilitate access and visibility of digital contents (some in Creative Commons) and the UK Higher Education repository of educational resources [Jorum Higher](#) (now being migrated into other JISC services). In this latter, a survey among its users (teachers and librarians) revealed the role of libraries and support centers as disseminators of information and internal consultants in e-learning within their respective educational institutions in British higher education. Other previous surveys, such as *Open Resources: Influence on Learners and Educators* (*ORIOLE*), also collected considerations about trusted repositories provided by libraries as a positive factor in the use, reuse and sharing of OER into the teaching (Santos-Hermosa, 2014).

Some brief conclusions obtained from these reports are that international libraries are seen as an opportunity to improve teaching and learning as well as important agents for promoting the use and adaptation of knowledge resources. They provide a wide range of learning resources (available in their collections or through open access) to teachers and students. Therefore, university libraries are 'catalysts' for innovation in teaching and learning, while favouring the transformation of universities in the universities of the future. Some recent international reports about the key trends, challenges and technological developments in Higher Education have pointed out the important role of the knowledge resources and libraries to improve the learning environments.

3. Benchmarking report[116]

In summer 2015 Paul Bacsich was commissioned by the UK Open University to carry out a Vision and Strategy Appraisal of Library Services and some associated student-related functions. This was a 9-month

---

[116] Section under the responsibility of Paul Bacsich

task with several components including four days of hearings at the UK Open University central campus in December 2015 by a panel of four experts including Paul, two Directors of Library Services from UK universities, and a senior officer of the UK Open University Students Association.

A number of benchmarking/comparative studies were done in order to ensure that UK Open University Library Services could plan to remain "state of the art" and "best of breed" in terms of the services it offered to students and staff. These included a set of interviews with leading UK research libraries; a similar set of interviews with libraries of UK face-to-face universities active in distance teaching or flexible learning; extensive desk research studies on the UK and Irish distance learning context and policy/fees/funding framework; and this study: a comparative benchmarking study (codename Annex X4B) with Library Services functions of four well-known distance teaching universities: Open University of the Netherlands (whose library services are supplied by Maastricht University), FernUniversität Hagen, Open University of Catalonia and Athabasca University.

The study benefited greatly from support from EADTU and in particular we want to thank George Ubachs for his help and support and also to acknowledge other involved contributors (table 1). Although the majority of studies for the Vision and Strategy Appraisal were strictly confidential to UK OU, it was agreed with EADTU that the outputs of this study would be shared not only with the participants but with the wider EADTU membership.

Visits were made to the first OUNL and FU Hagen. There were telephone consultations with OUC, leading to a questionnaire being filled in, and a teleconference with a group of senior staff was the way that Athabasca University collaborated with the study.

There was an interesting discussion with senior management on how to approach the benchmarking. In the end it was agreed not to use a standard library benchmarking approach, of which there are several, but to use a more general review scheme oriented to change management and thus better suited to how libraries might evolve in the future. The review rubric was as follows:

- Institutional overview
- Students Support Services:
    - Content services (including OER) and search tools
    - Digital literacy including student search skills
    - Employability skills
    - Support to module/qualification teams developing distance learning courses
    - Fostering the Scholarship of Teaching and Learning among staff
    - Career advisory services
    - Research Support Services (more briefly), including Open Access and Research Data Management.

In addition to the four distance teaching institutions (the specific focus of this study), the benchmarking studies also interviewed and/or did desk research on 16 university libraries in the UK (including both public

and private institutions). We did not produce a specific report on the four DL institutions but these case studies were particularly valuable and some of the conclusions below reflect that.

Most of the libraries studied opened their own catalogue search tool to all users, perhaps as a way of advertising the richness of their content and services. None were "Google First". More specifically, many libraries still seem reluctant to accept and work through the implications from recent research studies on the "primacy" of Google, both for students and academic staff.

Some libraries felt that they must become more proactive and less reactive in the way they are involved with university-level decisions on partnerships and out-of-country provision – which often end up with difficulties over content licenses. Interestingly, in the UK the private co-providers (Laureate, Kaplan, etc) now all offer the same library access to "their" students as from the base university. This situation has changed from the case a few years ago. We have no information on the situation in other countries - this is an interesting question.

Digital literacy is receiving a lot of attention from UK universities but the way it is worked into study programmes in the face to face situation may not always be transferable to distance education practice given differences in that. Likewise employability and careers advice is now getting a great deal of attention from universities with the bar for best practice raised very high, including self-employability, entrepreneurship and start-ups. However, services for distance learning students in face-to-face institutions mostly still seem to be in "deficit model" mode.

Open Access repositories are routine in and outside the UK (which has its rigorous Research Excellence Framework) – the discussions now focus more on the scale, the software and other tactical issues. In contrast, and no doubt of concern to EU and UNESCO, open educational resources are still a marginal aspect of business, especially so in face-to-face universities.

Their increasing inability to "curate everything relevant" in an increasingly open and "grey literature" world is of concern to libraries, and there are moves towards joint working. Progress is slow and may no longer come from country- or province-wide top-down initiatives but from regional or other bottom-up consortia.

Most libraries do accept the continuing relevance of books (including research monographs), including some distance learning libraries in this study. Those that do not find that there are difficulties in some subject areas – staff are creative in finding ways round the obstacles but in ways that management could not recommend or officially support. The research literature also supports the relevance of physical books to some modes of academic research.

It was towards the edge of the scope of our study but there do seem to be increasing similarities of approach in libraries across the distance teaching institutions we studied (despite large differences in scale) and increasing convergence also with the face-to-face institutions as they move to blended learning. However, an area where there still seems to be a wide range of approaches is in the area of librarian support for course development and research. Some DL providers operate with significantly less librarian support than other DL providers; interestingly at some face-to-face institutions libraries reported that they intended to put more focus on academic staff development and thus reduce "reactive" support.

In the UK and many other countries, university libraries have a strong civic mission especially when the institution is the sole/lead provider in a sizable town/city. Interestingly for some, but not all, distance

teaching universities, there is a significant civic mission also. Civic missions now do not seem to be just for face-to-face university providers.

4. Libraries and Knowledge resources into learning

4.1. EMPOWER project

EMPOWER is an EADTU (European Association of Distance Teaching) project which supports collaboration and sharing of expertise between European universities, and provides specialist advice and guidance for institutional leaders on the latest developments in online, open and flexible education.

EMPOWER has twelve fields of expertise, amongst which there is one dedicated to the Knowledge Resources. The use of knowledge resources (KR) and libraries is at the centre of the learning experience in traditional and online universities. In technology-enhanced learning methods prescriptors (professors, tutors, librarians and others) can easily link knowledge assets with every single learning unit, creating specific knowledge libraries bound to specific subject curriculums. To ensure the intensive use of e-knowledge and e-libraries by professors and students not only do we need to have expertise in knowledge and learning management, but we also need to design and embed complete information literacy skills actions into university programs.

Some of the activities carried out by the EMPOWER-KR experts team have been a series of online events about promoting KR into learning and how to apply learning technologies to create and use them, which can be checked in its website.

Hereafter, each member of KR Experts Group will present a brief highlight of his/her institutional report.

4.2. Experiences: Institutional summary reports

4.2.1. Open University of Catalonia (UOC)[117]

UOC is an online university founded in 1995 with the mission to provide our students with lifelong learning and educational opportunities and an educational model based on the personalization and accompanying of our students using online learning. Nowadays, it has 49.672 students, with more than 68.000 graduates, 21 bachelor's degrees and 36 university master's degrees in 7 faculties; and a teaching staff of 3.709 individuals, among coordinating professors (who guarantee the quality of the teaching of those subjects of which they are responsible) and course instructors (who act like external consultants -experts on the learning topics- and follow the students' development).

The UOC Virtual Library (www.biblioteca.uoc.edu), hereinafter VL, does not have a building accessible to its users, thus it was born completely online. Therefore, the website of the Library is the library itself and the main services are also offered throughout it. The Library can also be accessed from inside the classrooms (Cervera, 2010) and the UOC portal.

In the UOC's educational model (http://www.uoc.edu/portal/en/universitat/model-educatiu/index.html), students and their learning activity are at the centre of the teaching activity and they have three main elements with which to complete it: accompaniment, collaboration and knowledge resources (figure 1).

---

[117] Section under the responsibility of Gema-Santos Hermosa

The VL librarians are involved in both of this main elements, as a providers and managers of learning resources and also supporting teachers in their teaching action.

Providing and Managing Knowledge Resources for Learning
As mentioned above, one of the three main pillars in UOC students' learning activity are the learning resources, a range of different contents that UOC students have at their disposal. These resources are available in the virtual classrooms (for all degrees, master's degrees and postgraduate studies of the university) and the VL is the responsible of their supply and management. There are two main types of resources:

- The own resources, learning materials created and owned by the UOC: consist of a kind of handbook tailored to the needs of each subject, which are available in multiple format (html5, pdf, epub, audiobook, mobipocket, wiki, WordPress, videos, simulations, etc.) and languages. They are written by experts from each knowledge area, who transfer all of the rights to exploit the work at the UOC by signing a contract custom and transferring the exploitation rights.
- The external resources: all the contents owned by third parties, which the UOC uses to complement the teaching process. These learning resources can be of any type (books, books chapters, articles, databases, audiovisual, photography and also software) and their usage rights correspond to their holders. The external resources also include the Open Educational Resources (OER), which are stored in repositories but also can be used in university educational practice (Santos-Hermosa, Ferran-Ferrer &Abadal, 2012).

On the one hand, the VL takes care of all the creation and edition process of UOC learning materials: from the budget management for its authoring and editing (to create new content or updated it) and the editorial tracking to the publication of digital materials in the virtual classroom and also the dispatch of its printed version to students. In these sense, UOC librarians are aligned with one of the new roles in academic libraries (Johnson et al., 2015): the participation in learning materials creation and electronic edition. On the other hand, in order to use the external resources in the UOC's Virtual Campus, VL need to subscribe them (through the acquisition of databases' licenses) or to get the authorization of the exploitation rights holders.

The VL centralizes the management of learning resources, working closely coordinated with other departments involved in the learning resources management; such as:
- Legal advisers specialized in intellectual property issues, from the UOC's legal department;
- Programme managers, who ensure the proper development of a program: economically, its recruitment, the provision of learning resources, etc.;
- Technologists, who control the proper functioning of learning resources inside the virtual classrooms;
- Oberta Publishing editors, a UOC group company which is responsible of the entire publishing process of the learning materials at the university.

Supporting teachers in their teaching action

There is a collaboration between coordinating professors and subject librarians that aims to improve learning and to demonstrate how to work together can improve the quality and relevance of educational resources in virtual classrooms of the UOC. Under this new approach, while the teachers change their role from instructors to facilitators of the learning process and expand its outreach to students, libraries acquire a significant presence in academic learning communities (Santos-Hermosa, 2012).

Therefore, subject librarians provide support to educators by personalizing the services delivered, and having into account the coordinating professor's needs. It takes place throughout the whole teaching process, also covering the previous approach of the course and its post evaluation (Camps-Pinós, 2016):

- Conceptualization and design of the course: librarians advise the coordinating professors with the search and association of previously edited UOC's learning material, in order to reuse the UOC knowledge, and also participate in creating new learning materials.
- Search and selection of the learning resources: *Learning Resource Search Service* supports teaching activity specially while preparing a new subject or the rollout of a new programme, or while redesign an existing one.
- Course teaching: bespoke training service and the monitoring of the teaching and the use of the UOC's teaching material
- Course assessment: coinciding with the end of the course, the VL gives advice in the assessment phase of the learning resources used for the teaching activity and provide guidance for the open access publication of final projects in the UOC's institutional repository, O2.

4.2.2. Open University of Cyprus[118]

The Open University of Cyprus (OUC) (http://www.ouc.ac.cy/) is one of the three public Universities in the Republic of Cyprus. It was founded in 2002 and its the country's only dedicated distance education University offering undergraduate, postgraduate (Master & PhD) degrees and training/vocational programs of short duration. Teaching methodology is based on a blended model where a number of online, hybrid & face-to-face group meetings take place between teachers & students. The only part of this methodology that actually requires students to be physically present is the final examination.

This methodology is supported by a state of the art eLearning Platform called eClass (Epiphaniou, Rodosthenous, Christoforou *et al.*, 2015). eClass eLearning Platform (http://eclass.ouc.ac.cy) is a modern Learning Management System based on Moodle open source system and offers a number of services to its users, like content delivery, activities, lecture capture and video on demand, assignment submission and plagiarism detection (Rodosthenous et al., 2015), mobile learning and virtual classrooms. These services are integrated under a single platform that hides the complexity of the various tools used and facilitates learning. The technology used is not static, new services are added (Christoforou, Rodosthenous, Epiphaniou *et al.*, 2015) to match the needs of the faculty and learners.

One of the crucial components in supporting this methodology is the delivery of Knowledge Resources to learners. These resources can be found in both the OUC Library and the eClass Learning Platform. The OUC

---

[118] Section under the responsibility of Christos Rodosthenous

library (http://library.ouc.ac.cy/) is a hybrid library offering both conventional resources (books, journals, theses) and electronic resources (eBooks, subscription based journals, audio books etc.). As expected in a distance education University, the majority of resources are in electronic format, allowing learners to access them from any part of the world on their own devices. Furthermore, the OUC has an Institutional Repository (Rodosthenous, Themistocleous, Mavrotheris, & Christodoulides, 2016) that hosts a number of collections like the OUC theses collection, digital collections for preserving cultural heritage and the university publications collections. These collections are indexed and are searchable by other repositories using the Dublin Core metadata schema. Among the services offered to the OUC academic community is the Library Information System (LIS). Using this system, users have access to the union catalogue through the web Online Public Access Catalogue (OPAC). Moreover, this system allows unified searching for content in ebooks, journals and conventional material through a web interface.

For creating a course in the eClass eLearning Platform, a number of teams collaborate for finding knowledge resources, compiling them in the course and combining them with activities. More specifically, faculty members responsible for coordinating a course, discuss with librarians and identify possible knowledge resources. These resources can be part of the library collection, the in-house content materials or external resources that need to be acquired. Whatever the case is, these knowledge resources are selected and added to the course in the eClass eLearning Platform. A number of learning tools and components are used for seamlessly integrating available knowledge resources with activities and hence with the OUC learning methodology. The majority of tools used are the ones offered by Moodle, for adding content (files, web links, folders, books etc.) and activities (assignments, quizzes, surveys etc.). These tools are also combined for allowing conditional access to resources, i.e when students complete a quiz with a specific score, they are allowed to view the next course lecture. In each course, teachers can add primary or secondary bibliography by using the "Bibliography Tool" that allows them to directly search the OPAC, the journals and the institutional repository collections. Learners can access these resource by just clicking on them from their course page.

In-house production of content includes ebooks, online lectures and course content archived from previous years (lectures, presentations, notes). In each course, teachers create lectures using the video-lecture capture service. This service allows the recording of video, sound, presentation slides and screen capture from the teacher premises using their own equipment. These lectures are searchable by learners using optical character recognition (OCR) and speech recognition techniques.

Faculty members are trained for using the eLearning tools available and have continuous support while creating courses by the eLearning team. The support scheme utilizes the same services used for the learners, where teachers have access to a training course specifically designed to address their needs. This training course has a number of support content like electronic manuals, webcasts, video presentations and best practices.

4.2.3. Hellenic Open University Greece (HOU)[119]

The Distance Library and Information Center (D.L.I.C.) of the Hellenic Open University (HOU) operates in the framework of the Hellenic Open University (H.O.U.). The main purpose of the D.L.I.C. is to support all HOU distance learning and research programs and to organize and make available all kinds of material (printed, digital, legal access to network services etc.) and services, in such a way as to become a centre of collection and diffusion of information with modern technological means. It also collaborates with other Academic Libraries.

The D.L.I.C offers its services both from a distance and in situ (e.g. interloan service, article requests, etc.). D.L.I.C. users are kept up to date and trained not only from a distance but also by personal contact, through their participation in special programs: User Training Seminar, Encore Catalogue, HALUC – Hellenic Academic Libraries Union Catalog, National Archive of PhD Theses and Open Archives. The D.L.I.C. also provide access
to some important databases, such as: Health Management Information Consortium, JStor: Journals, Project Muse, ZentralBlatt Maths, ISI Web of Science, , Journal Citation Report, Oxford Reference Online, etc.

Expanding the co-operation between the D.L.I.C and the Hellenic National Documentation Center (EKT) to the application of open access policies, some efforts for a better understanding of resources are done through the Knowledge repositories "Open Archives". The openarchives.gr is the largest online search portal and navigation in reputable Greek digital science and culture content. The National Documentation Centre develops and maintains the openarchives.gr within the institutional role (e.g. the collection, organization, promotion and dissemination of scientific and cultural production in the country in a manner consistent with international standards and trends in the field as and with the modern needs of users). This content is distributed to individual digital libraries, institutional repositories and online collections and hardly detected by the established search engines. It is also dynamic and constantly updated.

It should be noted that the D.L.I.C and HOU teachers became involved in discipline based academic networks, innovating the students to participate to the service Educational virtual classrooms HOU. The teleconferencing service (virtual classrooms) gives teachers and students the ability to meetings and seminars wherever physical presence of the participants, through the organization and monitoring "online event"(centra.eap.gr). Finally, an example of KR management is the one offered by
the medical Library and the Health programmes, which make efforts for the introduction of ICT and the standardization, documentation, analysis, and review of medical data. There is a need for well educated professionals prepared for advanced clinical applications and evidence-based management (Lappa & Giannakopoulos, 2013).

4.2.4. Open University of the Netherlands (OUNL)[120]

The Open University of the Netherlands is an independent government-funded institute for distance learning at university level. The university is organized into 3 faculties with a network of 15 regional study

---

[119] Section under the responsibility of Evagelia Lappa

[120] Section under the responsibility of Marlies Bitter

centers in the Netherlands and 6 in Belgium (Flanders). Since its fully accredited bachelor and master studies are primarily aimed at the Dutch speaking student population its course materials, registration, tutoring and examinations are in Dutch. However, from the international ambitions of the university to expand as an international frontrunner in e-learning and Open Educational Resources, more programmes and courses are developed in English (e.g. Euro*MBA, European Virtual Seminar, Free Technology Academy -IT).

The Welten Institute as the Research Centre for Learning, Teaching and Technology of the Open University of the Netherlands, focuses her research on 'Learning and teaching in technology enhanced learning environments'. Within its programme on Technology enhanced learning innovations (TELI) investigation takes place on academic (re)search competences on the internet and recommender development to support finding and using knowledge resources.

Originally the university had an own physical library at the central campus in Heerlen, which offered employees and students live and online access to knowledge resources. As an institute focused on distance learning and also triggered by the typical physical distribution of its student population the OUNL decided already ten years ago to make the transition to digital library services for students. In collaboration with the Maastricht University the OUNL offers access to online library services among which access to a wide variety of repositories. Both international repositories like EBSCO based Academic Search Elite, ACM Digital Library, Cambridge Journals, Directory of Open Access Journals, Emerald, ERIC, IEEE Digital Library, JSTOR , Oxford journals, PsycArticles, ScienceDirect, SpringerLink, Taylor & Francis Online, Web of Science, Wiley Online Library and WorldCat. At the same time national repositories can be accessed like Kluwer Navigator, LiteRom, the Gateway to the National Academic Research and Collaborations Information System and PiCarta (NCC+ OLC).

The idea is that use of knowledge resources has become more a matter of learning the student's competencies to access, process and evaluate needed resources and become self-organized 21st academics. Hence the use of online library facilities and tooling adequately for their study at the university is perceived as an integral part of their study, of their academic research and writing competences. Consequently, learning to find relevant resources, assessing them adequately, manage referencing etcetera are part of study, assignments and tutoring in regular courses.

Moreover, there are options for students to participate in generic workshops for example one on how to use Endnote or participate in introduction of online library facilities at the Maastricht University. The knowledge resources access and use is supported in the own online learning environments. Both the MOOC based and VLE type of learning environments developed based on learning design principles derived from own and EU project based research, include supportive affordance and tooling for resources search and access.

In the university's former OpenU and current yOUlearn VLE's provide bookmarking, tagging, annotate and recommend resources and persons functionalities. Relevant knowledge and tooling developed in various EU projects at the Welten Institute might provide more advanced options like social recommenders as developed in the Open Discovery Space (ODS) project to find relevant knowledge resources and people

across Europe based on the (social) activities of the participants' in the learning environment (Bitter-Rijpkema *et al.* 2015).

The past trend has been from a physical library to access to online library resources. The characterisation of the current situation from the university's student perspective is a "snapshot" taken of a dynamic process. New tooling shared use of Mendeley, combining use of dedicated tooling in study communities and getting in touch with peers for recommendations emerge (Bitter-Rijpkema & Verjans, 2010), new hybrid forms of networked learning and knowledge resources sharing and recommending come into existence and will shape next steps to structure academic knowledge resource access, content creation and sharing practices.

4.2.5. KULeuven[121]

KU Leuven is a traditional university serving mainly an on-campus learning population spread over campuses in the Flemish region. It holds 24 libraries spread over 12 locations in Flanders (http://bib.kuleuven.be/). It is developing a series of student learning centres, of which the largest, agora (http://bib.kuleuven.be/agora), is now in use for its third year. It is a place where students can study together with access to digital library resources and collaboration equipment such as large screens. They also can use a video montage room our book group work rooms. Agora is for us a key concept in the modernization of learning, as it is student-centered and "flips the classroom". Gradually, university teaching adapts to this new infrastructure and gives students more control over their learning process. A well organized, very rich and user-friendly digital library system is essential to this, together with the availability of online courses (Truyen, Verbeken, Forward et al, 2014). A specific portal has been developed, LIMO (http://limo.libis.be/), which gives one-stop access to the very large collection of digital resources, including the library catalogues, digital databases such as JSTOR and the Web of Science, and web resources.

It must be said that the digital library has completely transformed scientific research as well as university education. The enormous - but very expensive - resources in the digital library mean that research can be performed with much better situational awareness. Databases like the Web of Science and JSTOR are essential for research, but the digital library also contains a large number of smaller, highly specialized resources. This means a huge effort has been undertaken to bring the knowledge of using the digital library in the study curriculum, with the help of the library staff.

A specific online course has been made, on the university Blackboard system, which learns students how to find information, and use it in scientific publications. This also addresses problems such as plagiarism (http://www.kuleuven.be/english/education/plagiarism/index). This is hosted by Toledo (http://toledo.kuleuven.be), the university Virtual Learning Environment, which is Blackboard based. It holds literally thousands of online courses and serves over 80.000 students. They are automatically registered to the courses they take. Today, also a MOOC portal has been setup (https://www.edx.org/school/kuleuvenx), where future developments in online learning are tested. After a pilot period with 4 MOOCs, now an effort to make larger scale offerings are in the works. An innovative example is the Europeana Space MOOC (https://www.edx.org/course/europeana-space-creative-digital-

---

[121] Section under the responsibility of Frederik Truyen

kuleuvenx-eurospacex) which is not based on an existing university lecture course, but directly on research projects (Truyen & Verbeke, 2015).

Through a proxy server (EZProxy) students can access the digital library from anywhere on the web, also off-campus. Besides this, an open source reference management tool, zotero (http://www.zotero.org), has been introduced at the Faculty level with all students, so that they learn how to manage the information they gather in a personal database. It is also very important that librarians inform the staff of new possibilities in the Digital Library. Besides a university reference repository, LIRIAS (http://lirias.kuleuven.be), some social networks for academic referencing (Academia.edu, Researchgate and Google Scholar) and other resources (such as the online bookshelf The Library Thing) are also promoted. This way students can have a better view on the biotope of the publications that are mentioned in the courses.

Finally, Open Access (http://bib.kuleuven.be/english/ub/target-group-research/open-access) and Open Data are very important for the university: research about it (https://www.law.kuleuven.be/citip/blog/category/intellectual-property-open-data/), published Open Journals - such as Image & Narrative (http://www.imageandnarrative.be)- and thesis research by students published in the university library portal LIMO (http://bib.kuleuven.be/).
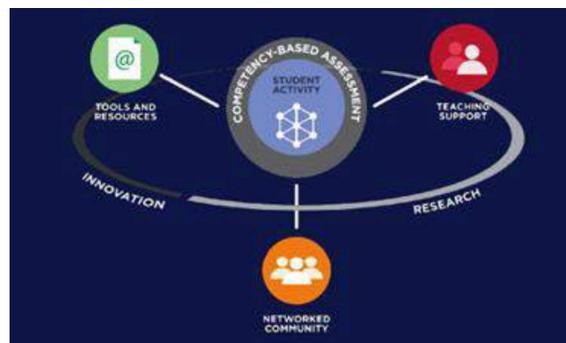
● **5. Tables and figures**

Figure 1: UOC's educational model

Fig 2. Open University of cyprus eClass eLearning Platform services

Fig 3. KU Leuven multidimensional Library services

● **EADTU**	• George Ubachs, Managing Director, EADTU • Darco Jansen, Programme Manager, EADTU
● **Athabasca University**	● Cindy Ives, Vice-President Academic Services (interim) ● Alain May, Associate Vice-President Student and Academic Services ● Elaine Fabbro, Director Library & Scholarly Resources ● Facilitation: Professor Rory McGreal
● **FernUniversität in Hagen**	● Karin Michalke, Director of Library Services ● Dr Jeanine Tuschling, Support Librarian for Arts ● Brigitte Kreplin, Senior eLearning Consultant, Centre of Media and IT ● Markus Deimann, Professor of Media Didactics, Institute of Educational Science and Media Research (IfBM) ● Facilitation: Ingrid Thaler, International Office
● **Open University of the Netherlands**	● Christian M. Stracke, Associate Professor for Open Education and Innovation, Welten Institute ● Peter Sloep, Professor of Technology Enhanced Learning, Welten Institute ● Marco Kalz, Professor of Open Education, Welten Institute ● Fred de Vries, Academic Affairs Office ● Paquita Perez Salgado, UNESCO Chair in Knowledge Transfer for Sustainable Development Supported by ICTs at OUNL, Chair of the OUNL Library Committee
● **Maastricht University**	● Charles Bollen, Economics, Business, and Technology Librarian, Maastricht University Library; also Project manager for the collaboration between the Open Universiteit and the University Library of Maastricht 2007-10 ● Fredericke Vernimmen, Manager Education and Research Support, Maastricht University Library.
● **Open University of Catalonia**	● Ciro Llueca, Director of OUC Library ● Gema Santos-Hermosa, OUC Library, in charge of the Knowledge Resources expert group in the EMPOWER EADTU project ● Facilitation: John Zvereff, Director, International Relations.
● **Others**	Anja Oskamp (Rector, Open University of the Netherlands) and Helmut Hoyer (at the time, Rector, FernUniversität in Hagen) for conversations on this study during the EADTU 2015 conference in Hagen in October 2015.

● *Table 1. Acknowledges (Benchmarking report)*

6. Conclusion

As it has been shown throughout this paper (some international reports about innovation in Higher Education, a benchmarking report of Libraries Student Support Services and a series of experiences from libraries members of EADTU) the influence of libraries is increasing into the teaching and learning. Their role as providers, managers and advisors of knowledge resources tailored to the different needs of teachers and students is gaining force within universities.

The NMC Horizon Report had already indicated the key trends, significant challenges, and important technological developments that were very likely to impact changes in libraries across the world over the next five years from 2015. In this sense, libraries have been involved in learning resources acquisition but now they are also participating in their creation (Johnson *et al.,* 2015). However,
different levels of achievement have identified amongst the libraries Support Learning Services. Some educational institutions allow their libraries to be involved in the design of knowledge resources for the different programmes and courses. Librarians collaborate with teachers and technologists in a common framework. Some other libraries are on the way or have just started.

In short, libraries have a chance to improve the learning environment. In a sea of great opportunities but great risks, they must return to one of their basic mission: searching, selecting, managing and providing customised knowledge resources for each need and user.

References

Bitter-Rijpkema, M., & Verjans, S. (2010). Hybrid professional learning networks for knowledge workers: educational theory inspiring new practices. In L. Creanor, D. Hawkridge, K. Ng, & F. Rennie (Eds.), ALT-C 2010 - Conference Proceedings: "Into something rich and strange" - making sense of the sea-change (pp. 166-174). September, 7-9, 2010, University of Nottingham, UK.

Bitter-Rijpkema, M., Brouns, F., Drachsler, H., Fazeli, S., Sanchez-Alonso, S., Rajabi, E., & Kolovou, L. (2015). Deliverable D.8.4. Social data visualization and navigation services -3rd Year Update-. Open Discovery Space ODS Project.

Camps-Pinós, A. and Cervera-Farré, A. (2016). Catàleg de serveis de la Biblioteca per als docents de la UOC. *14es. Jornades Catalanes d'Informació i Documentació. Barcelona: Col·legi Oficial de Bibliotecaris-Documentalistes*. http://hdl.handle.net/10609/44561

Cervera, A. (2010). "Document management in the Open University of Catalunya (UOC) classrooms". *D-lib magazine*, July/August, 16 (7/8), http://dx.doi.org/10.1045/july2010-cervera

Christoforou, P., Rodosthenous, C., Epiphaniou, M., Mavrotheris, S., & Christodoulides, C. (2015). Deploying New Services in the Open University of Cyprus Elearning Platform - Our experiences. In INTED2015 Proceedings (pp. 6108–6116). inproceedings, IATED.

Epiphaniou, M., Rodosthenous, C., Christoforou, P., Mavrotheris, S., & Christodoulides, C. (2015). Engaging Users in Distance Education - the Case of the Open University of Cyprus. In INTED2015 Proceedings (pp. 6092–6101). inproceedings, IATED.

Johnson, L., Adams Becker, S., Estrada, V., and Freeman, A. (2015). NMC Horizon Report: 2015 Library Edition. Texas: The New Media Consortium. http://www.nmc.org/publication/nmc-horizon-report-2015-library-edition/

Lappa, E. & Giannakopoulos, G. (2013). E-health Information Management According Types of DRGs and ICD Classification Systems: Greek Perspectives and Initiatives. *Procedia - Social and Behavioral Sciences* 73, 246 – 250. DOI: 10.1016/j.sbspro.2013.02.048

Orr, Dominic; Rimini, Michele; Damme, Dirk van (2015). *Open Educational Resources: A Catalyst for Innovation*. Paris: Educational Research and Innovation, OECD Publishing. Retrieved from: http://dx.doi.org/10.1787/9789264247543-en.

Rodosthenous, C., Christoforou, P., Epiphaniou, M., Matheou, G., Mavrotheris, S., & Christodoulides, C. (2015). Plagiarism Detection and Prevention – Experiences from the Open University of Cyprus. In EDULEARN15 Proceedings (pp. 1348–1355). Inproceedings, IATED.

Rodosthenous, C., Themistocleous, P., Mavrotheris, S., & Christodoulides, C. (2016). Developing an Academic Institutional Repository. The Case of the Open University of Cyprus. In EDULEARN16 Proceedings (pp. 1175–1183). inproceedings, IATED. http://doi.org/10.21125/edulearn.2016.1243

Santos-Hermosa, G.; Ferran-Ferrer, N.& Abadal, E. (2012). Recursos educativos abiertos: repositorios y uso. El profesional de la información, 2012, 21 (2), 136-145. http://dx.doi.org/10.3145/epi.2012.mar.03

Santos-Hermosa, G. (2012) "Faculty-librarians collaboration in an e-learning experience: resources management and training in Open University of Catalonia (UOC)", *2012 teaching & learning symposium*, UW-Madison, Wisconsin, US. http://hdl.handle.net/10609/18482

Santos-Hermosa, G. (2014). ORIOLE, in the Search for Evidence of OER in Teaching. Experiences in the Use, Re-use and the Sharing and Influence of Repositories. *Qualitative Research in Education*, 3(1), 232-268. Doi: 10.4771/qre.2014.46

Sharples, Mike; Adams, Anne; Alozie, Nonye *et al.* (2015). "Innovating Pedagogy 2015: exploring new forms of teaching, learning and assessment, to guide educators and policy makers". *Open University Innovation Report 4*. Milton Keynes: The Open University. Retrieved from: http://proxima.iet.open.ac.uk/public/innovating_pedagogy_2015.pdf

Sursock, Andrée (2015). *Trends 2015: Learning and Teaching in European Universities*. Brussels: European University Association. Retrieved from: http://www.eua.be/Libraries/publications-homepage-list/EUA_Trends_2015_web

Schiltz, M., Truyen, F., Coppens, H. (2007). Cutting the trees of knowledge: social software, information architecture and their epistemic consequences. *Thesis Eleven* (89), 94-114.

Truyen, F., Verbeke, D. (2015). The library as a valued partner in Digital Humanities projects: The example of EuropeanaPhotography. *Art Libraries Journal, 40* (3), 28-33.

Truyen, F., Verbeken, S., Forward, M. (as contributor), Lesko, I. (as contributor), Touzé, S. (as contributor), Tovar, E. (as contributor) & van Valkenburg, W. (as contributor) (2014). *Empowering Student Mobility with OpenCourseWare.* Delft, The Netherlands: Open Education Consortium Europe.