Transcript

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Derek Bruff: [00:05] Welcome to "Leading Lines," a podcast from Vanderbilt University. I'm your host Derek Bruff, Director of the Vanderbilt Center for Teaching.

[00:13] In this podcast we explore creative, intentional and effective uses of technology to enhance student learning, uses that point the way to the future of educational technology in college and university settings. Through interviews with educators, researchers, technologists and others, we hope to amplify ideas and voices that are or should be shaping how we think about digital learning and digital pedagogy.

[00:34] In this episode, I interview George Siemens, Executive Director of the Learning Innovation and Networked Knowledge and Research Lab at the University of Texas at Arlington.

[00:42] George is an internationally known expert in digital networked and open learning. Among his other accomplishments, he co-taught the very first Massive Open Online Courses, commonly known as MOOCs, back in 2008. His connectivist MOOCs, featured peer-to-peer learning through blogs, Twitter, and other platforms.

[00:59] These days, George continues to lead research efforts into MOOCs and other forms of digital learning.

[01:05] George was on campus at Vanderbilt in the spring to give a talk, as part of the Schmidt Family Educational Technologies Lecture series, and he was kind enough to sit down with me for a little while to talk about the present and future of educational technology.

[01:17] George has a way of thinking and talking about technology that helps me step back

and appreciate the big picture, and we're honored to have him as our first guest on Leading Lines.

[01:26] [music]

Derek: [01:28] I'm going to start with the big question, but it's one that I know you've thought about. Let's get out our crystal balls a little bit. Given the work that you're doing now, what do you see for the future of colleges and universities, particularly as technology shapes that future?

George Siemens: [01:43] I think, in a lot of ways, they'll continue to exist. I know there's been a lot of narrative that has come in a number of circles about universities are dying or in the future we're going to see half as many universities. I think theorists like Christensen and others have made some really strong statements about that.

[02:00] I just think there's absolutely no evidence that supports those opinions. Currently, if you look at major, developing regions of the world, they're putting much more dollars into the existing university system rather than actually pulling back.

[02:13] One example recently with Saudi Arabia, they've announced something in the range of a $2 trillion innovation fund, or future economic fund, recognizing that eventually their oil source will dry up. A big part of that is obviously focused on university. Their King Abdullah University of Science and Technology was created to the tune of $30 billion to try to bridge the knowledge economy.

[02:35] Same thing with China. Massive, massive investments in the future of their university system. To start, I just want to emphasize that that's not changing. Universities are going to be here in the future. There likely will be a few systems here and there that will close or that will smaller systems might not be successful, or whatever else comes of that at an individual level.

[02:58] By and large, the idea of universities as the knowledge back bone of a society, as an innovation back bone of a society, I don't expect that that's going to change in the next 15 to 20 years.

[03:10] I do think it will be augmented. It will be augmented by range of other knowledge

providers such as, let's say, code academies, or these boot camps to help people get skilled to work in a particular sector. That may come up as something that will grow an influence, but that is really reflective of the demographic shifts.

[03:29] Let's just say hypothetically, 50 years ago we needed, let's say, 15,000 hours of learning to enter a solid degree. Nowadays, it's doubled and tripled because we have to learn constantly.

[03:42] If you are somebody who is a programmer working for Facebook, you're constantly having to learn and update your skills and learn new approaches, new methods, new models of the work that you are doing.

[03:52] The same holds true in all areas of society, we just need to learn more and learn more constantly than we ever have. From that end, there's an expansion of the learning pie, so to speak, even though there's a number of providers that are adding on that we didn't have before.

[04:07] A simple view, in my case, is that in the future we are going to see more, not less, of involvement of university systems in our lives. That may take a different form. There may be more of a blended approach, there may be more of a partly online or fully online even, but still linked back to university identity.

[04:24] In one way, I have described it in the past, is that where as we may have, a generation ago, had a four year relationship with a university, in the future we are going to have something along the lines of a 40-year relationship where we keep returning to the university to re-skill and upgrade back to the labor market, back to the university, back to the labor market.

Derek: [04:42] Will there come a day where we don't have courses or classrooms?

George: [04:47] That's a really interesting question. I don't know. I think there will be a day where we don't have exclusively courses, and we don't have exclusively classrooms.

[04:56] I think it's possible that, for example, as I'm involved in working, of course my job, education, I have something that looks like a personal learning graph that details what I know and how I have come to know it, and has some way of me communicating my capability back

to an employer, or to a perspective employer.

[05:17] Then I may need to go to a university to gap fill some of those areas and that maybe not delivered through the existing pre-structured program or course. It may end up being something that looks much more like a computed curriculum, meaning that it's addressed real time for me.

[05:35] This idea of personalized and adaptive learning is that I attend a campus and I'm provided the curriculum that addresses the knowledge gaps that I have in order for me to get that degree.

[05:44] I might not have to take a two-year certificate in two years. I may be able to complete that in three months if it accounts for what I've already learned based on this knowledge graph that I built while I was working, while I was volunteering, and so on.

[05:56] It's possible you don't have that, but even now, if you look at it, how long haven't we been able to meet online for events and conferences and so on? Yet, the conference circuit, if anything, has exploded. There's more conferences every year. You'd say, "Well yeah, but I could just as soon watch that online or I could just as soon do whatever," and we do a lot of that.

[06:16] It's not that we don't watch YouTube, or TEDTalk, or instructional videos online. Instead, what it is that we're doing that, but still meeting as we traditionally are.

[06:26] I think the future and one of the interesting aspects of technology is it's almost always additive. We like to think it replaces. We talk like it replaces, but look to your university IT department. If you have an LMS and somebody comes along and says, "We should do ePortfolios," you don't do an LMS or ePortfolios, you do an LMS and ePortfolio.

[06:43] Then someone says, "Oh, we should do something like a Domain of One's Own, or everybody should have their own blog." Well, now you're going to have an LMS, an ePortfolio, and blogs added on. Then someone will come by and say, "We'll use an adaptive learning system." That's the component of technology. It's highly additive.

[06:59] I think, in the same regard, we will still have courses, but we also have the range of additional approaches and ways of helping students learn that's more relevant to their life

context and their personal learning needs at that time.

Derek: [07:12] Given some of those possibilities on the horizon, what would you like to see happen in educational technology in, say, the next three years?

George: [07:20] My big research interest right now is on social and affect. With the Research Lab, the focus that I have and that the researchers have is what does it mean to be human in a digital age? That's really our driving question. What happens to the human in this experience?

[07:38] I think this is relevant because we're hearing these rumors, these murmurings of how society is going to change due to automated technologies. One example I recently read looked at the 3.5 million truck drivers in the US could be obsolete within 5 to 10 years because of self-driving trucks. You don't need people driving it. That's an enormous impact on the economy.

[08:01] To have a truck driving job, which is reasonably well-paying — my dad was actually a truck driver and a reasonably well-paying type of work — to have that all be gone and automated, that has interesting implications in terms of what our learning needs are going to be and what society looks like.

[08:18] From that end, my short-term and, I'd say, long-term question is, "What becomes of the human in the midst of these upheavals?" If we see and continue to hear about Google being able to beat the world Go champion, or IBM when Watson won Jeopardy, and these other kinds of innovations that we see from AI. I'm starting to wonder, "What does that mean to us?"

[08:43] From an educational technology…and there's a few trends that are significant now. I don't know if they're going to be sustainable of what I would call alpha trends. Alpha trends are the ones that re-orient the whole field or an entire way of thinking. Whereas a lot of secondary trends that are there, they make an impact and they change what we do as practices, but they don't necessarily completely alter everything.

[09:03] For a while there, everybody was talking about MOOCs like they were this big new thing that was going to change the university. People like Clay Shirky wrote that MOOCs are the mp3 moment in higher education, and Udacity, which was at that time…they're now a

corporate learning provider, but at that time they were the early MOOC providers, and that Udacity was going to be our Napster. There was a lot of people making a hugely bold proclamations.

[09:26] Now you look at it and say, "Well, MOOCs are terrific. They're relevant. They're useful, but they're not an alpha trend." They're not changing the conversation the way that people predictably would.

[09:36] Competency-based education. I don't know if that's going to be something that's going to change everything. It'll be something that'll have an impact. Now we're hearing about blockchain as an assessment or as a credentialing type of a model.

Derek: [09:49] What is blockchain?

George: [09:50] [laughs] That's a really good question. Blockchain, basically — and there's a recent post that Audrey Waterside did on addressing this. It's basically, for lack of a better, a ledger. It's a way of keeping track of something that's happening. It was developed in tight conjunction, or at least it flowed out of Bitcoin. Not flowing out. It was central to Bitcoin.

[10:11] The idea of this, everything that happens to this transaction is encoded and it can't be changed. It's a permanent non-changeable entity, which means that you have greater trust in it because you can see everything that's happened to this.

[10:24] That idea of a blockchain, namely the series of links and connections. It's a ledger, everything that's happened to a something. It could be a currency. It could be a bank transaction. It could be a learning pathway and so on, or the learning that I've done.

[10:37] The whole system, the integrity is within the system. You can't just change one part of the system without the rest of the system being influenced by this. That's, I think, essentially one way that people who've looked at badging are starting to think, "Well maybe this way of the blockchain idea as a credentialing approach, could have some potential interest."

[10:56] All these things coming up, whether we're talking mobiles, we're talking wearables, we're talking competency learning, we're talking personalized and adaptive learning. There's this enormous range of new ways of looking at teaching and learning and education.

[11:10] I think anyone who picks the winner, at this point, is lucky. We really don't know which trends will stick, which ones are going to be consequential, which ones are going to be short term passing trends. Even a few years ago it was digital badges were going to change everything. They might still, but you don't hear much about digital badges anymore, as learning and crediting approach that we were hearing even two years ago.

Derek: [11:33] I have to say, I'm typically skeptical of the "It's going to change everything," argument. I remember the days of Second Life and how, somehow this virtual reality was going to change how we do universities. When you look back at it, it was kind of useful here and there, but it was enormously resource intensive. It didn't scale in the way that would actually effect any kind of change.

[11:56] I do think about characteristics of technologies or trends that are likely to have a bigger impact or lesser impact. A lot of my work is in teaching with clickers, which I have seen used in all disciplines, in all classroom settings.

[12:12] That's something it has going for it and that it seems adaptable enough, that you can see some widespread use. Is everyone going to be teaching with clickers? No, that hasn't happened. We've hit about 10 percent faculty adoption, maybe we'll hit 15 one day, but it's not transforming how we do classroom learning.

[12:31] It's useful and it's interesting. I think a lot of these trends will have uses and will be interesting in different ways.

George: [12:38] I absolutely agree. The mention of technology as an additive agent, I think is something that's worth considering which just means we have more options.

[12:48] We really are in the age of choice. It's not just that we have 10 channels on TV that we're dealing with, it's we have 500. To add to that 500, we have Netflix and then we have iTunes or a range of other sources of watching videos, and HULU. It's really the age of choice.

[13:09] That diversification of options is becoming more evident in education, not just from choices for how we teach, though there's many of those there. We can use an LMS. We can use a classroom. We can go blended. We can use clickers. We can use adaptive software. We can use blogs. There's a huge range of options.

[13:28] From a student end it's, faculty member, she lectured about the Stanford prison experiment. Rather than reading it in a text, you can go on to YouTube and actually see an interview with the research leads and some of the participants in the Stanford prison experiment. We have this huge range of teaching and learning options that we didn't have in the past.

[13:50] Recent report at MIT addressed this as well, one of the top uses of the MOOCs that they were running, was actually for their own campus students to revisit lectures that they had, maybe not fully understood in class or there were some practice activities that were sometimes involved with some of the Computer Science courses, they can engage in those activities.

[14:07] It's this broadening of options and growing range of interests, matching our educational options, teaching and learning to the general explosion of options we have in other areas of our lives.

Derek: [14:18] Let me ask about one of those option sets. I know it's one that you've looked at, and that's learning analytics. I hear a lot about learning analytics and their potential to enhance teaching and learning.

[14:31] I sometimes think maybe I hear too much. There's a lot of noise. What's the signal there? First, what are learning analytics, as you think of them, and what kind of potential do you see in their future in higher education?

George: [14:47] Learning analytics, largely, is the use of data that we have available to us about students and their learning process and activities, in order to improve the effectiveness and the quality of their learning experiences.

[15:00] Trying a simpler way, it's using data to improve the success of learners. Now, as with anything else, once you have a few corporate partners that are interested in it, you're not going to read an article or pick up a whatever, a newspaper. If it says, "Here's a moderated view of how learning analytics may help," that's not going to sell.

[15:22] On the other hand, if you say, "All faculty will be obsolete in 20 years, says researchers," somebody will pick up that article because it's provocative. It's click bait, but in the newspaper form. That's the same problem we have with learning analytics.

[15:36] Learning analytics aren't going to change the education system 100 percent. But they're going to impact every part of the education system. It'll impact how we recruit students. It'll impact how we teach in a classroom setting. It'll impact how students get feedback. It'll impact how we assign resources within an existing university setting, and so on.

[15:56] A few quick examples of what that might look like. Through the use of learning analytics, probably one of the first things that's gained a lot of attention is predictive models for student dropouts. If there's indication that a student might dropout, do we have the ability to recognize that and provide support services before they actually drop out? That's an easy approach.

[16:16] More complex approaches are that of adaptive learning, where we would say to each student, this is your level of knowledge of this course. We can adapt the content either in terms of pace, flow, type of content, type of social interactions based on how the student is succeeding.

[16:30] If you show that you're mastering concepts quickly, you get moved to a more advanced level quickly. If you show some difficulty, let's say in a course that indicates, George hasn't mastered basic math concepts that we would expect a student at this level to have. It would regress me, if you will, back to basic math instruction so it could build my foundation for future learning.

[16:52] There's been other activities with and around recommender systems. Recommender systems can be social. George you should learn with Derek because he's a bright guy and he can help you learn better. He's mastered this concept and could serve as a good student or peer mentor.

[17:06] There's also been content recommendation systems that have been used in this, where this is the course you should take next. If you take this other course next, there's a better chance, or a higher chance of you failing so this is what we recommend.

[17:17] Learning analytics has, I think, the capability to make an impact on all parts of the system by making all agents functioning within a system more aware of what's actually happening.

[17:29] Beyond that, I think it's worth emphasizing their future is not necessarily one of

completely altering everything, but it is one that I think it will influence how teachers make teaching decisions. It'll influence how students develop their self-regulation skills because a big part of this idea of the quantified self.

[17:47] This is reflected with wearable devices. We already see Fitbits and calorie intake or apps and so on. If we have better information about ourselves, there's the prospect then, not the guarantee but there's the prospect that we're going to do a better job of self-regulating.

[18:04] From a learning end, me, for example, as a learner, aware of how I'm doing and what I'm doing may give me the tools to change my practices or my strategies when I'm involved in learning so it's just bringing education up to speed with what's happening in other sectors of society around the use of data.

Derek: [18:24] Are there concerns about learning analytics that we should keep in mind? Things that might make us move more cautiously in certain directions?

George: [18:31] The biggest concern I have is around making the education process soulless. You can't engineer learning the way that you can engineer a building. Learning is a social complex process and I'm concerned that our algorithmic approaches to it will end up sucking the soul out of it and it'll become this lifeless passionless experience where we're just clicking the next button to get the next knowledge nugget.

[18:56] That's my biggest concern. I have secondary concerns around privacy and ethics. Who has access to the data? Especially with more corporations now involved in the university sector, who's going to get access to that data and what are they going to do with it?

[19:08] So I do definitely have some of those considerations and concerns as well, but by and large it's about if we are committed to analytics we need to take the idea of analytics and apply it to our analytics.

[19:21] Meaning that we need to assess whether they're working the way that we said they would, whether we are getting the results that we expected we would get and if we're not then to revisit the ideas that we have. Maybe we find that this data intensive model doesn't produce the better outcomes that we were promised and then it's time to rethink maybe there's a different solution that we need to explore.

Derek: [19:41] I'm curious about one of your current projects, the collaboration with the Carnegie Mellon University. Can you tell us about the Big Data Project and what you hope to learn from it?

George: [19:49] One of the projects we are involved with now together with Karen Rossi of Carnegie Mellon and a couple of her peers from CMU as well is we are really looking at how do the structures, the technological structures that we have, influence our ability to learn or to generate knowledge?

[20:04] We're looking at three specific types of spaces, one is Wikipedia which the way to collaborate and interact and create knowledge in there is fairly distinct. It was innovative 10 years ago and it still is. It's become a little more hardened in terms of whose editor and who has access so how does knowledge get generated there?

[20:23] The second element is that of Stack Overflow where we're seeing individuals who contribute in a Q&A type of site in terms of getting their challenging questions answered around programming or technology or other needs that they might have.

[20:38] The third relates to MOOCs which is something I've been fairly involved with over the last few years and as a result of that interest we're trying to see if you're in a MOOC or if you're on Stack Overflow or if you're contributing to Wikipedia, how are we generating that knowledge? What is the editor model of Wikipedia?

[20:57] How does that influence knowledge generation versus let's say the free or flowing anybody can answer a question that you might ask and answer a question. On a Stack Overflow type of setting or with MOOCs where you have a more traditional, there is still a faculty expert, but not the exclusive expert meaning that in a MOOC anyone can come in and be an expert though we still heavily defer that role.

[21:19] But really trying to get a better understanding of when these environments with these multiple kinds of interaction opportunities, how can we learn from different knowledge needs that we have as a society and bring that to bear within our classroom?

[21:33] Maybe there are certain kinds of knowledge activities that are better suited for open ended collaborative discussions and there's others that are better suited because I'm certainly still a fan of a lecturer so I'm, when's a lecture appropriate, when's open group work

appropriate, when's self-work appropriate?

Derek: [21:50] With the Wikipedia model, what might that look like in a university setting as knowledge production or learning?

George: [21:57] I think probably the easiest approach would be the generation of content and given how expensive textbooks are right now just a simple example.

[22:06] I don't see any reason why a group of graduate students together with let's say a psychology Prof couldn't generate the introductory text book as a Wikipedia project, so the knowledge there is that Wikipedia overwrites individual identity, meaning it's really a collaborative project so a Wikipedia page doesn't have a voice per se.

[22:28] There's a protocols and the editorship and so on around it at the top page on Wikipedia entry is where a lot of that mess is but the page itself is not tied to an identity.

[22:40] This is an opportunity for learners to have a reasonably authentic learning experience writing a text book as a graduate student or contributing to writing it and then making that available to students who are at a first year level of education. I think that's just a simple example of what Wikipedia could help.

[22:56] When you engaged in that, there's a few simple rules Wikipedia such as there are certain resources quality criteria that need to be met. So it's not that you can just say any random stuff. So if you're full of nonsense, then there needs to be some standards for what is acceptable and what's not acceptable.

[23:12] There's also the idea of shared governance that occurs within a Wikipedia entry. These are practices that students engage in if somebody calls into question the validity of an assumption or related difficulties that arise with those assumptions such as and Wikipedia periodically does lockdown talk pages during periods of high controversy in order to let the heat of the emotions of the pass.

[23:36] Those are the kinds of skills I think from a university and collegial knowledge creation, understanding shared governance and shared processes and management, but still at the end of the day recognizing that we have nothing if we're not willing to concede and collaborate to produce a better outcome.

[23:52] If all we want to do is stick with our own perspectives and our viewpoints, we don't end up creating anything new, and so those are I think terrific experiences for students to go through.

Derek: [24:01] I think one of the reasons I ask about Wikipedia is this authorship piece. Where I think in academia, we place a high value on authorship and voice and when that gets disguised right through the collaborative writing, I found instructors, faculty often push back against that.

George: [24:22] That's why as we were sort of talking about it earlier, it's really about more choices rather than having to make a decision between one and the other. It's about having more options available so that in context A we could do this. In context B we could do that.

[24:37] For example as a faculty member if I want to take a group of my psychology or computer science students, graduate level students, through a course that has some interesting practical application, maybe get them to write the introductory web page for our first year students. Save the students a few hundred dollars, have an interesting learning experience.

[24:55] Then if I want to work on building my digital identity. Let's say I'm a new faculty member, I'm pursuing tenure and I have to address not only the traditional publication and grad criteria, I also have to be teaching criteria that are increasingly common in the university setting as part of tenure.

[25:15] I have to start to find a way to have my work make an impact. In that case I might say I'd like the identity value of a blog, a Twitter ID, maybe Instagram. I'd like the identity impact of personal authorship but that is that context.

[25:31] The context always drives the approach. In my view at least, the entire education experience, the entire learning process is really just a massive if/then statement, and we forget that sometimes, that it's always contextual.

[25:43] There are settings where Wiki is a great idea and other settings where it's a terrible idea. There's times when academic needs her own voice and there's times where she doesn't and there's really no one answer that's right all the time but there's almost always an answer that's more correct in one setting than it'll be in another setting.

[26:00] Getting that mindset which my interests have been heavily around complexity theory and complexity science is lately, and by lately I mean the last 12 years, because it addresses the fact that we can't govern and practice education effectively through traditional rule based approaches. It's much more about taking an eco-system rather than an engineer model.

Derek: [26:22] We have a standard question we ask all our guests on the podcast. What's your favorite analog educational technology?

George: [26:31] I love the legal pad and paper and a pen. That's where I do the bulk of my sketching and I still do. It's a way to connect and interact with ideas in very easy way, something about the tactile experience.

[26:46] Research recently that emphasizes the value of note taking with a pen and paper versus note taking through a keyboard has better retention experiences for the individual students. So I still say, "Good old pen and paper gets her done."

Derek: [26:59] Awesome. Thank you, George. I appreciate your time and you taking this time to share a little bit of your experience and expertise with us.

George: [27:07] Thanks, Derek.

Derek: [27:08] That was George Siemens, Executive Director of the Learning Innovation and Network Knowledge Research Lab at the University of Texas at Arlington. You've been listening to Leading Lines, a podcast on educational technology from Vanderbilt University.