

## Lending out Learning Resources on Tablet Computers: Benefits and Pitfalls

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### Abstract

#### Settings

One of the most successful services of an academic medical library is the print textbook collection. If one day the print book would be superseded by something else, that would constitute a real challenge for the library. The medical library of the University Munster, Germany, wanted to be prepared for that potential successor, and started lending out textbooks on tablet computer as a replacement of print textbooks. This toolbox was offered for free to 1.250 students of medicine.

#### Objectives

The aim of this study was to assess whether the usage of digital media on printed textbooks or on a tablet PC is of greater benefit to the students of medicine.

#### Methods

1250 students of the medical faculty of Munster, Germany, were subdivided in three groups: 200 students provided with an tablet computer on loan, 850 students with their own tablet, and 200 with no access to a tablet. Each group was provided with a broad variety of learning materials such as textbooks, anatomy apps, and tools for training questions of the national exams (QNE). Subsequently the outcomes of the preclinical exams in the three groups was analyzed, as well as usage and satisfaction rates.

#### Results

From all learning material, students used QNE most and were satisfied most with it, followed by printed books and e-book apps. E-books as PDF were rated significantly lower. 2/3 learned almost always at home, followed by the library, and other places. The 2nd most used learning place was "on the way". The highest advantage of using a tablet was „not to carry around books“, and “learning wherever possible”. Tablet owners passed the preclinical exams with significantly higher scores than tablet lenders.

#### Conclusions

Previous studies have shown that electronic textbooks on PDF will not displace printed books. They have smaller usage as well as satisfaction rates. This study shows, that the successor of the printed textbook will rather be a mix of an e-book app with a mobile device. This combination was rated as good or better as the former gold standard "printed book". In contrast to books, tablet computer add significant value by providing 3D interactive anatomy, lecture notes, and QNE. Residents can work with electronic patient records and clinical decision systems. Tablet ownership is a predictive value for passing the exams.

## Introduction

We all agree that “smartphones and tablet computers have become the new cultural ‘norm’ within personal and professional lives” (1). Especially tablets are increasingly used in all kind of educational settings to enhance the learning. Some European medical schools have already recognized the value of tablet computers in learning and loan them or present them as a gift to students. This value pretty much reflects the use we all recognize in lectures, libraries, on the ward, on the go. As students use tablets for research and learning, it is clear that this will affect libraries too. What the future may hold for medical librarians in the age of mobile devices and content as the new cultural norm? Some reacted or pro-acted by lending tablet computers, recommending apps, licensing content, or training students in order to make the best of these devices. Some medical libraries as the medical library of the University Münster are embedding them into the curriculum.

## Project

After an excellent scoring of the predecessor project easyphysikum (2) by the students (88% satisfaction rate), the project was up scaled in May 2015 to 1,250 students of medicine in Münster ([www.easystudium.de](http://www.easystudium.de)). The number of iPads tripled to more than 200 and the value of the offered content to more than 1 Mio. Euro. Preferable students with financial weakness got an iPad. The maximum loaning period was 1.5 years. For all other students, the learning resources were provided for free on their own tablets or laptops. The learning materials included resources such as textbooks, anatomy apps, and tools for training questions of the national exams (QNE). The project was examined by online surveys, focus groups (champion user) and standardized interviews.

## Survey

In a survey from 6 - 10 October 2015 the project participants were asked 22 questions, such as which devices they owned, their learning behavior, use and satisfaction with current learning tools, their expectations, etc pp. The survey was answered 674 times. After deduction of 69 incomplete and 10 duplicates answers 595 answers were included in the analysis, among them 121 iPad borrower and 428 tablet owners. (16 respondents were both owners and borrower)

## Satisfaction

Participants were asked for their satisfaction with 28 different learning tools. The scale of the response options was "very satisfied / satisfied / partly-partly / dissatisfied / very dissatisfied". For the diagram (to be shown at the presentation), the learning tools were ranked according to the sum of "very satisfied" and "satisfied". The resulting hit list was led by printed textbooks (91%) and the Amboss QNE and learning cards (both 89%). Thieme examen online only comes to 4th place (85%). 83% were very satisfied / satisfied with the Campus-App of Thieme textbooks and 80% with the Sobotta App. They were followed by flashcards on paper (78%), UpToDate (76%), and notes on paper (74%) or on tablet (72%). Then the e-books in PDF format followed from Thieme (64%), (Springer (61%) and Elsevier (60%) with Elsevier's IPC Reader app were only around 50% satisfaction rate.

Plotting the satisfaction rate of the 28 learning tools of the pre-clinical vs. the clinical students, it becomes clear, that before the preclinical exams, the students loved anatomy apps such as Visible Body or Sobotta Atlas of Anatomy or tools for training the multiple choice questions. After the preclinical exams they loved their own transcripts of the lectures, the lecture notes which they got on the tablet, and again tools for training the multiple choice questions (of the clinical exams then).

### Expectations

Participants were asked for seven areas, whether the project would meet their expectations. The scale of the response options was "strongly agree / true / half and half / rather does not / not". In the diagram (to be shown at the presentation) the responses were ranked according to "strongly agree". The resulting hit list is led by the two expectations, "access to important apps / learning media" (89% approval) and "All media in your pocket" (81%), followed by "Better exam preparation" (80%), "Expert assistance by the staff of the library" (79%), "Better preparation for the clinic" (64%). "Support of Android and Windows tablets" (59%) and "Carefree package" (54%) were on the last two places. The expectations of preclinical students versus the clinical ones were almost identically.

### Comments

The survey participants were given the opportunity to place a general commentary on the project in free text. 137 participants - almost one in four – made use of this. The most informative comments were the following:

- Thank you! I have learned last semester as much as ever. Probably because it was so easy with the iPad to just flip through the e-books.
- The project is great, especially because I can have so many books at home / in my handbag, have an animated way to learn and saves space and weight. Also you don't have to worry anymore on loan periods and you can even take notes in the e-books!
- Tablet access to the e-books from Thieme Publisher was really helpful. Please enhance this opportunity, because in that way you have really everything with you at the lecture or on the ward to read it up! If it were financially sustainable, it would be great to have access to both, the learn tools Amboss and Examen online. That would be really desirable to be optimally prepared to both the exams in the university as well as the state exams! Thank you for having enabled us with the project easystudium.
- To use the project a tablet is essential. I was fortunate enough to get one. I suspect, however, that I would not have bought an own tablet if I did not get one from the library. I therefore hope that in future more funds are mobilized, so that every student, who does not have a tablet, can borrow one at least till the preclinical exams. The project clearly facilitates the learning for the exams and thus also paving a successful way for the study. Thanks to the library team, that you have started this project!

### Results

From all learning material, students used QNE most and were satisfied most with it, followed by printed books and e-book apps. E-books as PDF were rated significantly lower. 2/3 learned almost always at home, followed by the library, and other places. The 2nd most used learning place was "on the way". The highest advantage of using a tablet was „not to carry around books“, and "learning wherever possible". Tablet owners passed the preclinical exams with significantly higher scores than tablet lenders.

## Conclusions

- In contrast to books, tablet computer add significant value by providing 3D interactive anatomy, lecture notes, and QNE.
- Residents can work with electronic patient records and clinical decision systems.
- Tablet ownership is a predictive value for passing the exams.
- It could be shown that digital textbooks on tablets represent an added value compared to printed books.
- The combination of a mobile device, educational content, course organization and document sharing build a novel digital learning environment that was highly attractive and useful for students.
- The use of all learning media on a mobile device, which are needed for the study of medicine, allowed the independence of students from specific venues and times such as the library and its opening hours.
- Learning materials could be annotated and shared with other students, which wraps nicely into the digital learnflow of students.
- This decoupling of limitations in time, space, and sharing facilitates learning, makes the students more secure and was experienced as a kind of relief.
- The project help students, the university, and the library to better cope with the challenges of the mobile, digital environment.

## References

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