Mobile technologies and medical education at Heidelberg University Library

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Abstract
Heidelberg University Library uses mobile devices and has begun lending iPads to its users. The medical faculty in the branch library plays a significant role in this new service model. The tablets on loan are pre-configured with mobile applications specified for medical studies. The new service is part of the library's broader strategy to improve medical education at the university by providing both faculty members and students services in accordance with constantly changing study conditions.

Key words: libraries; education, medical; computing methodologies; mobile applications.

Introduction

Mobile technologies and devices are increasingly shaping our professional and private lives. Equipment such as laptops, smartphones or tablet computers play an essential role in academic research and teaching. This is confirmed by the appearance of any reading room at a scientific library where users usually work on their own laptops or tablets. The library's need for permanently installed computers has become a constant concern. However, fundamental to this library service is a nationwide power grid and a stable WiFi access in the reading areas.

In reaction to this trend Heidelberg University Library began lending netbooks to its users in 2012. Now, since the beginning of the summer term 2015, the branch library in Neuenheim has, in addition, started providing iPads on loan. Thereby the medical faculty plays a key role, as a large number of mobile applications have been developed in the field of medical studies to support students in their studies and help prepare them for their exams. A selection of these mobile apps is preinstalled on the tablets which the library lends to its users.

The provision of mobile devices is part of a comprehensive approach by Heidelberg University Library to enhance and support medical education. The actual handling of the devices as well as the underlying concept are presented below.

Heidelberg: university, library and medical sciences

Heidelberg University is a comprehensive university, offering the full spectrum of disciplines in the humanities, law and the social sciences alongside the natural and life sciences, including medicine. The University comprises about 30,000 students, 5,500 academic staff and more than 500 professors. The University Library is the key information and infrastructure facility with a total of 6 million items in its library system.

The branch library is the lending and reference institution as well as the central learning centre in the so-called "Neuenheimer Feld". The campus combines the University's faculties of natural and life sciences with approximately 15,000 students and scholars. Both the Medical Faculty – with around 100 professors, 2,500 scholars and 3,800 students – and the University Hospital – with 44 specialized clinical departments and 1,600 physicians or scientists – are the library's major and largest group of users with regards to literature and information supply (1).

An important objective is the constant optimization of the library's medical support through the immediate connection to the departments and clinics. It is essential to maintain the communication and exchange with scholars and students in order to keep in touch with current developments in research and teaching.

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iPads on loan for medical education

The Neuenheim branch of Heidelberg University Library has been providing iPads on loan since summer term 2015. The tablets can currently be borrowed for one day to use in- and outside the library compound. There is a special configuration of pre-installed mobile applications which is customized to the preparation of medical examinations and education in general, for example the courseware iPhysikum by MediLearn, the New England Journal of Medicine Image Challenge, Sobotta anatomical atlas or Gray's Anatomy.

Via the library's home button the users also have access to a full range of licensed e-media at the University. Regarding medical studies this comprises the licensed medical e-journals and e-books as well as medical databases, such as Thieme examen online, PubMed or Cochrane Library.

The selection of the pre-installed mobile applications was carried out in collaboration with the Department of Anatomy and Cell Biology at Heidelberg University, and based on the comprehensive and detailed description of medical apps by the Medical Branch Library ULB Münster (2). The organizational handling was also important, i.e. the question of the licenses of apps and the possibility to integrate them into a predefined configuration of a larger number of library tablet computers on loan. Once returned, the iPads are regularly stored in a docking station, where they are charged and restored to their pre-installed basic configuration.

During the preparatory process it was initially also planned to include, in addition to the applications that are customized for medical education, apps with access to daily newspapers or scientific magazines, such as the Frankfurter Allgemeine Zeitung or Geo.de. Due to the licensing models offered by the publishers this could not yet be realized. Likewise, it was originally considered to offer a compilation of scientific sound apps relevant for other disciplines, such as mathematics or physics, as the Neuenheim branch is responsible for the Medical Faculty as well as for the full range of the faculties of natural and life sciences at Heidelberg University. The preliminary research showed, however, that in many disciplines scientific sound apps for students are not yet available at university level. At present they are still primarily aimed at pupils and their preparation for high school examinations. This illustrates that the medical studies with their broad range of teaching material are well advance in the implementation of digital and mobile technologies.

The new service for providing iPads on loan has been set into practice and is at present still in a test phase. The first feedback from students, however, has been positive, without exception.

Parallel to the launch of the iPad service, the conversion of the library's seminar room took place: installed computers were cleared to make space for the use of mobile laptops. During lessons the students now use their own mobile equipment or work on laptops provided by the library. This enables them to continue working in their accustomed virtual environment during seminars. In between seminars the laptops are kept in a docking station, where they are charged and restored to their basic configuration. This also permits a much more flexible use of the seminar room for example for meetings or brief conversations.

The acquisition of the mobile devices was financially supported by the comprehensive program of the country Baden-Wuerttemberg to improve the teaching at the university libraries in 2014 (PVL-HB-BW). One of the essential areas to be conveyed was the creation of innovative electronic reading places for students.

Concept of library support for medical education

Offering iPads on loan is part of a comprehensive approach to enhance and support medical education. Thus, Heidelberg University Library in the course of recent years has forged new paths to strengthen the medical teaching (3). This was done in close cooperation with the Institute for Anatomy and Cell Biology and the innovative study concept of "virtual anatomy" (4). In this concept new digital media play a significant role as well as traditional teaching aids.

The virtual dissection table Anatomage enables students to prepare and reassess their preparation courses. Comparable to the situation in the dissecting room, they are faced with life-sized, virtual anatomical models in 3D. These are generated from CT data and offer an educational and systematic access to anatomical surface structures. Students are

able to rotate, move and prepare the models comparable to real ones. Through various stages and in any section it is possible to visualize and rename bones, tissues, muscles, organs etc.

Complementary to the new digital and mobile technologies, traditional means and models are employed. The extensive collection of nearly 300 anatomical teaching media in around 600 physical copies at the Neuenheim branch library is a permanent loan from the Institute for Anatomy and Cell Biology. The students can borrow the anatomical teaching media, such as SOMSO models or plastinations to prepare themselves for the audit certificates in the anatomy courses and, of course, for the oral part of the important preliminary examination ("Phsyikum"). The collection is, in addition, completely photographed, catalogued and described in detail in the Heidelberg image database HeidICON. Thereby it can also be researched online.

The new medical services of the university library have already had a positive effect. Within the first year, when the services were introduced in 2014, the user appreciation from among the medical students was enormous. The number of visitors in the Neuenheim branch's reading room increased by almost 40%, from 205,000 in the previous year to 285,000 visitors.

Conclusion

The use of mobile technologies is one major component in the concept of improving the conditions for studying medicine at Heidelberg University. Lending iPads with medical applications and using laptops for teaching reflects and is a response to students and scholars daily engagement with mobile devices as well as to new forms and methods of research.

The constant monitoring of and adjustment to these changing in research environments and methods are fundamental to any transforming academic library. By doing so the library remains a strong infrastructural partner for science and teaching. By doing so the library stays alive.

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