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JUSTIN REICH: Today, we're going to talk about peer-guided learning at scale. The thing I asked you to do for today was to write a little bit in your learning journal about one of your hobbies that you use online resources to learn from. So just get in groups of three and spend the first few minutes talking to each other about what kinds of hobbies you have and what kind of online learning you do in those hobbies. Does that make sense? Ready? Go.

All right, come on back. So first of all, Omar should show us his camera.

AUDIENCE: Do you want to talk about-- oh, yeah.

AUDIENCE: So I talked about photography. I spend an unhealthy amount of time on YouTube with photography tutorials. And so this camera is a 50-year-old camera, and I had no idea how to even begin looking for one. And these last three weeks, I've been looking because I want to run a CPW event for admits on how to use an SLR camera.

AUDIENCE: Isn't that cool?

AUDIENCE: So I don't know-- this is in really great condition. And I was on eBay for hours. But I watched YouTube tutorials. I was reading on Reddit forums, photography forums, DPReview, PetaPixel on what to look out for. And before that, learning how to actually take photos was all done through YouTube. It was self-taught.

I started off with a phone, and then I slowly built up my toolbox once I had the knowledge. And yeah, now, I'm the photo editor for *The Tech,* I do stuff for yearbook, and now I do a lot of stuff for photography, and now I'm actually teaching others.

I recently actually just interviewed-- I forgot to mention this. I interviewed to teach a digital photography course, although, due to time conflicts, I won't be able to do that. But I did interview, and I was about to go on the other side of that learning experience.

JUSTIN REICH: The camera's rad. Cool.

AUDIENCE: I just got it before my last class. So I need to go to a camera shop, just to make sure it works, which I'll be doing after this class.

JUSTIN REICH: OK.

AUDIENCE: I want a photo of that.

JUSTIN REICH: I want a photo of Omar with his new camera taken with a contemporary--

AUDIENCE: [INAUDIBLE]

JUSTIN REICH: Yeah, I mean, those Polaroid cameras became much more widely accessible, probably when I was in grade school. They were pretty common. And then there was a revival in the last few years. So my daughter has a Polaroid camera. I don't think it's called-- we call them Polaroid cameras. They probably have some different term now, instant camera or something like that. Anybody have a completely different hobby from Omar, where you could tell a very similar kind of story about learning?

AUDIENCE: I'm not an expert.

AUDIENCE: I guess a similar story of learning is through YouTube, right? I want to-- or I'm starting to learn how to play guitar and bass and stuff. But the thing with YouTube is it's like, we talk about algorithm-guided learning or whatever, but it kind of almost feels like YouTube is algorithm-guided learning in a way, or I feel like the YouTube algorithm really drives my interests or diverts my interests into different things at different periods of time.

On a week-by-week-- on a week-by-week basis, I can be interested in something completely different than what I was interested in last week. So it feels like I'm just moving through a bunch of different hobbies because I feel like I'm at the whim of the YouTube algorithm sometimes.

JUSTIN REICH: Oh, yeah, yeah, yeah. Yeah. Yeah. Yeah. No, I think people feel that way with lots of technologies that do some kind of aggregation. Pinterest for people who do crafty kinds of things, TikTok for people who follow media, and stuff like that. Yeah, good. What other hobbies do you talk about, or what other informal learning strategies seem important and interesting or things that you were talking about in your groups? Yeah, Asa?

AUDIENCE: I'll say, on a less, I guess, hands-on level, I use similar resources, like YouTube and stuff like that, for a lot of collecting knowledge for things that I'm interested in, like fashion, for example, because a lot of it is like-- in New York Fashion Week, for example, it's these very condensed times where it's all happening and a lot of people follow very closely.

But if you're an MIT student, you're probably like, I can't be doing that. But then you can watch highlights from it and actual critics' commentary on them and see what that's doing, both socially and also from an artistic side.

JUSTIN REICH: Yeah. Do you use Pinterest or anything for collecting your--

AUDIENCE: I had a social media problem. So now I just do YouTube. So I'm kind of just continuing into YouTube and stuff. But I do get to, I guess, reflect on it because I'm doing costume design and stuff.

JUSTIN REICH: Oh, cool. My daughter is big into aesthetics of various kinds, craft things or design things, and Pinterest is a big part of how she-- she does the same kind of combing that you do, but she's deliberate about taking things that she likes and storing them and categorizing them and trying to make sense of them and things like that. Yeah, Dana, then Imran.

AUDIENCE: I was just going to say, just another medium outside of watching videos is just online. So mine is cooking. So recipes or just articles. And then also, mine was a little bit of TikTok, just in the one-minute video of, you can cook this. And it isn't a professional chef showing you how to do it. It was cool to see that, oh, I can relate to that person, so I can do it.

JUSTIN REICH: What are your favorite recipe media or cooking media? How do you--

AUDIENCE: So I've only perfected one singular dish, and it's scallops, which is a relatively hard thing. But I'm scared to cook a chicken because I'm going to give myself salmonella. But [LAUGHING] scallop. Yeah. So my family joke is, are you only going to eat scallops for the rest of your life? I was like, yeah.

JUSTIN REICH: They're pretty good. They're healthy. There might be too many heavy metals if you do that your whole life or something like that. But yeah. Yeah, I don't know if bottom feeders are what you should do for your whole life, but that seems like seems like a good start. How about you, Imran?

AUDIENCE: I didn't mention this in our group, but what came out from people talking, I feel like a lot of people relate, is Numberphile. 3Blue1Brown, this video. I just put them in.

JUSTIN REICH: What is this?

AUDIENCE: It's a math video. They just tell you cool math stuff.

JUSTIN REICH: It's called Numberphile?

AUDIENCE: Numberphile.

JUSTIN REICH: OK.

AUDIENCE: 3Blue1Brown. Those kind of videos. So sometimes you learn that there is fractional dimension, and you'd just be watching what that means.

AUDIENCE: I watch those too sometimes.

AUDIENCE: They're very interesting.

JUSTIN REICH: Yeah. Who was the guy who came here a couple of years ago for a graduation or convocation or something?

AUDIENCE: Mark Rober?

JUSTIN REICH: Hm?

AUDIENCE: Mark Rober.

JUSTIN REICH: Mark Rober. Yep. Yeah. Yeah. He's a science YouTuber. A guy named Veritasium does things like that, too. Yeah. Yeah. Enormously popular and successful and things like that.

I play a lot of computer games, and my life overlaps. I don't know, computer games are a couple of years older than me, but not by much. I mean, definitely some of my earliest memories are games that would have been played off of a cassette reel, rather than any kind of rotary disk or something like that.

But another distinctive memory is that one of the first categories of games were these text-based games, where you had to enter prompts into a parser, like open mailbox, go left, go right, walk in, pick up key, put key in lock, those kinds of things. So a lot of what you're doing-- yeah, come on in-- was kind of guessing what was the right key term to put in to engage things.

And so actually, a lot of these games-- Infocom was a company that sold a lot of them-- the game companies would also publish a book. And the book would have the answers to a whole bunch of things or solution sets in invisible ink. And so you had a little pen that came with it.

And so when you decided that you had given up trying for yourself, you would cover the invisible ink with this pen that would reveal the next clue and help you go on and so forth. But now, essentially every video game, they almost instantly are created with a wiki that has every item in the game and what they do and where they go.

A Reddit forum for conversation. More recently, Discord pages that actually, for smaller games, can be kind of surprisingly intimate, where you really do feel like you're just like chatting with the guy who made the game, even if they may not be responding to you directly. But they're certainly responding to people that are there around with you and things like that. YouTube channels or all these kinds of things.

Yeah, I think there's all kinds of ways. There are very few people, I think, left in the networked world who don't have some kind of encounter with this sort of informal learning. I think just an enormous number of people in a very short period of time-- I mean, obviously, there have always been people who do DIY kinds of things and stuff like that, but the degree to which online resources has shaped those learning interactions is a profound change over the last decade or two.

And I think it reminds us to do a few things that are useful. One is to conceptualize learning really broadly. A lot of times, when we think of learning, we pin it down in education, K-12 education, college, things like that. But that's a relatively small part of people's lives. People are learning all throughout their lives, all the time.

People are developing new skills for work. They're developing new skills around their interests. They're pursuing passions. They're doing whatever else. And so I think it's very helpful, when thinking about online learning, to be really open to all these kinds of things.

And then I would say, if there's a core argument in peer-guided learning at scale, it's that these technologies have been so profound in changing the ways that we pursue learning outside of school, and schools have proven to be institutions that are just remarkably resistant to these forms of learning as well. My hunch is most of you don't have an experience where you feel like, yeah, the kind of learning that I did in my eighth grade physics class was really just like the kind of learning that I did to learn photography or something like that.

There's something about schools and the design and organization of schools that makes it really hard for these kinds of learning environments to make their way in. I think a lot of what I want to share with you today are some of the most substantial efforts, particularly in higher education, to figure out how some of these approaches to peer-guided learning at scale could make their way into formal institutions.

The ideas that I am presenting to you, if I was talking about them 10 years ago, I would have positioned them more as, these are very viable ways in which at least higher education, maybe a number of forms of education, might substantially change in the next 5 or 10 years. And I think I'm more likely to present you them today as an interesting dead end, as a set of things that people were trying, putting a lot of effort behind, putting a lot of design behind, and really didn't have much impact in how especially higher education, in how formal education of all kinds are organized.

Studying things that flop is good. We're going to come back to this a few different times. Studying things that flop is really important to figure out why things work. If you just study things that work, you actually don't know why they work. You know characteristics they have, but there's lots of things that are in common between things that work and things that don't work. And so that's what we'll delve into some today.

Maybe I'll talk for a little bit, and then see what kind of thoughts you have. All right. So I think we did the Rainbow Loom story. We talked about this the other day. This is one, I think, iconic moment of the creation of a new craft generates these new kinds of communities.

This was from 2013. "Low tech but high on creativity, the Rainbow Loom has kids hooked-- spending hours after school and on weekends making bracelets weaving together small, colorful rubber bands on a simple plastic loom." And all of the narrative around Rainbow Loom was, man, look, we finally got kids off their phones. We finally got kids in the real world connecting to one another. This is, I think, 2013, that this was published right before Christmas.

But of course, the kids were on their phones the whole time that they were playing with Rainbow Loom. And so this is Ashley and Steph who were these two girls who have a quarter of a million people subscribed. Oh, this is, yeah, how to make a Rainbow Loom Starburst bracelet.

Whenever I recorded this, 30 million views, probably 10 times as many that were on the official Rainbow Loom Starburst page, that somehow these two kids had captivated-- I don't know. It's hard to say that it was millions of people, because it actually could have been a couple of hundred thousand people each watched this 10 or 20 times because it's super hard to make one of these bracelets.

But I think a compelling example of how network learning was. And something like this, if you're my age, looking at this in 2013, it's really hard to imagine something similar happening in 1990 or something like that. If someone had invented a new kind of craft, you would have had to go to a craft store, you would have had to join a club, you had to go to classes, there would have to be a college club or something like that.

I mean, maybe PBS would put on a television show about it. You could imagine the Bob Ross of Rainbow Loom or something like that. But very hard to imagine the same kind of highly decentralized mechanism by which learners connect themselves to each other.

I think one of the things I'm going to ask you to read for an upcoming week-- I can't remember if it's next week, but this piece by Ivan Illich called "Deschooling Society." I think it's written in the 1960s. And he almost exactly-- the very dawn of computing. And he predicts learning networks that emerge like this.

He says, one day-- I mean, he has a funny way of describing it. He says, one day, there's going to be a bunch of learners who write down the things they're interested in learning on punch cards, because that's what were computers at the time, and there's going to be a bunch of experts who share their interests on punch cards. And the computers are going to connect these punch cards together and get people teaching and learning from one another. And it turned out, we had YouTube rather than punch cards, but it was a pretty similar kind of phenomenon.

In the early 2010s, there were some people who were particularly enthusiastic about the fact-- so one thing about Rainbow Loom, you could say, is something like, well, all right, so some kids figured out how to make plastic bracelets. That's OK. But there are people who achieved elite levels of performance in a variety of different disciplines and domains by following the same kinds of practices that the Rainbow Loom kids were using.

So there's a guy named Julius Yego who, as I recall, won a silver medal in the Olympics. He was from Kenya, and he was a javelin thrower. There are no field athletes in Kenya. They're all track runners. And for whatever reason, Julius Yego got it in his head, I'm going to be a javelin thrower. I mean, it's here. "My coach is me, and the YouTube videos." And he became an elite, globally recognized-- I mean, there's a moment where this tips.

There's a moment where he goes to a track and field competition. He doesn't really have a coach, and he throws a javelin pretty far. And some people notice him and take him under his wing and stuff like that. So it's not just YouTube videos that get you entirely to being the second best javelin thrower in the world, but going quite a long way.

There's echoes of this, of the story that I told you before of Battushig, the boy genius of Ulaanbaatar, the kid who discovered in Mongolia, through MITx and things like this, the idea that these could have these profound democratizing effects. You don't have to be in a country that has a really big track and field infrastructure to be able to become a great athlete. You can do it anywhere because we have YouTube now.

So I was working for HarvardX in 2013. Maybe I'll pause to tell this story too. Well, I don't know what the right order is now that I'm inspired by it. But there was this term, massive open online courses, and it actually was not originally applied to the courses that came out of Coursera and edX and MITx and Udacity and things like that.

There were a group of Canadian educators who, 2008, 2009, 2010, 2011, started building these networked courses. I'll go more into the details of the network courses, but you would basically create an online learning environment, have people create blogs, connect on Twitter, form social network connections with one another, and all be studying the same thing at the same time.

Sometimes some of the people would be getting credit from some institution and other people would not be getting credit. They were all kind of openly being involved. A few thousand people, probably the largest of these, signing up. And so there was actually a reporter who, when edX and Coursera got started, was trying to figure out what these things should be called. And somebody said, well, these Canadian guys have these things called massive open online courses. And the name stuck, but it stuck to describe something very, very different.

One of the things that we recognize early on is that, in the early days of people doing the massive open online courses that came out of Harvard and MIT, is many of them were not just using the course materials that were being provided on these platforms, but they were using all kinds of other things. So you'd ask people and they're like, yeah, well, we're searching for all kinds of things that show up.

We're reading the Wikipedia entries about the things that show up in these classes. We're buying additional books that are around them. We're looking for those books on Google Books. We're joining Facebook groups of people who are studying these courses together and things like that.

And so the barriers between these instructor-guided learning at scale, these highly structured learning management system kinds of things, and the informal world of people messing around on YouTube, learning about stuff, smushed together. Probably a bunch of you have some kind of experience of that in your classes too.

I mean, presumably all of you, when you don't understand something in class, you're looking up online videos about it. Or you don't like the lecture and, probably mostly in your technical classes, you watch it from some other place. Or I don't know, do any of you join groups or find communities of people who are good at solving problems in the things that you're interested in?

AUDIENCE: One thing about being an MIT student is you can go on OCW if you miss a lecture or you don't understand the lecture, you want to expand it in a different way from a different professor. You can just watch that same lecture, which I've done before for some of my more technical classes.

JUSTIN REICH: Yeah. So yeah. So you can rewatch past things. Some professors are pretty explicit about that. They'll be like, well, this is my lecture, but somebody else filmed roughly the same course four years ago. And you can watch all those things.

How many of your classes still use Piazza or some kind of discussion forum things? Are the Piazza forums ever insufficient, and then you go to Stack Overflow or to some other kind of-- maybe for your coding classes and things like that?

AUDIENCE: I would say, Piazza has a weird social dynamic in itself.

JUSTIN REICH: Tell me more.

AUDIENCE: I think it's like-- I mean, obviously you can both do anonymous questions and non-anonymous questions. But usually it seems like it really depends on-- a little bit on who's really using it, and also, how responsive the faculty and stuff are and how they choose to respond. Because I have it in quite a few classes where I log on, and then it's like, yes, I had that question. And they're like, oh, sorry, we worded the question weird.

But then I've also been in quite a few classes where it's like, they're asking this super high-level question about the lecture. And then it kind of sets that expectation for the class, especially if it's a larger class, of, oh, my, quote unquote, "dumb" questions aren't going to be answered here.

JUSTIN REICH: It's not going to be respected or things like that. Yeah. And I mean, because these things are social in nature, I bet a lot of those things can be determined pretty early on by the actions of a couple of people. When we were studying massive open online courses, one of the things we found in the discussion forums, the largest threads, the most upvoted kinds of things, were almost always amongst the very first topics posted.

So it wasn't like the forums were surfacing-- it wasn't like there was lots of ideas, and the most interesting or important of those ideas were surfacing at the top. It was like somebody jumped in there first, and then people started talking about those things. And you could imagine an alternate timeline of the exact same course you were in, where the first two people to post happened to just be people who were like, I don't understand this really basic thing. Will someone explain it again? And the forums have a whole different character to them.

I mean, to some extent, I think of computer programming in particular as a field that depends upon this kind of informal learning, that basically no one knows enough about programming languages and how they operate and how they solve problems. And so you essentially can't do that profession if you can't figure out how to navigate all the online resources, all the online communities, and things like that.

And unusually, you can be promoted and thrive in those communities through your participation in some of these kind of informal learning networks. You can be really active in creating open source projects or just be a really active contributor to Stack Overflow or other kinds of communities like that, get recognized for your contributions, and have that translate into other kinds of opportunities.

So the boundaries between-- there are ways that I think these informal learning environments and formal learning environments, the boundaries can permeate, even if, as we'll keep talking about, just trying to take the whole informal, peer-guided learning infrastructure and bringing it to schools seems not to work pretty well.

I think, actually, one of the most compelling reasons for integrating technology into people's school learning at all is the idea that, actually, for most of your lives, the kind of learning that you do will look more like the learning around your hobbies than it does look like the learning in your classes. In the next couple of years, some of you will keep taking classes for a long, long time, but most of you will probably stop, or take them only infrequently.

You will probably, however, continue to participate in these online learning communities. To me, it raises really interesting questions like, what responsibility does a school have for helping people become really good at learning cooking through playing with recipes the way Dana described, or learning photography through online forums, or music through online videos, in the way that Jaren and Omar describe?

What would a K-12 education look like if someone left school and they were like, I'm totally prepared to teach myself stuff by engaging these online communities because I've had a bunch of practice and those sorts of things? What would a college education look like if it was good at that?

AUDIENCE: I feel like that's like such an interesting point, because I think back to a conversation I had with my mom, where she grew up and was out of college-- or out of high school right before the really dawn of computer classes in high school and middle school. And in middle school, so rudimentary to us, we learn how to use an Excel sheet and just learn how to Google things and a lot of just the super basic skills, like how to type on a computer keyboard that she doesn't know how to do.

And it almost seems like the next generation will leave computer classes knowing how to navigate these sites. And then all the stuff that I had to learn on my own, maybe I'm asking my kids, where did you learn that? And they're just like, in school.

JUSTIN REICH: There was a phrase that was used for a number of years. It was called "digital native." Maybe a more common phrase that you'll hear probably in the next few years will be something like "AI native." The idea that, what's the difference between having to learn something by having it come into your life versus having it be something that you grow up with all the time.

There's actually a bunch of good evidence, in fact, that digital natives, that young people are actually not that much better at using technology, especially learning things, than older folks. Young people in schools are usually pretty good at doing certain kinds of technology-mediated things, but the things that are most helpful for learning, they're often no better at than anybody else.

Although I've always liked the idea-- one of the things that comes along with the idea of immigration of digital natives-- digital immigrants and digital natives-- is that second-generation immigrants are always taking on new responsibilities for teaching their first-generation parents about things. You grow up in a country and you learn the language, you learn their culture, you learn other kinds of things that you have to explain to your parents. So there's something kind of nice about that metaphor carrying over. Were you going to say more?

AUDIENCE: Something that I know the state of Massachusetts is doing is-- I don't know if I completely agree with it-- blending computer science and computer literacy together. I do think that teaching computer literacy is of utmost importance. I credit a lot of my computer literacy to my seventh grade-- or seventh and eighth grade technology teacher.

The LinkedIn I use now was created back in seventh grade, and I still use the very same account. And he was the one who got me-- I think I mentioned the typing lessons at the beginning of the class. That's where I learned how to type. That's where I learned how to create a portfolio, create an online website, do individual kind of research, and create a project on something that I'm interested about. And I think creating projects on something that is personal to someone within a K through 12 lesson is really important for teaching them how to conduct research, take notes, and come up with conclusions on what they got up and looked for online.

JUSTIN REICH: And a constant challenge educators have is, what new things are actually worth investing additional discretionary time in? I mean, there were plenty of folks 10 years ago who said, man, it's incredibly important-- every high schooler should complete a MOOC. MOOCs are going to be absolutely central to how people learn and finish higher education in the future. If you can't do a MOOC, you're really going to be left out.

It's like, well, maybe not so much. A LinkedIn profile, however, many years later, still seems like a pretty handy thing to have. There was no reason, 10 years ago, that you-- it's very easy to imagine a world where LinkedIn got replaced by something else entirely and MOOCs were super important. In 2013, the success paths of those things were not at all predictable.

Educators were super anxious about-- I just gave it-- Erin came to this conference with me. I gave a talk to a bunch of educators about AI and education on Monday. And there's a ton of anxiety about, how important are these things? What do we not need?

Does it make sense to teach kids the same way to search anymore if AI agents are just going to answer our questions for us, or is it more important to be able to do that because the AI agents are going to say nonsense to us? All these kinds of things. Yeah, Ty?

AUDIENCE: Oh, sorry. In that regard, do you consider AI a form of peer learning because it's been trained on peer communities, like Stack Overflow and all these other things?

JUSTIN REICH: I love that question. So my first thing about AI-- I was giving a talk with Jim Waldo, who was the chief technical officer at Harvard. He's a neat guy because he got a PhD in philosophy about 40 years ago, then went and worked at Oracle, helped write Java. If you have an Android phone, you're probably running his code on it.

And then came back. And now he does policy stuff, and he's a philosopher again. But he's like, AI is what we call computing technologies that are new and we don't understand very well. And 10 years from now, they won't be called AI anymore. And so are generative pre-trained transformers peer communication? Well, maybe. What do I think a peer-guided network is?

A learner enters a network with a wide range of learning resources that are generated by previously all human agents. Could a generative pre-trained transformer generate a useful learning sequence? Seems plausible. I remain not entirely convinced.

Actually, somebody came up to me and was like, we have a startup where we're creating online classes by having AI create the classes. And I was like, that just sounds like a terrible idea, in part because there's just such a huge surfeit of classes. There's so many things out there, and they're really not, unfortunately, that expensive to develop. Why do you need machines to do them?

I have a colleague, Carolyn Rosé, who worked with chatbots for decades. And she actually has convinced me to be very skeptical of interactions of individuals with chatbots. I don't know. How many of you in the last week spent more than an hour talking to a chatbot? Zero. Maybe one.

I just don't think people like it that much. She really thought that where they could be powerful is jumping in in the conversations between two people, that you just have peers talking to each other. So you're on this discussion forum and you're going back and forth or other things like that, and then a bot comes in and helps you ask an interesting question.

Hey, look, somebody over here has a different perspective on that. Let me connect you to that. And so you can talk and things like that. But yeah, I think it totally seems plausible that a peer-guided learning environment could include artificial agents that are doing things that humans had previously been doing.

AUDIENCE: Yeah, I guess, to both your points of AI interaction, I would say an interesting aspect of that, especially in terms of what can be a credible source for learning and stuff like that. So I think, in California, or at least the part of California I was in for a while, we did have, in middle school, a week-long program that every kid had to do that was like, oh, you're 13. Here, make an email. And here's how you Google stuff.

And recently, with the new Google AI feature that kind of summarizes answers for you now, I was thinking about, how does that change those levels of instructions? Because sometimes I look up things, and I see the summary, and I'm like, I don't know what the answer is, but I know it's not that.

[LAUGHTER]

And I go deeper. But let's say, if I'm a middle schooler and it's like, well, I don't learn this, or I'm a high schooler that took that class in middle school. And it's like, well, now I'm not sure. Or I take Bard's word for good.

JUSTIN REICH: Yeah. Yeah. No, a huge problem with GPT-generated text is that it's probably much more useful for experts than for novices. So if you ask a GPT to make eight things and two of them are cool and six of them are nonsense, or the opposite, an expert can tell the difference and be like, oh, that was an idea I didn't have before.

But a novice can't. A novice just looks and be like, OK, these are eight ideas. They all seem plausible and they're confidently stated and things like that. It's a huge problem that educators are going to have to wrestle with in the years ahead. The kind of class that you're describing, if it were to be taught 10 years ago, a big thing that educators were thinking about at the time was, how are people going to navigate a social web?

So when the web was first developed-- we'll get into this a little bit more-- it was pretty hard for people to contribute to it. You had to know a little bit about FTP, you had to know a little bit about HTML, a couple other things like that. They weren't super hard, but there was a relatively small portion of the population that added content to the internet.

And there was a suite of technologies that got bundled and called Web 2.0, which said, OK, we're going to make it much easier for anybody to type things online. You can all start a blog. You can all start a microblog. You can all make a simple website. You don't have to know how to code to do any of these things. We're going to use user interfaces to take away all that programming expertise that's necessary.

And so people thought, wow, I bet our lives and young people's lives-- if you're teaching 11-year-olds, 12-year-olds in 2013, you're like, man, a major thing they're going to have to do is how to connect and network with each other. We have to have them create their LinkedIn page so that they know how to social network with each other.

We have to have them participate in online dialogues. We have to have them think about, what are responsible ways of representing themselves? People talk a lot about their digital footprint and other kinds of things like that. Today, a 13-year-old is entering a web environment in which there are lots of parts of social media which are collapsing.

Just as an example, actually, I went to the guy who ran this conference on Monday, and it was kind of interesting. So usually this conference get 100 or 150 people show up. It was about AI. They had 240 people show up, and 70 folks were on the waitlist. Tons and tons of interest from educators.

And I went to the guy who runs it, Tom Driscoll, and says, what do you think these teachers are interested in? What are you-- what do they want to know? Why are they here? And he's like, you know what? I don't know.

10 years ago, they would have had blogs. They would have participated in forums. They would have joined Facebook groups. They would have-- there were many, many more ways that educators were proactively contributing their ideas to the web. Maybe not all of them. Maybe it was 10% of them or 20% of them, but there was enough of them that you could get the pulse of a whole community, which he felt like, and I agree, you really can't do anymore.

Some of that is that there was a moment in Web 2.0 in which people believed that the infrastructure of the web might be really quite open and quite owned or controlled by individual people, that there could be a world where people create their own websites, they create their own blogs, they host their own accounts, and things like that.

And I don't know when some of these things-- starting around 2015, 2016, people started describing The Web We Lost, a kind of moment in which social media took a turn. So these are the kinds of things that, I don't know, I was playing around with in 2004, 2007.

Any of you have a LiveJournal blog? That was one of the earliest blogging sites, that people create their own space and hosting it. This was a wordpress.com blog of my wife and I, writing little stories about us going on adventures and things like that, posting pictures, hosting it ourselves.

And essentially, Facebook came and demolished all this and said, you know what? You don't need to host your own blog. You don't need to figure out an FTP server to upload your own pictures or use a picture interface. We're going to create an interface. People participate in a lot of the same kind of practices on Facebook, of writing little stories on the trips they do and posting pictures and stuff like that. But all of a sudden, it was all controlled by Mark Zuckerberg.

This was a quote from David Weinberger. "In many ways, Facebook fulfilled the dream of blogging." But not exactly. Everybody was online, but they weren't in spaces that they owned, had control over, had some familiarity with. And then-- we'll talk about some of this as it goes along-- I think there was a moment in which participation in a broad online life felt much less toxic and draining and vulnerability-inspiring as it does right now.

I mean, if you're a teacher who's working in a state which has recently passed a divisive concepts law or other things like that, regulating the kinds of topics you can talk about and things like that, all of that has a chilling effect. I mean, not to mention just the ways in which the social media services, Facebook, Twitter, other kinds of things we use, have degraded in their conversations over time.

This is what David Weinberger said. "The blogosphere did not scale." Some people created their own blogs, but not everyone. And then Facebook came in, and many people who created blogs were like, I'll just post to Facebook. A lot of those people have moved over to Substack now or other kinds of things like that, but systems that they don't control.

There is, I think, a parallel to that story that happened in higher education. So in the early days, when the web was first made available broadly to schools, which also happens to overlap with my life. So I think, in 1993, Dartmouth College is the first college to give every incoming student an email address.

I think, in 1994, very quickly, many, many other colleges had done that. By the time I graduated high school, but certainly by the time I was into college in 1996, I had an email address. Everybody else would have had an email address. That would have been pretty universal and standard.

But this is what university web pages looked like at the time. MIT still has some of these kinds of things. Has anybody ever been to somebody's Tilde Space? www.mit.edu/ tildejreich or something like that. Who do you--

AUDIENCE: Oh, man. The 18.06 professor. What's his name? I keep forgetting. The one who just retired.

AUDIENCE: Gilbert Strang?

JUSTIN REICH: Gil Strang? Good. Perfect. Great. Others that people can think of who have these things? So some things that you'll notice about the-- well, I don't know. What are you-- just looking at these pictures, what do you notice about these things? What strikes you about them? There were some giggles before, which I think is appropriate.

AUDIENCE: Everything is Times New Roman.

JUSTIN REICH: OK. So not a lot of font diversity. What else?

AUDIENCE: There's no advertisements.

JUSTIN REICH: Yeah, good. No, so these were not created with Wix or something like that, where, in exchange for making a website, you have to put a bar of advertisements at the bottom or something like that. So somebody actually made these pages. They're all personal home pages. Other things that strike you?

AUDIENCE: The backgrounds.

JUSTIN REICH: What about the backgrounds?

AUDIENCE: It's certainly of-- I don't know. I feel like I personally associate them with a very specific time period.

JUSTIN REICH: OK, good.

AUDIENCE: Like this is naturally--

JUSTIN REICH: They have a '90s aesthetic to them?

AUDIENCE: Yeah. I would say maybe it is partially just the quality of, let's say, a pattern or something you can put on, or now we have a lot of templates and make sure it's aesthetically consistent.

JUSTIN REICH: This is pre-Canva. Kent, what were you going to observe?

AUDIENCE: I was about to say about the templates. They're not all using the exact same template and similar format.

JUSTIN REICH: They're not all using the exact same template and similar formatting. I think that that is actually quite important. There are some good things that templates do, of make things looking aesthetic, but they standardize in a way. They put things in the same way. People at universities do really, really different kinds of things. That might be important. Other observations about these?

AUDIENCE: It's very skeuomorphic. There's buttons on the bottom left, along those icons, that you don't see as often. And I want to say the background, especially the bottom left, where I think of a physical wallpaper, which is like the principal--

JUSTIN REICH: Do you want to define skeuomorphism for us?

AUDIENCE: Skeuomorphism is like-- the most famous example is probably iOS 6, where you have all these buttons and reflections that try to mimic real life. And that's what skeuomorphism is, trying to mimic real life. And then, when we transitioned to iOS 7, you removed a lot of that dimension, and it became a lot more simplistic and symbolic.

JUSTIN REICH: A lot of the early note taking apps would have a background like a yellow legal pad, or a spiral binding on the side or something like that. And you're like, brother, we could put the-- we don't need the lines. The cursor will do that for you.

But people wanted to make some kind of connection between what they saw-- what they saw in the physical world, and what this new digital thing was trying to do. Skeuomorphism shows up in that book somewhere. I can't remember now where I wrote about it. But yeah. I mean, obviously, these pictures are just outstanding.

Just like people had kind of a cool, idiosyncratic, personalized, kind of a pain in the butt to organize blogosphere that existed, that Facebook just came and demolished and homogenized and standardized and pulled out of the control of individual people's spaces and into this corporate space, you could say that Blackboard did something very, very similar to campus web pages, that learning management systems came along and they said, we're going to standardize it all.

You don't have to create your own page anymore. Blackboard will create your own faculty page, create your own course page. And that's going to come with some kind of benefits of standardization. It's going to make it a lot easier for people. But it's also going to get rid of some of the wonderful idiosyncrasies of these things.

And it's going to mean that there is a corporate entity who is not accountable-- who's accountable to their shareholders and not accountable to the same values that we might have as a university, which is deciding what those things look like, much like when we move all of our blogs onto Facebook, you're not even accountable to shareholders. You're just accountable to whatever Mark thinks people should be doing in Facebook.

Yeah. In many ways, Blackboard fulfilled the dream of the university. Tilde Spaces did not scale. I believe the problem could have been solved. But then Blackboard happened.

Why would Blackboard happen? These are the instructions for SUNY Oneonta about how you would go about creating one of your Tilde Space pages. Log in to ACAD. Create a directory. Change to this directory. Create HTML documents. HTML Developers Jump Station. Set prot equals w colon r filename x.

You read about a page of this stuff and you're like, yeah, I can see why a lot of people-- why launching a Blackboard page might be fine. This is what the-- was this Blackboard? I don't remember what learning management system this was. Maybe it's Canvas. It's not Canvas. I don't know I can't remember what it is now.

This is the very first version of a version of this course that I taught 10 years ago. And this is the page that the system generated for me when I first created the class. So it comes with a bunch of these sort of-- not this stuff. That I added. But Syllabus, Class Sessions, Other Resources, Assignments, Collaborate, Information, Reserves Lists, Search this Site, Lecture Video. It makes a set of assumptions about what my course is.

It says, this is what the standard format of this learning experience should be. But maybe that's not at all what I want. It certainly doesn't make a lot-- if I had taught this class about-- this was in an education school. If I had made this class about education technology, about the experience of Indigenous kids learning on reservations, about, I don't know, the global education policy, intermediate statistics, it all would have been the exact same format.

They would have given the same standardized creation for this, which in lots of-- it makes sense in some kind of ways, and it's bonkers and other kinds of ways. Our courses are super different. Why should all of our courses have the same template? Why should we all be subtly, invisibly squished into teaching our courses the same way by these kinds of structures?

And of course, there's all kinds of physical analogs to this too. The way we design environments shapes the learning experiences that happen in the environment. I just read a beautiful sentence of this, which is something like-- it was something like, buildings have agenda for their occupants. The way that spaces are created, it doesn't tell you what to do, but it certainly guides you.

You walk into a room like this and you have some thoughts about the kind of learning that's going to happen in that space. Well, you're all going to be facing in the same direction, probably not going to be talking to each other a whole lot in that space. You're going to be writing with certain kinds of physical materials. If you try to use a laptop on those square tables, you'll have a hard time. There's no room for power cords or other kinds of things like this.

This is actually one of the most famous examples in elite private education in the United States, which is, there were donors to the Phillips Exeter School who were really concerned that, essentially, there's too much instructionism and not enough constructionism. They wouldn't have said it the exact same way, but they would have said something along those lines-- too much sitting, passive listening, not enough engaged conversation.

And so a bunch of donors got together and they said, in every classroom, we're going to pull out all of the chairs that look like this, and we're going to put in these tables, called Harkness tables. Some of the features of Harkness tables are that you need to be able to fit everybody in the class in an oval around the table. The tables are so large that they usually have to be built in different pieces and then shipped into the room, and then assembled inside the room.

They're incredibly heavy, but they make it so there is no front of the room. And at Phillips Exeter and other kinds of independent schools, they put these tables in every classroom. They put them in the English classrooms, they put them in the history classrooms, but they put them in the math classrooms, they put them in the science classrooms.

And the intention was to change the physical space in order to create certain kinds of learning environments and certain kinds of interactions in there. Now, of course, you can give a math lecture in a room like this, but it's hard to lecture for 52 minutes if you're standing here and half the kids either have their backs to you or have to rotate around or other kinds of things like that. It's designed to make people do that.

So you can think about, what agenda does this online space have for its occupants? What is it that a generic Canvas classroom tells instructors and students that they're supposed to do? You can look at these links later, but these are two of the folks who, as Blackboard was sweeping higher education, were amongst the most active in trying to have these conversations.

There was a book that was written about them and some other people called *Edupunks* and trying to make connection between the punk movement and music, very countercultural, do-it-yourself, kind of stand up to the man sort of thing. And folks like the "Reverend" Jim Groom and Alan "Cogdog" Levine. They have these monikers because if you were participating in social networks, you create handles for those kinds of things. But also, "Reverend" Jim Groom was a bit of a prophet of such things.

So what these systems really allow is a certain kind of coordination. It becomes very, very easy to say, all the faculty are going to have a page. You're all going to create at the same time. It's going to be automatically generated for you at the beginning of the semester. Even if you don't like computers, we're still going to be able to make you do it because it's not that hard.

But there are a couple of characteristics of it that I think are not so good. I've talked mostly about the stamped piece of it. There's a way in which the control of all of the learning artifacts is with the institution and not the people. So imagine, imagine an infrastructure for online learning and higher education where you didn't put all the stuff on someone else's web page. You put it on your own web page.

What if, when you went to do homework, you went to do writing, you went to ask questions, it didn't show up on the school's Canvas site, which you don't care about, but it was on your site in some kind of way? It was in some of space that you controlled. And the thing that was always craziest to me about these sites is that we delete them every 18 months.

It's a strange thing to go to students and be like, please pour in your best, most thoughtful, most interesting words, ideas. Oh, and by the way, 9 months from now, they're going to be automatically deleted. That's a strange feature to me of an online learning environment.

So me and other folks for a while were really interested in, well, what would an alternative to this look like? What would be something that was not Blackboard, that was not Canvas, that still could have coordination, but it would have some of these characteristics that the Web 2.0 open web movement had?

Like, it let students own their own stuff. It helped them develop some technology proficiency. It connected people to each other and to their work. It didn't just hoover up your stuff, churn it through, grade it, and delete it, but it would be something that you owned and cared about for a while.

AUDIENCE: What is in your hands?

JUSTIN REICH: Those are ice cream sandwiches. Yeah, good. Yeah. So it's a good-- it's a good picture. It definitely evokes some of these kinds of pictures. Some of these kinds of pictures ended up on professor Twitter handles in 2013. I didn't make that picture. I had one semester where, I don't know, some students were enjoying class, and they sent me a whole bunch of-- I don't know. How quickly can I find these things?

There's one of me. Are these going to be on here? There's a few. There's this one. This one. Oh, no, that's a real one. Justin is LeBron James. A little dicey to be doing this one these days. I probably wouldn't-- you probably wouldn't put white Justin into a black body anymore. But back in the day.

Yeah. For one day for class-- I think something terrible had happened in the world, and I made them ice cream sandwiches one day for class. And so they made that picture there.

AUDIENCE: What were you originally holding?

JUSTIN REICH: It was for-- [LAUGHS] We're getting to the real issues now. I think that I went to the International Society for Technology in Education Conference, and they basically grabbed a bunch of random people and took them to a photo shoot to generate their own stock photos. They wanted to have a whole set of stock photos that were from the membership of this organization.

And so it was just like-- I don't think I was holding anything. I mean, you can imagine this as generic invitation to some kind of thing. But that's where all that came from. Is this worth your learning time? Hard to say, but it's pretty fun. OK.

This you should remember a little bit. This is another branch of constructionism. All these ideas just repeat themselves. They get reinvented over and over again. These two Canadian educators, people who founded the 2007-2008 original massive open online courses. And they had this idea called connectivism.

And they said, part of the problem with learning theory is that it thinks that learning happens and knowledge exists inside people's heads, but learning and knowledge really exists between people more than exists within people. There's a famous line, which you probably all would agree with in some way, that the smartest person in the room is the room, that the collective capacity of people is where the heart of our intelligence lives.

Connectivism almost went further and said, maybe the only intelligence in the room is the room. Maybe your knowledge, your understanding doesn't exist without social convention, like language, like culture, other kinds of things like that. So this was, at first, an educational philosophy. Maybe it was an epistemology, maybe it was a philosophy of knowledge. But then it got translated into these pedagogical ideas.

And the pedagogical ideas were, say, what if you defined courses where their primary value was creating connections between people and ideas? One of the things Stephen Downes said about this, which you'll find it very connected to situated learning. He says, if you become a physicist, what happens? Well, you read physics papers, and you follow new ideas in physics, and you figure out where physicists talk to each other and where the physics lounge is and which physics conferences to go to-- I don't know-- what music physicists like, what television shows they find funny, all these kinds of things.

That is as much a part of becoming a physicist as learning formulas and theories and knowledge and things like that. What if we had educational systems that took that really seriously? Like, the job of a physics class is not just to have you be able to learn some formulas about Newton's three laws, but to connect to other physicists. That's kind of a cool idea.

One of the most radical things Stephen Downes ever said, he said something along the lines of, in my class, the content is MacGuffin. A MacGuffin is the thing in a movie that's not really important, that drives the plot forward. It's the briefcase that gets switched in the beginning, which helps two people fall in love with each other or something like that. The MacGuffin is the thing that you're chasing to make the plot move forward.

This is a radical statement for an educator. The content is a MacGuffin. The thing that I told you the class is about is a trick. The real part of the class is getting you connected to each other, to things that you're interested in, to other kinds of expertise. It's a very radical set of ideas, and there are a lot of people who are profoundly influenced by them and people trying to say, yeah, well, what could some genuine alternative architecture to Canvas that embraced some of these ideas of the open web of Web 2.0 of connectivism, what might it look like?

And so this no longer exists. I don't think either of those links are live anymore. But this is what the website for this class, or an earlier version of this class, used to look like. And here's how the infrastructure of it worked. At the beginning of class, folks were assigned to create spaces where they would do the work of this class. So you wouldn't have a learning journal. You wouldn't have a Canvas discussion page or something like that.

Go make your own blog. Go make your own Tumblr page. Go make your own Twitter feed. Go make your own Flickr page. Make all kinds of other things like that and do all of the work for this class in your own space. Now, one problem with that is that nobody can find that stuff anymore now. It's all on other people's things.

But that's a solvable problem, because we're going to build this thing called the Syndication bus. And the Syndication Bus is going to depend on this technology, which-- how many of you are familiar with real simple syndication? Is it something that you vaguely know exists?

So again, 10 or 15 years ago, this was considered an essential part of the web. And there are many people who would have told you, this is the future of how people will find things. So Jaren was telling us before about the YouTube algorithm kind of controlling what he watches and what he finds and things like that. An alternative to that was you subscribe to a series of feeds.

So you would find all the bloggers that you like or all the video bloggers that you like or whatever else. You would choose their feeds, and then you would have-- one really popular technology was called Google Reader, which just gave you the things that came out of those feeds. So instead of being bounced around by an algorithm to things that people think are popular or interesting and things like that, you have more control over that.

So basically what we did was, everyone would create their own online space, and then we would use this Syndication Bus to aggregate all those things. So effectively we would-- oh, where am I? There's an animation there that's missing. We would make a copy of each of these pieces, and we would pull the copy into the Syndication Bus.

So you owned your own thing, but we would use RSS to grab one copy of those things, and then we would aggregate them in different kinds of ways. So imagine if every time you wrote in your learning journal-- you didn't just write in your own Google Slides, but you wrote on a blog-- anybody could subscribe to that blog. But the course subscribed to the blog and hoovered all of those things up into one space.

You could also teach people other ways of aggregating things, like, any time in any of the spaces that you're working, you share something that we might be interested, tag it with T509 Massive. And then what gets populated in this Syndication Bus Twitter channel is all the tweets that people have that are about T509 Massive.

Then, when you showed up on the home page, I as the instructor would pick a few of these things. So there was a section called the Spotlight, where I would go through all the stuff that people were generating every week and pick a few things that I thought were particularly interesting, particularly important, particularly funny, stuff like that, and show them to people to feature them.

And then-- that's probably kind of less important. But then there are other spaces-- I could create spaces that were about a particular assignment. You could say, OK, everybody is working on your-- oh, I want to tell you how I graded the class. But I could say, everybody create your rubric, and then pull all of those things together, have a kind of rubric hub that everybody could see those things.

And then we had a space, I think it was called the Fire Hose or something like that, where it was everything that was coming in. There were probably 50 or 60 people who took this version of the class, and so there was no way that everybody was going to read everything that everyone else did. But a part of class every week was finding out, who are you connected with? Who are you finding interesting? Who are you learning from?

Oh, you four were English teachers before you came in this class? You should be networked with each other. Moreover, you should be networked to other English teachers. The things that you're generating, if you're putting a bunch of work into this class, why just have it sit in a discussion forum that no one's ever going to see again. Put it in this space where you can share with other people and stuff like that.

If you take this idea of letting people choose how they want to share, who they want to connect with seriously, the more and more you get to this idea of, there's no right way to do this. You're all coming to this class with different goals. Maybe some of you really want to connect with other edtech companies and are interested in being a founder or working for a startup. Maybe some of you want to go into education research. Maybe some of you want to go into teaching.

Why should you all have the same criteria for what you're writing about or what you're sharing? Why don't you just tell me what it is that you want to learn about? Why don't you tell me what your goals are for this kind of communication? And so people would create their own rubrics about-- essentially, you tell me what your blog is supposed to do, is supposed to accomplish.

I think at one point, there was a part of the assignment which you had to say, describe how your writing is going to benefit you and your learning, how your writing is going to benefit the other people in this class, and how your writing might plausibly benefit some other community somewhere else that you're connected to in some kind of way. This was a professional-- I taught this at the Harvard Graduate School of Education. So people were, for the most part, already coming in with some kind of professional communities from outside to network.

And there were lots of other people who were doing this kind of thing. This was a course called Connected Courses, which was basically teaching people across higher education how you would go about creating these courses. But people built them in anthropology. Probably one of the most famous ones, which I think still has a bunch of stuff which exists, is called DS106, Digital Storytelling 106, which was a course offered at the University of Mary Washington, but essentially syndicated to a bunch of other universities and also built in such a way-- you can probably still go to ds106.org right now.

And it was mostly about creative assignments. They had a feature called the Daily Create where, if you took this class four days a week, you were supposed to do a daily create. It might be something like-- my favorite one was, pull out your keychain and make a short video where you tell the story of your keychain. Where does each key come from? What does it mean to you? Other kinds of things like that. Figuring out how to make their way across the web.

So I told you this was a story, essentially, of a failed enterprise. Clearly, I'm not teaching like this anymore. You won't find many other classes. You'll find the idea is kind out there, percolating in different spaces, but probably doesn't really exist.

Why did it fail? Probably two big reasons. One that we'll keep coming back to, which I've termed the Curse of the Familiar, which is, it's just weird. It's different. It's unusual. It takes a bunch of time to learn. On the one hand, I think people who participate in these classes were like, oh man, I learned a lot of stuff about blogging, about using Twitter, about connecting with other people, about social networking. But, my guy, the class was intermediate statistics. That's not what you were supposed to be learning in this thing.

There were a handful of universities that built a collaborative infrastructure around this stuff, in the hopes that you could drive down some of the complexity. So this guy, Jim Groom, built a company called Reclaim Hosting, which tried to make it really-- universities could sign up to make it really easy for every student in the school to start a blog. And then you teach them all about blogging a little bit, and then maybe you could get away from discussion forums and have people do most of their short form writing on blogs. Maybe there are some people out there that are still trying it, but not that much.

And then another huge challenge with asking people to write publicly is that we are not all equally vulnerable to the consequences of having our writing be read. Anybody recognize this person? She's a woman named Anita Sarkeesian, who had a website called Feminist Frequency, which was one of the initial spaces that was related to what became Gamergate.

She made a bunch of videos basically about anti-feminist themes in video games, like how there's always a princess that needs to be saved, and the princess doesn't actually have to-- doesn't get to have her own character and things like that. And just piled on ruthlessly by all kinds of people, especially people who saw gaming as a hobby, who didn't want these tropes changed.

And so people get doxxed and swatted and all kinds of-- are you all familiar with Gamergate? Is that a phrase that-- OK. So I don't even remember what year this was now. I don't know. In the Media Studies department, we should be teaching a class called Gamergate. It was kind of-- it seemed ludicrous at the time, but it was a way of organizing groups of people to effectively suppress communication from subaltern perspectives, from people who are trying to say different kinds of things.

So anyway, for me as a pretty privileged white dude blogging my way through the world, it's relatively safe and relatively straightforward. But if I have 50 or 60 students in my class, they're all going to be coming from different perspectives, and they're all going to be inequitably vulnerable to writing something which catches the attention in negative ways of big crowds, or offends people, or messes up their relationship or other kinds of things. I mean, part of what you want to do in writing in a class is let people be experimental and try on ideas that they don't agree with yet or don't understand yet.

And then, when I was doing this in 2013, that felt a little bit risky, maybe. Yeah, I could imagine someone might take down a post that they decide wasn't well worded or disagree with, things like that. In 2024, it seems substantially more risky. I would say not just because of heightened sensitivities, but because actors in society have learned how to broadcast messages that appear online in various kinds of places and to use them to generate outrage and drive traffic and those kinds of things.

Oh, this was the company, Reclaim Hosting. And somebody should Google Reclaim Hosting and see if they're still known for education. It was a project that was basically-- it was trying to take everything that I just described and figure out, how do you make a really simple front end for it so it's not hard for people to build, but it still lets people own stuff? It still lets people be the owner of their own means of production.

But it's something that I think will-- by far, the most exciting part of teaching these courses was realizing that people were still using this infrastructure in various kinds of ways years after the course ended. So I think I taught this course in 2013. And still, in 2015, people were posting on their blogs, connecting with each other. I don't know, the equivalent of that would be, if you're in 18.06 now and it has a Piazza forum, what if, three years from now, you were inspired to hop back in there and still-- everyone's looking at me like, good god, I would never do such a thing.

But you wouldn't do such a thing because you don't own it, and it's not yours, and you can't take it in the direction that you're interested in. But in higher education, if we gave you an infrastructure that you had some control over, you might be substantially more-- I mean, at least the students at the time were interested in continuing to pursue these kinds of learning experiences.

But I would say the degree to which people feel much more individual threat about sharing things online, especially in really open spaces, and just the difficulty of the ramp-up time of building all this infrastructure, has made it more or less an interesting dead end and something kind of fun to learn from and explore. It probably also illustrates more of what you'll read about. This is an effort in higher education that basically foundered. You'll read about other kinds of things that foundered in different ways in K-12, or the challenge to make them not founder, for next week.

There's all this amazing learning that happens in people's informal learning experiences. Why is it so hard to bring those practices into school environments? What is the nature of school environments that makes it difficult for that to happen? Good. I think that's where I got to the end. What questions do folks have or what--

AUDIENCE: My question is, what place does online community building without the presence of instructors have in this?

JUSTIN REICH: Yeah. If this worked because you owned your own piece of writing-- I'm teaching this class at a professional school-- you might find that actually, what motivates you most to write these assignments is that you found a bunch of other sixth grade science teachers that are reading your blog posts, and you increasingly care less that Justin, the instructor of this class, is reading your stuff and more like, hey, I'm getting my ideas out there and connecting more with other Earth science teachers.

And that, I think, for a lot of-- when it was most successful, that for people just felt like work that was super real and urgent. The other thing is, most of the things-- I don't know. When people got responses, there wasn't a whole lot of-- there was probably some, but there wasn't a whole lot of, you are required to reply to at least two people kinds of things. There was a lot of, people would write blog posts, but they would write blog posts that tagged or posted back to someone else's post. So it was just kind of like a natural conversation that was happening and unfolding.

Where it was most successful, what you felt like as an instructor, is you were just putting some fuel for this fire to burn on its own. You're just like, here, check out these things. But then people would take them in the directions that they were most interested in and excited about. Does that answer your question? Other thoughts or things that--

AUDIENCE: How does this play into the Google Doc that runs this course?

JUSTIN REICH: Huh. Yeah. Well, some of it is-- probably the main lingering piece is that it's a pain in the ass to show my Canvas site to someone else. And one of the main things that I want to do is, I don't know, in my career of teaching, be able to quickly to explain to other people how I teach. So one of the best things about having the whole course live on a Google Doc is any new professor who's just starting teaching EdTech and Society, it's like, here's a whole course. Take it and-- I mean, they're probably taking it and shoving it bit by bit into Canvas, which I've done periodically for some things.

That any of you who want to sign up for my-- future people who are interested in this class, syllabus is there. I mean, it's even got the revision history. You can not only see-- nobody does that, but you can not only see what we did. I mean, I would also say, earlier versions of that-- when the web was more active in this way, over the summer, I would post, here are all the changes that I made to my syllabus and circulate it around the hashtags or other networks of people that were active in those conversations.

And people would definitely jump into the syllabus and add comments and be like, oh, this new book just came out, or these new resources came out and things like that. I mean, it existed as, for a period of time, a much more social document, again, when there were a lot of educators, especially people interested in online learning and education technology, who were pretty active in those kinds of communities. And so you could do stuff like that.

Now, it's mostly just a legacy of, editing that thing is so much easier than editing Canvas. Anytime I want to change something in Canvas, I have to do it in three places and click 15 buttons. The Google Doc, I just edit. Good. So that was a little bit in some of these ideas of peer-guided learning in higher education.

We'll see some more of them in K-12. I think you're going to read some stuff from Mimi Ito-- and what else did I make you do for next time?-- and Mitch Resnick about Scratch, which Scratch is probably the most successful peer-guided learning environment which has made its way into K-12 schools.

Although one of the things that we'll learn is that when it gets there, it kind of gets schoolified in ways that are horrific to the people who made it, but more to follow when we discuss that on Monday. Great. Have a wonderful rest of your week and weekend, and I will see you next week.