We believe in humanities. We don’t want students to be just physicians.

Yale-Professor M. Schwartz zu Ausbildung und iPads

Im Jahr 2015 besuchte Prof. Dr. Michael L. Schwartz, Associate Dean for Curriculum der Yale School of Medicine, die Medizinische Fakultät der Universität Münster. Als Leiter des Office of Education hatte er unter dem Slogan „Going Green and Digital“ bereits 2011 iPads in die medizinische Lehre eingeführt. Er sagte selber dazu: „A project that began as a way to save energy and reduce paper waste is now giving students innovative, hands-on ways to immerse themselves in their curriculum.” Im Folgenden finden Sie die Originalversion des Interviews, dass Dr. O. Obst mit Prof. M. Schwartz anläßlich seines Besuchs geführt hat. Die Interviewfragen wurden durch Überschriften ersetzt.

iPads are a big deal for students

There are a couple of benefits to using the iPad in our curriculum. For example, one Yale student said that, “I like not having to carry excessive books and remembering which printed syllabus materials to bring with me each day for note taking. The iPad is extremely easy to use and great for taking notes”. I think another benefit is that students have everything in their curriculum with them at every moment in time. So, if they are sitting somewhere or are on the bus they have access to their materials, and they can read and use them anywhere. We are also continually trying to enhance the data we make available to the students on the iPad: we provide curricular videos, we podcast all lectures, we give them iBooks tied to their curriculum... things like that... it is easy for them to work whenever and wherever they want. But the other side is that they live on the iPad now, so it is also their social media and entertainment device. Thus, it meets most of their academic and social needs. I think that it is a major advantage: to have their curriculum, social networking and other stuff with them at all times.

Another thing that is important is for us to comply with the laws and regulations protecting patient information. These standards are very strict and require us to be sure that any device that could contain electronic protected health information (ePHI) be encrypted and secure in a number of different ways. Even email access by students must meet strict security standards. For example, our students are not allowed to read messages to their Yale email on a non-secure device. Even though 90% of the email may come from parents, siblings or friends, that 10% that may contain patient information must be protected and requires that all access to their email account be done on a secure device. Because of the security profiles we enforce on their iPads, the iPad is that secure device that allows them to be compliant with all standards for ePHI.

To increase their engagement with the curriculum we made sure that all of our videos and podcasts are iPad compatible. They can watch all of the instructional videos for the flipped classroom sessions on their iPad and we podcast every lecture using a system that allows them to search the podcast using...
keywords and to speed up or slow down the video as they watch it on the iPad. To engage with curricular materials we provide them with the Good Reader App. This App allows them to download all curricular materials (lecture notes, PowerPoint or Keynote presentations, case materials, etc.) to their iPad using a simple and quick synchronizing mechanism that accesses all content posted on our learning management system. They can then read, annotate and review any curricular session materials on the iPad. The use of the iPads has definitely changed the engagement of the students with curriculum content.

**Lectures should be up to date and in one place**

Prior to launching our iPad initiative for all students, we did a pilot study with five self-identified “tech-savvy” and five “not tech-savvy” students to determine what was most important to them and to see how they would use the iPads, accessories and Apps. Two of the most salient things which we learned were that students: (1) found it frustrating and inefficient if the materials we provide them to annotate and read are not the same as what they see in their classes and, (2) find it challenging if each class has a different folder structure and system for organizing their materials.

To the first point they said that it does no good for them to take notes on a presentation that is different from what they are seeing in class and that it is even more frustrating if the lecturer starts the lecture telling them that he/she changed the PowerPoint and will send them the updated presentation after the lecture! In fact, this lack of matching has historically been one of the biggest complaints by our students, even when we used to supply paper copies of the notes and presentations.

With this feedback, and also knowing that many faculty change their presentations at the last minute, we designed a “just in time” system to provide the updated presentations to the students in real time. Now when faculty enter the lecture hall with a modified presentation or one that was not uploaded to the learning management system they use a thumb drive to drop the new presentation onto a folder on the podium computer desktop, it gets converted to a format for annotating and then gets pushed to the student iPads. This all happens within a few minutes and ensures students always are taking notes on the most up-to-date materials. This also benefits the faculty since they used to be reluctant to update their lectures knowing that students might be upset if they did not get the updates in time.

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To the second point, students in the pilot group told us how frustrating it was that each class had a different folder structure and system for their materials. Thus, it was on them to figure out the folder logic for each class and they spent needless time doing this before they could access materials. For example, the PowerPoints for the Neuroscience course might be in a folder titled “Presentations” while in Biochemistry they might be in the “Notes” folder. To remedy this we created the same folder structure for each course on the iPad. We then designed a file naming convention for the learning management system that allows all of the files to be downloaded to the iPad to be placed in the proper course folder, the correct content subfolder (lectures, notes, case conferences, etc.) and to be organized chronologically in the subfolder. Now every single one of our courses and clerkships have the same subfolder structure and file provisioning to these subfolders. Students no longer have to read our minds on how we organize each course, it is all the same.

An unexpected and interesting piece of data we took away from the pilot was how different individual students were in their comfort and knowledge about IT and mobile devices. We assumed that everyone coming to the medical school in this generation would be tech savvy and comfortable with using these devices. Yet, we found that roughly 30% of students have no idea how to set up their computer, or phone, even if they are conversant with using individual Apps or programs on these devices. This observation was striking to me. After we had implemented iPads in the curriculum, this point was further reinforced when I would occasionally interview an applicant for admissions and they would say, “...do I need to be able to use an iPad in the Yale curriculum?” Being aware of this has impacted our orientation sessions for iPad set-up. No student leaves the session in which we give them the iPads until the devices have been set up for curricular synchronizing, secure email, encryption, the electronic health record and secure mobile computing. I think it’s good that they start out with the iPad so that by the time they get to the clinic they are conversant with mobile devices that are becoming an increasingly important part of the clinical environment.

One of the important advantages of the iPad is the large number of educational and clinically relevant Apps that are available. We do not push Apps to the student iPads as we feel it is important that they decide which Apps may be useful based upon discussions with other students and preceptors. However, our medical library provides no cost licensing for a number of relevant Apps during the pre-clerkship, clerkship and advanced training periods of the curriculum. During the pre-clinical period of the curriculum these are available through the library website, and during the clinical period of training they are made available through the Mobile Device Management system that maintains the security of the iPads.
We also decided not to develop Apps ourselves since there is still a portion of the student body that prefers to use their computers and not the iPads. This group usually includes students in the MD/PhD program that require statistical programs and other software that is not available on the iPad. We do develop curricular engagement applications that can be used by both the iPads and computers that are based on websites. To make these feel more integrated with the iPads we create web-clips, a type of bookmark, that students can place on the home page of the iPad. Students activate these by tapping on the icon as they would an App icon, making it as easy to engage the content and application as it would be if they were activating an App.

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We strongly believe in the value of incorporating the humanities into medical training in the required curriculum and also support, and encourage, this engagement with robust extracurricular offerings. Within the formal curriculum these sessions include reflective writing sessions and sessions in which students view art to teach the principles of observation, description and implicit bias. Extracurricular activities include a medical student orchestra, an acapella group, sessions focused on drawing and sketching and meditation. When we introduced the iPads our Dean of Student Affairs introduced a Literature Salon series. She would provide books relevant to the curriculum, that were coordinated with their courses, to all of the students on their iPads. For example during the Neuroscience course, that I teach, she would provide the students with the book, “The Man Who Mistook His Wife for a Hat” by Oliver Sachs. Interested students could then sign up to join a small group of other students for a discussion of the book at an evening session in my home over wine, cider, cheese, and chowder. The discussions range from how the topics in the course impact their understanding of the books’ stories, to the nature of medical research and ethics. This concentration on the humanities reflects our commitment to make our students more compassionate and caring physicians and also to focus on their own wellness and things that are important for their own self-care. We make it clear to them that they cannot effectively take care of their patients if they do not take care of their own physical, cognitive and mental needs.

Evaluation of lectures

The iPad is a very useful method for students to provide real-time lecture or workshop evaluation. Using Qualtrics survey software we have created a brief real-time survey that students can activate by tapping on an icon on their iPad after each lecture or workshop. They can select the course and session quickly using dropdown menus. They then answer two questions rating the engagement and effectiveness of the session and then
have a comment box for narrative responses. The feedback takes only a few minutes and can be made available to the faculty member shortly after the session, and in some cases in time for the faculty member to make changes before the next time he/she lectures or runs a workshop. Despite its simplicity, not all students use this system. Typically, a core of 10-15 students out of the 104 students class use this feedback mechanism. However, when it occurs the feedback tends to be very useful. This feedback also tends to be more formative than what we get with our end of course surveys.

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No E-Books for s
We don’t really provide commercial eBooks to the students. How students use books is changing and we find that there is great diversity in what books students use, and even the extent to which they use books now that they have so many resources available to them on the web. We do, however, create and distribute eBooks to our students for a number of core courses, including Neuroscience, Human Anatomy and Clinical Skills. We restrict the use of these to our students since they are carefully tied to our curriculum. We do not distribute them through the Apple iBook store, but through a dedicated website.

Teachers and iPads
When we first adopted iPads in the curriculum some faculty would be upset when students in lecture or workshops would look up information relevant to the discussion that the faculty member did not know or had forgotten. This could be around effective drug doses, test results, etc. This was threatening for some faculty who saw their role in education as the “expert” whose job it is to impart knowledge to the learner who is the vessel for receiving knowledge. In the past, if faculty did not know something they might tell the students that they would bring back the answers at the next session. However, with students looking this information up in the session the dynamic of expert and vessel became more complicated. Despite this reaction from a small group of faculty we found many faculty liked it when the students sought out this information in real-time using their iPads. These faculty saw the advantage of this behavior to their teaching since it allowed them to take the information that the student brought to the discussion and provide context or to demonstrate how this information would be applied and used in patient care. For these faculty, teaching became less about the details that everyone can get from the web and more about applying the data, critical reasoning and putting the data in the context of patient care.

In addition to its value as an in-the-moment source of information, some faculty members have become very good at using the iPad in a productive way to enhance classroom interactivity and engagement. For example, a number of educators use these devices as

(v.l.nr.) Thomas Stamm, Mike Schwartz, Oliver Obst und Gesche Frohwitter
audience response systems or to generate word clouds or other narratives that can be displayed to the whole class using audio-video projection to the classroom screen. This interactivity often informs the discussion and can be used by the faculty to assess how effectively the students are understanding what is taught.

Although the iOS (iPad mobile operating system) has changed, in the initial years of our iPad program the iOS was unable to display multiple App screens, simultaneously. This meant that if a student needed to take notes on the Powerpoint presentation they could not have a shopping App open at the same time to look for shoes or an email client open responding to emails. Students in the pilot group told us that this made them more focused in lecture. They pretty much had to stay on the App they were using to annotate the lecture slides. In the initial years of the program we would typically see that 90% of the iPads had the lecture on their screens and the students were annotating them. Unfortunately, that is now changing as these devices are now able to screen share and easily switch between App windows.

The iPad project gives us visibility and recognition

I think the major benefit of iPads for our medical school has been to enhance and facilitate the pedagogical delivery of curriculum and to enhance learner engagement and interactivity. However, in our initial years we were one of a handful of schools that gave iPads to all incoming students. We wondered what impact this might have on admissions and the Dean of the medical school even joked to my wife at a Holiday party that I would be very popular with the students because, “your husband is the one who gave out iPads”. When we surveyed first year students about how the iPad program impacted their choice to come to Yale they said that the iPad had very little impact per se, but that they recognized that the iPad represented to them our commitment to improve our curricular pedagogy and to use technology in smart ways to facilitate this. It was reassuring that this $1000 device was not the main reason that they chose us, but instead was a factor because it represented to them something more important about our culture and our commitment to educating our learners.

What will be the future of learning?

I think the future of learning is moving toward greater interactivity among and between learners and educators. What our students tell us is most memorable and the most “sticky” parts of their learning come from the narratives and interactions that occur in the presence of patients and with their faculty in small group sessions. When you ask a physician what he/she remembers best from their time as trainee they always say something like: “Well, my internal medicine attending or resident told me this as we were...
discussing a particular patient and I will never forget that patient and how this discussion impacted their treatment and care”. So where does tech fit into this educational landscape? Being a self-described tech nerd and junkie, I think technology can enhance that exchange, but I don’t see that there can be effective learning if we try to replace that discussion and the relevance of the patient with technology. I believe we can deliver all the knowledge the students need to know with technology and that this can be done more and more effectively. However, how they apply that knowledge, evaluate its reliability and use it in clinical reasoning requires mentoring, modeling and formative feedback that, for now, relies on the quality and commitment of individual educators. It’s one thing to know a topic or disease from reading a book and something very different to know when you apply this data, what data is needed and how that shapes a differential diagnosis and treatment plan. I see technology as really important, because most of the stuff we are doing around knowledge can be delivered at some level with technology. I think the most important thing that we need to do with our students – certainly in medicine – is to make them smart consumers of this knowledge so that they can effectively evaluate, and apply this information as it changes and is added to over their lifetimes and then to make them adept at applying the principles of critical thinking and clinical reasoning in its use.

Finally, we need to make sure that our students are able to use this technology in a patient centered way – to educate them on how to include the patient in their use of it. Just as some faculty look out over a lecture hall of students and wonder if they are all focused on the lecture or shopping on Amazon, patients not included in the use of the technology may think that screens they are not invited to view or physicians focused on a device and not them are not prioritizing them in the delivery of their care.

Libraries as learning centers
When I wanted to learn something in grade school I always went to the library. The library can support the process of medical education and learning for sure. I think the role of the library is helping people to access information and enabling them to do it effectively. At Yale, the librarians in our Medical Library work with students both in the library and in the classroom. They are no longer tethered to the library spaces helping students only within the library itself. As an example, two of our librarians lead several curricular sessions during the clinical rotations in the hospital teaching students how to use UpToDate, PubMed, and other search engines and tools to access information that may be relevant to patient care. In other sessions, we have librarians work with students in the use of certain

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clinical Apps for acquiring drug dosage information or specialty specific simulation cases. More and more instead of just coming into the library for a book, or journal, students come into the library to think about how to best find things using online sources. In my opinion the mission of the library has always been about helping people to access knowledge; now that includes helping people to understand technology in this process. I think of the library as a center for learning and although its role as a place for storing information is changing, it remains the place where we go to acquire, and access, information.

What I hope will not be the future of the library is to function solely as a computer support center. As technology becomes more central to the mission of the library it certainly can serve to house IT services in support of its mission. Thus, in our medical school library we have a computer support center that is run by IT people. When someone’s iPad or laptop breaks, they can go there to have it fixed, or updated. However, I think that it is important that the library continue to serve a more elevated role in education – as a center for collaboration and thought in learning and research. I think it’s also the role of the library to be an innovation center. In this regard, I was so impressed during my visit to Münster with how you had setup iPads to help your students to prepare for licensing exams by collecting diverse sources of information and materials together that would be effective in preparing them for these exams. Letting students check out these pre-configured iPads during their preparation for exams rather than them having to research and collect all of these resources on their own is a great example of the power and influence that the libraries can continue to provide as technology becomes a bigger part of health profession training.

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Ikonisches Foto an der Bürotüre von Mike Schwartz. Es zeigt, wieviel (ausgedruckte) Vorlesungsskripte eingespart werden, wenn man ein iPad benutzt.