How He Boosted Female Enrollment in Emerging Technologies from 6% to 82%

Host: Donna Milgram, Executive Director, Institute for Women in Trades, Technology & Science

Presenter: Mark Evans, Program Chair and Instructor of Emerging Technologies, Athens Technical College

Interview Transcript:

Donna: Hello and welcome to the *2018 STEM Success for Women Telesummit*. We are going to have an amazing conference together. We've brought together 15 accomplished speakers and over 1,000 educators, who will convene over the next two weeks. We'll be showcasing real life in the trenches educators, and change makers who are making a difference in their schools, in their classrooms, and in the community of STEM and Career and Technical Education.

They come from two-year, and four-year colleges, big cities, small towns, and rural populations, and Hispanic-Serving Institutions, and diverse communities. They live the daily challenges of recruiting and retaining women and underserved populations in STEM and CTE programs, where ultimately the success of the United States to continue as a world leader in innovation and the advancement of technology is being tested.

We need to do a better job bringing people from all places, and walks of life to the table, designing, building, and leveraging technology for the future. Thanks to our funder, the National Science Foundation, for making this conference possible. I'm your host Donna Milgram, the Executive Director of the Institute for Women in Trades, Technology, and Science. I really want to thank all of you who are taking time out of your busy schedules, to attend this Telesummit, because you care so much about broadening participation of women in STEM.

Okay, our guest today is Mark Evans. He's the Chair and Instructor of Emerging Technologies at Athens Technical College in Georgia, and he's one of my heroes**. His Emerging Technologies class went from a baseline of only one female student, before he participated in our WomenTech Educators Online Training, and it went up to 15 female students, the very next semester after the training. And fall 2016, nearly half of the 43 Video Game Design and Development certificates at Athens Tech were awarded to female students. By fall 2017, the program grew to 70 students: 22 female students, and 48 male.**

Mark Evans

Welcome Mark, and thank you for joining me for the *STEM Success for Women Telesummit*. Now, I know your program is in a very male-dominated area, and I'm sure everybody listening wants to know how you did it. **Can you tell us what the biggest change was that you made, in the way that you did recruitment?**

Mark: Well thank you for having me Donna, and hello everyone. I think the biggest change for me was, I started looking outside of my silo in small colleges like mine. We sometimes look at ourselves in a particular silo. For instance I belong to the Technology, Engineering and Manufacturing Division, and so I would really recruit to that baseline, because quite frankly the students are engaged already. They have

an interest in the things that I do already, so to me what I had to do was take a look at the college in a very holistic way, and go at it as a whole college.

That meant branching off into the Gen Ed's, into the Life Sciences divisions, and also into the Business divisions. What that did is, that opened up an entirely new group of people for me to not only expose to Emerging Technologies, but also to recruit.

Donna: Okay, now I know that you used multiple recruitment strategies with those groups, and our research shows that actually multiple touches are most effective from a marketing and outreach perspective**. Can you describe for our listeners some of the recruitment tactics, the kinds of events?** Especially, I've been talking about your Spheros and drones. **Describe what the tactics were that you used again with this different audience, not your usual tech audience.**

Mark: What I did is, I went and talked to the different Deans of the different divisions and I was like, "Hey, we're a new program and we're doing this new program with Donna Milgram, and we want to bring more women into STEM, and in the Life Sciences." We have a lot more women and when I say the Life Sciences, I'm talking about like your nursing, radiology, radiography, dental hygienist, all of the things that pertain to nursing and healthcare.

I went to the Dean there and said, "Hey, would it be all right if I just came over a few days out of the week, and just in passing just have some drones flying, and let people touch and try, or have some Spheros running around?" He was very receptive to this, and I was very fortunate that he was very receptive to this. He too was very committed to making the college a more inclusive place, and one of the things that he'd been concerned about, was the fact that to get into his programs, you have to have a really super high GPA, 3.7 or better.

A lot of times what happened to it, we'd have very good students who just didn't make that cut, and a lot of them would just drop out and not really try anything else. And so he was really pleased that I wanted to do that, especially in his area. I did, and it was magnificent just for me. I think I had a lot more fun than the students to be honest with you, because there's a real joy in teaching as we all know, and to have someone drive a Sphero for the first time, and navigate an obstacle course, or to go outside and fly a drone.

Really you see that, almost that awesome birthday present feeling, that when you give a child a gift, and you give them exactly what they wanted, that's exactly the kind of thing that I would get from the people who would participate.

Donna: So just for our listeners, the Health Sciences students that you're talking about, **these are primarily nursing students, or pre-nursing. Many of whom ultimately don't end up in the program, because there's not enough space for them, and that majority of them end up just leaving the college altogether. Is that the group we're talking about here?**

Mark: That is exactly the group that I'm talking about. We only have so many spots for so many people to be in that program, and so it's fiercely competitive. One of the things that we were always worried about as a college is, well what happens to that kid who has a 3.49, who just misses the cut because they didn't do so well in organic chemistry?

Well what happens with them, and so by setting up these little booths and having these conversations with people, really for some of them, it gave them an opportunity to try something new. And then maybe if they didn't get into the program of their choice, they would really fall back into mine. I don't mean fall back in a bad way, I mean in a way where it wasn't what they went to, what they originally started with, but they are also glad that they came along.

Donna: Now I remember when you first told me about this, that you were telling me that there was like a couch, where everybody would congregate, and **you have the Spheros and drones, and didn't you have like a little sign, that also said you make this much an hour? If you go into Emerging Technologies, do I remember that correctly?**

Mark: Yeah that's exactly right, so there are these big windows, and there's this couch area over in the actual Life Sciences Building, where the students would just come and hang out after class. A lot of them, they've structured their schedule so that way they have about 30 to 35 minutes between classes, and so they would just go in this area and hang out, and that's where I would go. I had a little sign and it said that "the average Emerging Technologist who goes into drone flight makes $74 an hour."

That was a real conversation starter with people, but really what got people into what we were doing, was them actually touching the technology and trying it out. I had one person who she absolutely slammed this drone into the building, and I was like, "Hey it's just part of the deal." I said they're part of the thing that we are going to teach you is, what do you do when this happens? So I was able to have a real quick tutorial on how to fix a rotor, and it was pretty cool. There were lots of different things.

Donna: Now, was that the only thing that you did, was have a personal encouragement conversation with the nursing students who came by, or did you do some follow-up activities in addition to get them to actually get to the point where they actually decided to enroll in your course and program?

Mark: Yeah, so I would get their emails, their student emails and stuff, and like I said I spent a lot of time over in that building. I got to know a lot of people personally, and then if they were super interested in something for instance, one of the big things was 3D printing. A lot of them needed to do something with bones, and so a lot of them were like, "Hey, can we 3D print a bone?" I was like, "Well, yeah." So we actually have what we call the Technology Nest here on campus, and we would go over there, and 3D print their bone.

They were like, "Well this is really cool." I showed them how to use Blender, which is a 3D object making program, and a lot of them were like, "Wow this is really neat and I've always wanted to do art." I'm like "Well hey, there's a real need for this especially here in Georgia, because of the movie industry there." They need 3D modelers a great deal. So that would lead the conversations about different jobs, and different things that you could do in the Emerging Technologies field.

Donna: Great, now I know that we discussed some other things that you did such as a Girls Who Code Hackathon. **Could you talk a little bit about that, and how you, was that just the Health Sciences students, or did you get others there? How did you get people to come?**

Mark: We just had a big college wide hackathon, but I geared it. And what it was, it was a video game design hackathon, where basically I took a Life Science to standard. I was like "Okay, well we need to develop a game around this particular standard." And it was about infection, and how diseases are

spread and things like that. What I was able to do was, I was able to use their knowledge of Life Sciences and what they'd have been studying. Then translate that into how you could use that in Emerging Tech.

For me, I think that was a big eye-opener for a lot of the women who came that next semester, was that they didn't feel like they had wasted their time. They weren't abandoning, they were just going about what they wanted to do in a different way, and so that was a really, a really cool couple of days. To me, I think that was a linchpin for most of them, is that they were looking at what they were doing. By that time, some of them had figured out that they weren't going to make the cut. They were looking at well what's a good "plan B", and by me doing that and really playing towards their strengths, they were able to see Emerging Tech as something that they would like to do.

Donna: One of the things that you were doing was you're really appealing to what research shows overall that in general, many females are interested in STEM, interested in technology to help others. And you were tuning in particular, to helping others in the Health Sciences field, because this was one of your important target markets. Now, you went from one to 15, now were all of them Health science students of the 15 the next semester, or were there some of the students that came from other areas? Talk a little bit about the variety of where they came from.

Mark: I really concentrated mostly on the Health Sciences, because of the rate of students that we lose from there. And so I thought, to me, that was the path of least resistance. Also, on the Business side, when I would go and I would talk about what I would do, I would actually do the same stuff I did at Health Sciences. But I didn't do it quite as much for the Business folks, because they just don't have that same area, and the classes are a little different. Some of them are at night, so it was hard for me to really establish a rhythm for me to be there.

The ones that I did talk with, a lot of them were like, "Hey, I didn't know what to come to college for, so my parents said to me that well a business degree is something that is always useful." So that's why they got into business, and I said, "Well what is it that you want to do?" Some of them would be like, "Well, you know what I've really wanted to do, I've always wanted to be an artist", or "I've really wanted to work in sound design", or "I really wanted to do video." Again, my program, we use a lot of that stuff, and so I was able to again translate their wants into an actual tangible thing that they could turn into a position later on.

Donna: Great. I think that many other two-year colleges are in a similar position, where they have a program like nursing, many students want to get in, but only a small percentage can, and then they actually lose those students to the college. It might be in another area, or maybe they're students who are unsure of their major, and so they go into business or general studies. **Often what I hear is, "Well we can't go to another department in the way that you did." So I'm curious, how did you get this kind of support in order to make that possible at your college?**

Mark: Well a lot of it is, it really begins at the top with our president. Dr. Daniel, is really into making us understand that we are one College, we're one community, and we're one group of people. And that before, when there were other administrations here, there was this real problem with head counts. Like you've got to have at least 50 people in your program, or your program is going to get axed, and things like that. What happened is, that the little fiefdoms started to show up with and when you have fiefdoms you have walls.

Then all of a sudden, there was this, "Are you sniping students from my program? Why are you doing that? Are you recruiting against me?" And so on and so forth. In fact Donna, I think one of the very first things that you and I talked about was, "How do I work around this, this thought and idea?" Because it was so prevalent here. But again, having a new administration come in, that is committed to this idea of one college, I had a lot of support from Dr. Daniel, from my vice-president James Price, who really encouraged me to go and talk with the Deans.

I didn't make it a big surprise, I talked with the Deans first. I asked them to take this to their Program Chairs, and if their Program Chairs had any objections to come see me. I did have a couple of Program Chairs who were concerned about what I was doing, and I was able to say, "Hey listen, this is about keeping this kid enrolled. This is about keeping this student here, so that way she can go forward in her life and isn't that our job as teachers?" If I wanted to worry about numbers, I would have gone into accounting.

What I'm here to do, is do real life change and when you present that to your colleague, they very often respond positively. Sometimes they have a student, who they know is not going to make it, but there are really a good student, and so they actually may guide them to you. The thing is that you've got to look at your community in a very holistic way, and be open, and be honest. I think that's one of the things that was really important, and one of the aspects of Dr. Daniel's leadership was that she allowed us to have this open and frank conversation, without having to worry so much about numbers and things like that.

Donna: You collaborated and in essence it was a win-win, because you were able to broaden participation in a career pathway that's very male-dominated. And actually some of your students ended up getting certificates in that area, and then also that you didn't lose those students to the college, so that's great. **I want to ask you if you have any stories from female students that are actually working in the industry.**

Mark: Right. I actually have a couple, I think the one I'm most proud of right now is a young woman by the name of Mary, and she was one of the students who came. She actually came from the business side though, she didn't come from of Life Sciences, but she really got into Augmented Reality (AR). For those of you who are not familiar with Augmented Reality, it's basically like Snapchat. I'm pretty sure we're all familiar with Snapchat. Either we've seen it, or we're telling our students to put it away. She really got into that technology, and has started her own AR business here in Athens, and is now hiring my students to work for her.

Donna: Wow, that's exciting.

Mark: Yeah, she's really doing a great job and a lot of it is because she was really motivated, and it really did fit into that art that she wanted to do, but yet one of the things is that when you're going to college you're trying to always think, "How can I do art and make money? I don't want to be a starving artist? How is this?" Well, Augmented Reality gave her a way for her to fuel her passion, and be a leader in her community. She's awesome.

Donna: Can you give me a sense of, if you come out, can you really make $70, did you say $73 an hour with just a certificate? **Give me a sense of what kind of salary range someone just coming out might make, and what kind of jobs?**

Mark: We have many different facets of our program. One of them is in app design. And in application design, you can go and work for, for instance, I've got a young woman who now works for Verizon. She makes custom apps, and she's making $45,000 a year at 20. What am I doing wrong?

Donna: What degree did she get?

Mark: She got her certificate in Mobile Programming.

Donna: She got a certificate only, in Mobile Programming, and she started making $45,000 right away in mobile apps?

Mark: Yes.

Donna: That's fantastic, at age 20 that is great. Now, are there others? **Can you give me a sense of maybe another couple of, types of jobs that you could get?**

Mark: One of the ones that I get calls for every day is, drone operators. What we do here is, we get students prepared to take the FAA 107 exam, to be a licensed drone operator. Because drones are being used pretty much in every industry that you could possibly think of, and some that you probably haven't even considered. The biggest employer right now, that is recruiting my students, is Georgia Power. They're wanting to redo the entire electrical grid in the northwestern corner of the state, which is part of the Appalachian Mountains.

They can send survey crews up there, but that takes forever, where a drone can go and map out the different things at a third of the time as a survey crew, and be able to cover a much different area, and be able to do something. You do have to take in effect there's weather and other factors, but it's a really safe, and inexpensive way to do that. Another industry that I've got-

Donna: Can I just, sorry can I just ask you, what kind of ... I mean that sounds exciting and cutting edge. **What might you make being a drone operator coming straight out of your program?**

Mark: Let's ... I don't really know the answer to that question, because I haven't asked, which I probably should. I do know that they drive much better cars than I do now, so if we're going next to my Nissan truck compared to their Ford Mustang, they're doing pretty well.

Donna: Would that be again with a certificate, or would you be getting an A.S. in Emerging Technologies? **What kind of education would you need to start with Georgia Power as a drone operator?**

Mark: Actually, you just need the 107 exam, and have some flight time really. One of the things is that Emerging Technologies is the Wild West of engineering in that, there are lots of jobs and things that are happening that we never really anticipated. The idea of having someone who can fix a 3D printer, that is going to be a real position in the next two, three, four years. You can get a 3D printer now at Sam's Club for $200.

Donna: This is so exciting, and it's exciting to have women be a part of this new picture. Now, we're going to be finishing up the interview portion, and go to our questions in a moment. We've got some

questions, but I want to ask you a couple more questions before we close. **One is, what was your biggest takeaway from the WomenTech Educators Training?**

Mark: I think the biggest takeaway was, the idea of sitting and just spending time on this issue. We were able to, Dr. Daniel gave us the time to be able to think about, "How do we get more women into STEM?" I'm not the only one who did this, also Dr. Powell collaborated with me on this, and he and I spent a good deal of time figuring out, "How do we get more women into nanotechnology? How do we get more women into drone operation, into video game design and development? What are some strategies and things that we can do?" Having that time, and really Donna, the things that you put together, and the questions that you ask during the training really made us be very reflective on what we were doing, and how we were presenting information.

Donna: Yes, you worked with a team and developed a plan, a Recruitment Plan and a Retention Plan. **By the way, could you share with everybody also what your retention rates are? We haven't mentioned them, but they're really quite good.**

Mark: My retention rates are in the 90s, and a lot of it is because what, okay so getting them into the door, was the easy part. I know that that sounds ridiculous and it is hard, but out of the two things, getting them through the door is easy, getting them to the stage to walk across and shake Dr. Daniels' hand, and get their certificate, or get their AAF requires us to really think about what we're doing, and how do we build community, and how do we keep everyone on track.

So coming up with this cohort model that we talked about in our training, in my program really works out well, because what happened, and I go back to Mary. Mary was able to see that there were some people who were really good. There were some women who were really good at building 3D models, and there were some women who were really good on the programming, and who really liked to code. What she was able to do is work with them, so when she started her business she was able to say, "Okay, hey Kat, come on over here. I really need some 3D models made. How would you like to work for me for $X?"

For us, that was the big thing, was creating this community of just awesomeness, that you can do this. A lot of times, once they would get in, they would be like, "I'm overwhelmed," and there's all this tech talk and things like that. All of a sudden you would sometimes, and it usually happens like the second week when we're starting to work with Blender, when they get it. This happens with my male students as well, but for that they just got it.

Donna: That's great.

Mark: They're like, "This is it, and this is what I want to do. This is why I came to college, this is what I want to do with my life."

Donna: That's great. **Now in closing, do you have, if you were just to give one piece of advice to other educators that are themselves trying to increase the number of female students in their STEM and CTE courses, what would it be?"**

Mark: Boy that ... I think the one piece of advice that I would give is, to just get out there and have stuff, and get people to touch, and try. I mean go to the malls, go to churches, my goodness all of the different

community things that I went to, not just over in the Life Sciences building, but anytime I got a call from a high school, or I got a call from another college, or if I got a call from a Rotary Club, or the Boys and Girls Club or whatever, I went.

We've got to get people with their hands on this stuff, and with a digital divide. A lot of times, people just don't have access to this type of technology, and so by giving them even just a taste of it, makes them want more. If we can get that drive for them to want more, they'll come to us. So my big suggestion would be, is just to get out there, go and talk to your colleagues, be open to your students and just get people to try stuff.

Donna: Great, thank you so much. Now, it's time to take the questions from the listeners, and we've actually set aside half hour to do so.

I am going to start with a question about, this is a great question. *"**When you went to talk with the health career students Mark, was it just yourself**?"* I mean you're a male, or did you bring some female faculty, or students with you?

Mark: Well, unfortunately it was just me, and I say unfortunately in that I wish that I would have had someone to go with me, but again I was starting a new program, like there are no other Emerging Technologies programs in the country. I'm building out a program, while I'm trying to recruit, and even though I had a lot of support from administration, there was still small apprehension, especially in the Computer Science wing about what we were doing, or what I was trying to do, but yeah it was just me. I'm a pretty engaging person.

Donna: Indeed you are, but I want to point out that often, I have had male professors, teachers, and instructors, like yourself successfully recruit female students. It's great if you can also bring a female student with you, now you've got some. It's not always possible, and I have seen other male instructors like yourself have success, by being welcoming and by using the personal encouragement conversation that you develop in the WomenTech Educators Training. In a way, I'm glad that that illustrates, "Yes, you can be a male instructor and successfully recruit."

Another question that I see is, *"**Do you ever work with more mature students?**"* You mentioned that 20 year-old student who graduated. I know that the average age of students and community college is 29, so are most of your students younger because it was Emerging Technologies, or some older? Any of them more mature students?

Mark: My program does skew rather young, the average age is about 20 to 21 years of age and there, so I get a lot of students that are out of high school, who are really into technology already. They hear about us, or they come to a career fair where I'm at, so there's that. I have had older students, I have some older students now. Actually my oldest student, Miss Sarah, she is in her 80s, and in the state of Georgia if you're over 65 you can take technical college courses for free.

She heard about what we were doing, and she actually came by at one of the Life Science stage one day. She was a nurse in her previous career, and just really liked what we were doing, and I've now hooked her. This is her second year with me.

Donna: Wow, that is exciting. She's in her 80s, wow.

Mark: Yeah, she's in her 80s, and it's really great to watch her work with the students, and it's great to see them actually take a leadership role with her in it. For me, that's always been the big thing is that, if in technology and it been my experience and not only in academia but in business, that you've got to be able to have a real conversation with people who may not understand what the technology is that you're talking about. Sometimes where Sarah doesn't actually understand 100% of the time, and they actually take upon themselves to get her to get it. Then she teaches this other group, I mean it's really a very cool interaction.

Donna: Very nice. Now another question that I see is*, "Where did the students come from?"* At the end, you mentioned a whole bunch of different places that you went, but I know that you took a look to see where the most of your students came from. Were they mostly students who are already at the college, who maybe were really uncommitted to a major, or maybe didn't make it into Health Sciences, or were they external? Where did the majority of your students come from, your female students?

Mark: The majority of my female students in the beginning came from other colleges that they either didn't test into, or they didn't have a space for things like that. What happened is that those women now, are talking to their friends and peers, and they're actually getting them to come here and check stuff out. My classroom is completely open and well the other day, I had a student who brought her niece in. Now her niece is 14 years old, she can't enroll yet, but it was great for her to be here because she could see what we were doing.

She could see that her aunt was doing it, and she was like, "Well, if you can do this Auntie, then I can do this as well." As she was leaving she was like, "Have you ever heard of dual enrollment?" I'm like, "Yes, I know about dual enrollment." She goes "Well do you guys-", and I'm like "Yes we do", and so it's starting to grow now, and it's starting to get out into the community, but again a lot of it is, you have to just be open, and you're going to have to spend that time.

Donna: I want, because you know how big I am on the difference between career awareness versus actual enrollment, I just want to be clear. It's great that she brought in someone at a middle school age, but that's not someone who's going to actually enroll. What I'm hearing is that initially, the students came from other internal markets in the audience like nursing, or business and now they're telling people that are their friends, or their relatives. Are some of the people who actually are enrolling now, are they from in the community and from word-of-mouth? What I'm hearing is word-of-mouth. So aren't some of the people actually enrolled currently that are female coming from word-of-mouth?

Mark: Yes, yeah, and a lot of that is coming from the high school staff and things when the recruiters bring the different high schools here, they definitely bring them here and because like I said, I keep my classroom open, so we have a tour in here a lot and able to really capture that imagination, so yes.

Donna: Okay, and so are you still seeing, you mentioned that the average age is 20, 21. Are you still seeing some students come from internally in the school, and then some students are coming from high school? How is that playing itself out?

Mark: It's about 30/70 right now with the 30% being the internal, and the 70% being the external.

Donna: Okay, and initially it was like the reverse?

Mark: Yeah, yeah, so to be honest with you, I haven't walked over there, and talked to the Dean of Life Sciences yet. I wonder if they just got more instructors, because they were trying to, prior to seeing how successful I was.

Donna: Okay, now in terms of, someone has asked if you still have female students right now. "***What are your numbers looking like right now?***"

Mark: My numbers right now if we look at fall, and the fall numbers are the best ones, there are 22 female students and we have 48 male students that were enrolled this fall. Again I'm seeing we're starting to do our pre-enrollment for fall and summer, and I'm seeing a lot more, actually I've seen more women than I have men.

Donna: So you're maintaining having female students, it wasn't a one-time thing, that's fantastic.

Mark: No.

Donna: Now another question that I received is, ***"What is the How to Talk to Female Students Training you quickly mentioned?"*** That is actually a personal encouragement conversation, is actually one of the things that you learn in the WomenTech Educators Training. I'll talk a little bit more about that at the end, we also have, if you're online, if you want to talk about how to have more female students in your school there's a link that you can click to put in your information, but there's in the training itself, a number of required elements in the Recruitment Plan, and one of them is how to have a personal encouragement conversation. You actually create a script as part of the training. Another question that I have is, "***What did it cost you to do this kind of recruitment, Mark? Was it very expensive?***"

Mark: I had a whopping budget of zero to do this.

Donna: Zero?

Mark: Yeah. Well part of it is, we were a brand-new program, and so when I was brought on to create this program, they weren't sure how it was going to be received, and the response. They didn't put a lot of money into it, and so what I had to do was, I had to be strategic and figure out how to best use my time. To me, that was over and I'm not saying money's not important, because we all know it is, but for recruitment and having those conversations, what was the best way for me to effectively manage the time that I would need to do that. Now I've got budgets galore to do everything, but-

Donna: That's rarely the case, and in two year colleges, so I know that's a joke, but the focus, and the training is on low-cost, or no-cost strategies.

Mark: I'm sorry Donna, I'm sorry I didn't mean to cut you off, but that is exactly right. One of the things that you made us do and with the different sections that we went through with you was, how we can use in an effective way what we have. I had Spheros and drones, so I was able to use that stuff that the college had purchased for me to use as a recruitment tool.

Donna: Another question is, ***"How did you get the budgets for the Spheros, drones and robotics***?" Was that something that the college invested in, to have the Emerging Technologies program, how did you get that budget?

Mark: I actually applied for a Samsung grant, and at the time Samsung was doing this mobile bus tour, where they would come out with Spheros, and drones, and things, and they had a Raspberry Pi Workshop in their technology bus as they were calling it at the time. I got a $5,000 grant, but it was something that I had to write, it was something that I had to do.

The college, like most two-year colleges as everyone who worked through your college is aware of just, we don't get that type of funding. I was very fortunate that I was able to find this, and make a very compelling argument to Samsung.

Donna: Yeah indeed. Now, another question I have is, **"Do you have recruiters at your college?"** Did you prepare them to do this, or is this again something that you had to do from within your program?

Mark: It's something I had to do within my program. We do have college recruiters, we have a college recruiter, and she's great. Ashley is wonderful, but she has to recruit for the entire college. When she goes out, she talks about the entire college. Now, the cool part about having an open classroom is that, whenever there is a tour, she knows that she can come here, the students can see some cool stuff happening. That does make for a better tour for her, but as far as recruitment goes for the program, 95% of it happens right here with me and my students.

Donna: Great. Now I'm going to go to some retention questions that we have, and one of them is around the community building that you mentioned. *"How did the male's deal with it, and did your retention rate go up for everybody once you did community building?"*

Mark: I'll start with the last part, yes. What we did was, in looking at what we were doing for the program that we were working with, Donna, was this idea of a cohort model of which is, you would think it would be a no-brainer, but for some programs it just doesn't work as well. For my program in particular, it really works well especially since most of the jobs that they're going to be going into use some team based, or community based approach, where you have scrum boards, you have milestone meetings, and things like that.

We were able to begin building that, and we would just do basic stuff, we play games. I know, and I know it sounds ridiculous, but I had one time, there were six games of Dungeons and Dragons going on, and they were all into it, because they all wanted to finish this thing together. We would do hackathons, we would have these pizza days where I would go and buy a bunch of pizza, and we would just sit around, we would just talk tech.

Normally around like the Apple conferences, or the developer conferences, where we would just all sit around the projector, we would listen to what they would have to say, then we would eat, we would talk about what it is that we saw. So my male students at first, there's always going to be that stupid misogyny that comes from high school. So, how do I quickly kill that, and how you do that? You put them in a room with strong women who are empowered and that normally ends that foolishness right away.

In fact whenever I have different things where they have to break up into teams, I am always 100% of the time, if I have a male program manager or a project manager, the first person they normally get is one of their women classmates, because they know that they are effective and can do the job.

Donna: Great, it sounds like a lot of fun, and you're doing things like putting females in leadership positions, and rotating doing teamwork. All are some of the principles that we talked about, and I just want to call out in order to build that community and have everybody be able to work well together, and overcome some of the silliness as you described. Well that leads to another retention question which was, ***"How do you keep your female students engaged when there aren't that many female role models in this area of Emerging Technologies?"***

Mark: I always like to say it's always great to be first to the party, and why can't you be that role model? Mary has really taken on that mantle, and a lot of it is that there are, I mean there are great women out there, Hedy Lamarr for instance. We wouldn't have Wi-Fi without Hedy Lamarr. We all know her from her movies back in the '30s and '40s, but without her theory, there wouldn't be Wi-Fi. They're there, it's just unfortunately we have to uncover them, and again I think that we now live in a time where women don't mind taking on that leadership role. They want to be that person, they feel empowered to be that strong person, and it's great.

I have different little personal anecdotes here and there, that I could go on all day about what I have seen because I make them volunteer. I make all my students volunteer, and some of the times they go and they'll do a small little hackathon at the Boys and Girls Club, and the stories that they come back with are just amazing.

Donna: You're actually growing your own female role models in this very new area, and encouraging them to help recruit others, and be role models in the community. That is wonderful, wonderful, wonderful. Well, I'm just going to take a couple more questions, and then I need to ask people to stay on to do a very brief evaluation for the National Science Foundation. I see a question about, if your students, if any of them come from a rural environment, and we actually have three talks coming up that are from very rural areas, schools from very rural areas. **"*Do you have students from rural areas in your college?*"**

Mark: Absolutely, we serve 10 counties in northeast Georgia and eight of those are considered rural counties, so yes. I have a lot of students who come in from ... I've got one student she drives 50 miles from Elberton, to come here to go to college. So yes, we have a lot of stuff. Again, drones in agriculture are huge.

Donna: Great, okay. I want to also mention for those who are listening, that the other talks that will be specifically from very rural areas are day three. Thank you again Mark, for being our opening speaker, and to all of our participants, and the many wonderful questions.

Mark: Thank you, Donna.