Why Wearables Are the New Gateways to Human Knowledge

The use of Google Glass and other wearable devices in higher education is still experimental, but the technology is opening up exciting new possibilities for teaching and learning.

RAY KURZWEIL, American author, scientist, inventor, futurist — and now director of engineering at Google — said, famously: "Mobile phones are misnamed. They should be called gateways to human knowledge."

That gateway is widening, especially on campus, where wearable tech is becoming the latest portal into human knowledge — and the future. "Wearables are just a continuation of the smartphone industry," remarked Emory Answer, director of e-learning and instructional technology at The College of New Rochelle (NY), "but they change everything."

CT asked Emory Craig and his colleague Maya Georgieva, associate director of the Center for Innovation in Teaching and Learning at New York University's Stern School of Business — both visionaries in the field of wearable technologies in higher education — about the future of wearables in teaching and learning.

CT: Why is wearable tech such a compelling tool for today's students and faculty?

Answer: Since the beginning of the mobile revolution, we've seen rapid growth in social media and the ability to stay in almost constant communication with each other. I think we naturally gravitate toward technology that becomes more personal and fosters communication. Wearable devices give us new insights on how our minds and bodies function that are impossible to see with our current senses. The possibilities associated with that perspective are very hard to resist!

CT: What will be the impact of wearable devices on higher education in general?

Answer: It's so early in the game right now for wearables that we can only speculate about the potential impact on higher education. Technological developments always have intended and unintended consequences, and it's the latter that interests me the most. How wearables develop will largely depend on the ecosystem around them (the apps created by independent developers). If you look at the first smartphones, they were incredibly immature compared to what we have today. Now, with over a million apps available, we can do things we never anticipated — photo and movie editing, streaming music, gaming. Smartphones are even becoming devices for virtual reality experiences (with the Samsung Gear VR and the Galaxy Note 4 phone).

I think we'll see learning become much more personal with new forms of feedback (both from faculty and from our own minds and bodies); a revolution in the rapidly emerging field of learning analytics; and new virtual experiences which could revolutionize the way we teach medicine, history, the sciences, etc.

CT: What are the most popular wearable tech devices on campuses today?

Answer: Colleges are starting to open experiments with wearable technologies such as Google Glass, the Narrative Clip and Oculus Rift. There are experiments going on in various undergraduate programs, medical schools, journalism, business schools — and more pilots will start later this year and next spring.

Everyone is tentatively venturing into a new landscape here. Most projects focus on the ability of Google Glass to capture first-person perspective and hands-free video, such as recording with Glass within and outside of the classroom. The same goes for the Narrative Clip, which works great for capturing images during field trips or lab experiments.

I think that the most common applications will be students or faculty capturing video and, for the brave, some applications that can work for online teaching, videoconferencing and one-on-one sessions, such as connecting with experts and mentors to provide coaching and feedback. In addition, we are starting to see some interesting applications for students with disabilities, in which Google Glass or other wearables can provide visual, auditory and physical assistance.

Whether it is Glass, the Narrative Clip, the Oculus Rift or another device that will be released in the next few months, the most exciting ideas will come from our students. I think that the best applications are yet to be developed on college campuses by students tinkering with what is available, building new apps, testing it with new games.

CT: What are some of the obstacles to wearable tech?

Answer: Right now, the major obstacle is battery life, especially for Glass-type devices that you wear on your face. Batteries are, relatively speaking, large and heavy for wearables. This will change, but battery life is not growing nearly as rapidly as processor speed and storage capacity.

The other challenge is user interface (UI). Obviously, voice control (which is getting there, but is not perfect) and touchpad-like areas (as on Google Glass) are probably the future of UI. But the other approach is to do what the Narrative Clip Lifelogging Camera has done: Narrative Clip has no on/off switch and it functions continuously unless you put it facedown on a surface. A significant portion of the market will probably move in that direction — devices that will just always be on.

CT: How should higher ed institutions integrate wear- able tech devices into the educational system?

Answer: My recommendation to the higher ed community is to not try to force wearables into our learning frameworks, but rather to create a space for students to play with wearable tech. I think we are on the cusp of exciting new developments with wearables that will provide fertile ground for personalized, connected and immersive learning. Things are about to get a lot more interesting — and fun — in 2015!

Answer: Be proactive. Experiment and try things out. Stay abreast of the developments in the wearable market, and don't assume that this is just a minor refinement of the mobile revolution. Wearables will start out largely as prod-

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Wearables have the potential to have a huge impact on the teaching-learning environment. The best way for IT departments and faculty to be ahead of the curve is to start the conversation now, embrace change and always be open to innovation.

The average traditional-age college student is already showing up on campus with about seven technology devices. I've seen predictions where we may have up to 10 wear- able devices on our

bodies and clothes. If that turns out to be true, don't be surprised to see the average student show up with 15 or so devices in a few years. Whatever the num- ber will be, we'll look back and laugh at the simplicity of our current era with "only" seven devices per student.

It will get more complex, but we have to see if wearables move toward the use of our wireless networks or depend on cellular services. IT departments should be purchasing devices as they come out so that they can plan for network connectivity challenges.

CT: Most colleges and universities have a mobile strategy. How do we create a wearable tech strategy?

Answer: Higher ed institutions will need to think about their wearable strategy, but it has to extend beyond the obvious questions around privacy, content, network security. The more interesting areas will be to consider the potential applications and Web services that we offer on campus. Students will want to connect to, access, sync and use in new ways with their wearable devices. I don't think we can "shoehorn" our current content into wearables. Wearables are a new cycle of technology that bring their own potential to be explored, and we need to focus on how it will shape the student experience.

We do not need to translate every single application into being accessible via wearable tech. Nobody will have the patience to browse through university Web sites on Google Glass or any of the other Glass- or watch-type devices. Think about having students walk with wearables through our buildings, using devices that are already charged with personal data and connect to an array of sensors. This opens completely new channels of communication.

It is no longer about one "killer app" but about all apps playing together to make the "ultimate student learning experience." Today there is a lot written about BYOD, but soon we may refer to it as BYOE (bring your own every thing) or, in the not-too-distant future (if I can coin a new acronym), BYOEB: bring your own enhanced body.

We will start with students on the digital edge, providing the opportunity to interact with information in limited ways — record and share a picture or video from Google Glass or a moment of the Narrative Clip stream; connect to social apps; participate in online sessions; or [experience] a simulation via Glass or a virtual reality device like the Oculus Rift. It will not be just making sure the content can flow through these devices, but focusing on creating interactions and fostering innovative student-learning experiences.

As [philosopher and media theorist] Marshall McLuhan said, "Each new technology is a reprogramming of our sensory life." With wearables, we are about to open a new chapter on how we will learn and express ourselves in the future.

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