4-1-2013

How Disruptive is Information Technology Really?

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In an administrative career lasting over thirty years, first as a provost and then through three presidencies and a stint at the National Science Foundation, I have watched while changes in technology have reshaped the nature and character of discovery, the gathering and interpretation of increasingly complex observations whose patterns would be completely opaque if we did not have high-speed computing to sort them out, and the integration and use of knowledge in ways that would have been impossible when I went to college in the early 1960s. I went from having to learn the purpose of each of the F (function) keys on my keyboard in order to send an e-mail message on my orange-colored screen back in the early 1980s to being able to find exactly the document or information I need by simply typing a word or phrase into my search engine. I have served as the president of an institution, Winona State University, that became one of the nation's first "laptop universities" and then shifted from focusing primarily on the equipment to emphasizing what we were trying to accomplish: e-learning. Now back in Portland, Oregon, I am teaching my first fully online course. If we can so readily take for granted all of this easy access to ideas and information, what capabilities can we tap for scholarly and learning purposes if we set our minds to the task? When we do, are we really being "disruptive," or are we simply expanding our senses to see the world in new ways and building our networks of people with whom we communicate on a regular basis?

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My hypothesis, based on my observations as a university president and arising from my experiences as an instructor of hybrid/blended courses and now an online course, is that the use of cyberspace expands our approach to learning because it opens up and reveals our mental landscapes, stimulates our thinking processes, and allows people who process ideas at different rates and in different ways to contribute to the building of a shared understanding of a complex or controversial topic. The act of teaching is becoming more about designing the educational context and engaging students as they learn to approach material in more insightful and demanding ways. We are not transmitters of knowledge very often today, although an occasional superb lecture by a remarkably perceptive and even prescient speaker or a carefully crafted blog contribution can open up new ways of thinking about things. In one of those earnest and now inevitable conversations about Massive Open Online Courses (MOOCs) and other recent "disruptive" ideas, a friend of mine asked: "If all knowledge is really socially constructed, what do we do when there is no one else in the room or online with whom we can interact?" I saw an echo of this in a recent essay, "A More-Radical Online Revolution" by Edward L. Ayers. Ayers made an equally simple but important observation. He asked whether there is another way to think about new technologies and new ways to deliver instruction. "The skeptics might ask whether the new technologies cannot offer useful amplification to our scholarly work of discovery; the advocates of the new technologies need to think more directly about how to reach broad audiences while also fostering meaningful conversations across the disciplines and bridging a division between teaching and scholarship."[1]

In January 2013, the Presidents Forum at the annual meeting of the Association of American Colleges and Universities (AAC&U) focused on "The Digital Revolution." The speakers explored the path that we in higher education have taken as technology has shaped our access to ideas and information, our capacity to communicate with each other, and the environments in which learning can take place, both on the ground and in cyberspace. That day, EDUCAUSE President and CEO Diana Oblinger argued that information technology is not simply another channel through which to deliver material but is, rather, a new kind of experience and an enabler of new ways of learning.

Oblinger's observation set off a chain reaction in my mind. It is as though we can extend our senses and the workings of our brains to "see" in different wavelengths and to explore ideas in several dimensions that would otherwise lie flat on a page or fade away in the air after someone tried to explain them. In exciting ways, concepts that used to be presented in words or with the use of simple stick figures or diagrams suddenly open up into rich, colorful, and engaging images that move in space and across time to reveal how a process works or how a phenomenon changes over time. The classroom itself expands beyond the limits of four walls to embrace the entire known universe if we wish. Furthermore, the "classroom" can be anywhere when inquiring minds are engaged, and essential information can be found whenever we require it. It is no longer stored only in physical form in a library. At the same time, information does not become knowledge and knowledge does

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not yield wisdom without the kinds of social interactions that we must foster in person or online. The new technologies give us much more to work with and a better way to explore topics in depth, but we still need to do so in the company of others.

We all know these simple things about how the educational experience is changing, but how recently have we paused to think about how truly wonderful it is to be able to use our smartphones to answer a question right immediately? My real concern is that not all questions have a quick, well-researched, and easy-to-find answer. Many, perhaps most, questions in today's world are hard to formulate, are seen in very different ways by different people, or simply do not have good answers at all. That is why we still need real people who interact with each other in real time in order to frame questions that matter, to explore the ideas that come from those questions, and to work together to find solutions. No longer, however, are those people confined to the knowledge and experience that they carry in their own minds or that they can bring along with them on paper. They can tap into a true universe of material whenever they wish.

How disruptive is this technology revolution, and what does this expansion of the world of knowledge portend for higher education? Certainly the boundaries that once separated teacher from student, research from teaching, and basic scholarship from practice are disappearing. This leads to some interesting questions about what lies ahead for those of us who chose to cast our lot with the academy. Who will be the teach-

ers in the future, and who will be the learners? What role will a sense of place play in defining the distinctive character of learning? When will learning be informed by personal experiences, and when will it be more universal in character and conducted in cyberspace? What will it mean to "know" something, and what will we expect of a person who has completed an advanced education beyond high school? How many different ways will open up to achieve that goal, and what guidance will we offer to people who are managing their own learning and steering along their own path? Frameworks such as Liberal Education and America's Promise (LEAP) or its close relative the Degree Qualifications Profile (DQP) can provide a map that a student can follow through an educationally confusing and complex terrain. Both frameworks offer form-giving goals that can define the direction and purpose of advanced learning and that can help students navigate in often unfamiliar territory. Yet both models still rest on some assumptions that are less and less applicable as students pursue many different pathways toward an advanced degree (either on the ground or in cyberspace or both and often at several different institutions), as the professoriate changes in its nature and age structure, and as the process of discovery and the use of knowledge continue to expand beyond the academy to include the wisdom and experiences of people across society.

Many years ago, I was told a story of how technological innovation unfolds. The first automobiles were really horseless carriages, designed on the same frame as a horse-drawn carriage and with power defined in horsepower. The capabilities of these early contraptions were limited, and the infrastructure to support this new form of mobility was slow to develop as the early car owners rattled across the ruts and sank into the mud of unpaved and poorly maintained roads. These days, our society is built around the mobility provided by today's automobiles, and we are seeking to expand the infrastructure to accommodate battery-powered vehicles. How close is this analogy to the early stages of experimenting with cyberspace? I think the two stories are very similar, and I look forward to the day when the ruts in the cyberspace highway have been smoothed for a true community of learners to improve our world. ∎

Note

1. Edward L. Ayers, "A More-Radical Online Revolution," *Chronicle of Higher Education*, February 4, 2013.

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