Increasing Retention of Underrepresented Minority Engineering Students from 63% to 95%

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

Presenter: Virginia Booth Womack, Director of the Minority Engineering Program at Purdue University and National President of the National Association of Multicultural Engineering Program Advocates (NAMEPA)

Interview Transcript:

Donna: Hello, and welcome to the fifth session of the *STEM Success for Women Telesummit.* My name is Donna Milgram, Executive Director of the Institute for Women in Trades, Technology, and Science, and I'm so excited that all of you could join me and our very special guest speaker, Virginia Booth Womack, today. She's the Director of the Minority Engineering Program at Purdue University since 2004, and she's also the National President of the National Association of Multicultural Engineering Program Advocates (NAMEPA) since 2015. Virginia is a Purdue graduate herself with a BS degree in Industrial Engineering and a BA degree in Psychology. She has 18 years of experience in engineering, manufacturing, and is currently a PhD student in engineering education.

Virginia Booth Womack

While at Purdue, Virginia has used her engineering background to address retention and academic performance gaps between underrepresented minority engineering students and the majority population. **First year retention rates for underrepresented minority students at Purdue have grown from 63% to 95%, and first year academic performance has increased by 40%.** Welcome, Virginia, and thank you so much for joining me for the *STEM Success for Women Telesummit.*

Virginia Booth Womack (Virginia): Thank you, Donna. It's a pleasure to be involved in this Telesummit.

Donna: Now, you've led Purdue's Minority Engineering Program for 14 years, during which you've used your background as an industrial engineer to increase retention rates of underrepresented minority students to 90% plus, and I actually saw that in 2016, the retention rates for African-American engineering students was actually a little higher than the overall student average. I just want to say wow. **I'm impressed and I'm so excited to learn about the process you used to bring about these kind of results, and that's what I'd really like us to focus on in this interview, which is what process did you use to get there?** Because I know that you can't replicate exactly what someone else is doing, because we have many listeners from many different colleges, many different career pathways, many different programs. So, if they did exactly what you did, it may still not work. **I'm wanting for you to share the process that you used to have these kind of fabulous results at Purdue.**

Virginia: Well, Donna. I really appreciate the accolades and everything that you've said, and I'm happy to share with the audience what we do here at Purdue. I need to start out with the need for strong leadership at the university. We do have College of Engineering faculty and administration, our Dean, they're very much supportive of these types of programs. They're very vested in understanding how to improve diversity and they're committed. I think at the onset, you need upper level management that

believes in what you're doing and that gives you the leverage and also the support to get the work done. So, I need to start with that.

As an engineer, when I first came to a Purdue, it didn't seem like a job change I would make because I was so deeply entrenched in manufacturing. I worked in an engine facility and we would bring in new blocks and we'd get 100 blocks in, and, of course, I had to get 100 engines out the door. And anything that didn't come out, I had to understand and try to fix. Why that block didn't make it through the process? Where was it rejected? Off of the line and was it a mechanical issue? Was it something in the block itself? Exactly, what caused it to fail? And that's where you focus your energy so that you don't have repairs or you don't have what in manufacturing we call scrap. You never want to throw something away.

So, when I came and looked at this position, it changed from me leaving manufacturing and going to academia to me actually bringing the engineering skillset into an environment where I would get more satisfaction than I'd ever get out of an engine, and that's trying to resolve throughput issues that pertain to students. I'm very, very committed and very connected to student success, and that's another bullet point. Student success has to be the focus of what we do at a university, whatever type of university we're in. When we looked at what was happening with underrepresented minority students, I needed to do a deep study of the past history, get data, and I think this is the part where we talk about Purdue versus other institutions.

Every institution has to define the problem. You have to do that background homework. Find your baseline for the metric that you want to change and for us, the thing that I felt was most in my area of focus. The areas that I could actually touch with my work and my staff in this office would be the first year experience the students have when they come to Purdue, the first year retention. That's something that I felt was definitely within my space, and the first year academic performance of incoming freshman students. We looked at, historically, how do students perform first semester? And we saw gaps between underrepresented minorities and total cohort, and then we unpacked that to find out where those academic issues may have come from. We looked at all incoming metrics for students that came into Purdue that were underrepresented, and they were on par with every other student that came into Purdue. There's nothing wrong with the student coming in the door, so what's happening in the classroom?

It seems that the struggles in the classroom were sort of similar with other ethnicities, and I want to just sort of push to the point because I tend to ramble. I don't want to do that. But when we began to look at student success at Purdue, there was a big issue around transition. If all students come in the same way, they should process in a similar way. We found that for underrepresented students, it was just acclimating themselves to the Purdue environment, to the climate here, understanding that they were welcome and that they were included, and that the work that we require students at Purdue, it's a little bit different from what they went through in high school. So, how do we create a transition program that helps students make that leap from high school to college?

The boot camp, which is what most of the metrics that you spoke about were tied to, was simply a simulation of a first semester at Purdue for incoming freshman. We would take a semester's worth of work, crunch it into a five-week simulation, and when the students would come, they found themselves in sort of a real boot camp. I guess, I should just say that.

Donna: Sure.

Virginia: By the end of that five weeks, the students were in a better position to compete.

Donna: Before we go talk about the boot camp, can we just go back? I also love to look at data and in our WomenTech Educators Training, the colleges that we work with, that's one of the things they do is they look at the baseline data for the courses they want to impact. Both from an increasing female enrollment perspective, but also retention, not only of female students, but male students. **I'm curious to know that when you went back and looked at those first year courses, if there were some courses that the students were having a more difficult time with than others? If there were differences?**

Virginia: Yes. The courses now, they call them gateway courses, were Chemistry 115, which is your basic incoming chemistry course; Calc 1; and, there was a programming class called MATLAB, which introduces coding, and most students had not had that before. Those were the three classes that they tend to struggle with, and that's all students at Purdue struggle with those three classes.

Donna: Was there a bigger gap for underrepresented minority students with regards to these three classes, and also did you look at gender as well?

Virginia: So, yes. We just aggregated by gender and by ethnicity. Purdue is very highly populated with international students. I believe we run around 20% to 22% and we're one of the largest internationally populated schools in the nation. When you just aggregate by ethnicity, you would find in those classes, the international students outperform domestic students. So, there was actually a squeeze in the domestic population altogether, because some of the students that come here from other countries may have had that material in the 8th, 7th grade. People that come here from United States have only competed with the United States, in terms of their national metrics, their grades, their test scores, and they haven't necessarily had to compete with some of the best students in the world, which I think is a good thing because you're being sharpened by some of the best students, but you have to be ready to meet them academically.

So, those three classes were struggle points for both domestic and underrepresented minorities, and within the underrepresented population, there was a larger gap for African-Americans between the African-American, Native, and Hispanic students. Looking at how they performed coming in and their metrics coming in, we concluded that we had really a transition problem or opportunity. My question to myself and the staff was, "If we can address transition, as it relates to being underrepresented, to not feeling welcome, or to climate issues, will we see a difference in how they perform academically?" And that was the premise that we set the boot camp up on.

Donna: Okay. I know you've mentioned that these three courses were generally unfamiliar to most of the students, but there was a bigger gap for underrepresented minority students, in terms of performance. **Did you focus on the skills in these courses, in addition to feeling a part of the Purdue community?**

Virginia: Actually, we didn't really have time for that. If they weren't ready for engineering coming in the door, I really didn't see what we could do. We mainly focused on transition and for those classes, the chemistry, for example, most students hadn't had it since sophomore year in high school. So, just seeing it sort of refreshed their memory. That may have been sort of a reminder for them, but for the Calc and for the programming, it was a new exposure, but our pace was pretty fast. It was mainly, "How do you

study? How do you organize your day? How do you manage your time, so that you handle your academics in a way that allows you to get through work without being exhausted?"

Some of the things that we used in our transition was the Guaranteed 4.0 Program, which taught students how to learn versus study. Our premise wasn't that anybody needed remediation, but they definitely needed to organize their day. They needed to understand that everything is going to move a lot faster and you need to be ready for that, and I think that was the main thing that gave a boost to student performance.

Donna: By the way, for our listeners, we actually will be interviewing the developer of the Guaranteed 4.0 Method, Donna O. Johnson, if you're not familiar with 4.0. That's so interesting because here you have some of the best students from around the country and around the world, but what was the core of the boot camp was how to study and how to manage your time now that you're in a college environment. So, what really made this difference in retention and in grade attainment was really focusing on that. Some might have thought, "Okay, this is going to be," as you were describing, "summer remediation." But since with Purdue, you've got some of the best, most competitive students from around the country. That was not your focus, but it was on the study skills.

Our focus is actually two-year colleges, and that is one of the things that we also have as one of the planned components in our WomenTech Training is time management study skills, and one can only imagine that if that would make such a difference at Purdue that it would make a really big difference with those students who are not among the top and most competitive. That really I think that this is something that is not really taught in very many high schools. I think students often don't get the knowledge base for how to study and how to manage their time, unless they're lucky enough to somehow have got introduced to 4.0. Or I know that there are some high schools that have this in their curriculum, but I think it's very few. It makes sense that gaining that skill would make such a huge difference.

Virginia: I need to interject. One of the things, especially when you're dealing with underrepresented students and women, self-efficacy is critical and students believing in themselves and knowing that others people in them is very, very important. Knowing that you have an environment where, not only are you included but there's a role for you to play in reaching back to other students. A lot of what we do with students, in terms of building that community, I think is transferable to any type of university. You need to know who your students are. What are they concerned about in a four-year or a two-year community college? Sometimes, you may have a student with children. There may be all kinds of needs that they have that when you go into a university setting, it seems like no one really cares, and for underrepresented minorities. I'll say one year we were here and we had 1800 incoming freshman and only 19 of them were African-American.

Well, those students, 16 of them were in the boot camp and they were petrified. Like, "There's only 19 of us?" And I'm like, "Yes, but you're going to be able to compete and you're going to do it. We're going to figure out what we need to do and you need to overcome whatever your fears of not seeing a lot of people that look like you," and I think sometimes we downplay that. Not intentionally, but we don't really understand how important it is for students to know that they are counted, and that they can do this. I know that, yes, they need to learn how to study, they need to do time management, but they need to believe in themselves and programs need to make sure that that's one of the components that's embedded in there. I'm not talking about holding hands. I'm talking about really having an inclusive environment and really dealing with your climate.

Donna: Well, when you're one of 19 out of, how many did you say?

Virginia: There were 19 out of 1800 incoming freshman. This was 2013's enrollment class.

Donna: I think there's another dynamic that goes on, which is you're really under the microscope, aren't you?

Virginia: Absolutely.

Donna: And this is also true for when women are very few in many STEM career pathways, and if you're really under that microscope, then talking about the self-efficacy and the self-confidence, which the literature shows is the predictor of success in STEM, it's a lot harder when you're under that microscope and when you're one of very few. I think that's where the community and connecting with others that look like yourself, and also the self-efficacy skill become so important, because any mistake that you might make, or anything that you might not get in a lab, is going to feel multiplied by like 100,000.

Virginia: Absolutely. And even working in a team, sometimes teams don't seem welcoming. Well, how do you navigate that? What conversation do you have to make sure that you're included and that you bring your A-game to that environment? And one of the things we also did within the boot camp, we created teams and students met other students from outside of their ethnicity, and I wanted them to be very comfortable working in a team with people that you've never met before, because when school starts that's what's going to happen. You may not even understand their accent, but you need to be able to communicate.

Just getting people familiar with what that campus environment is going to require can really make a boot camp or any type of initiative work better. It's that soft stuff and that intuitive stuff that really, I think, brings the sauce that makes everything really taste good. So, we have to do that with our programs. Yes, you can have the academic component. Yes, they may need so many credit hours. But how does it feel and who are the people, and how do we integrate them into the fabric of that university so that they see themselves and what they see looks good?

Donna: Well, there's another aspect that I want to bubble up, which is that the nature of a boot camp is that it's very intense and everybody bonds together, and I think that that creates a natural support network, which is especially important when you are one of very few among a larger group, whether that be underrepresented minority or one of very few women. I don't think we can underestimate the importance of having a natural support network, because what can happen, and if you're part of the larger group, is that unless you are very proactive sometimes, not intentionally, you may not be included. This provides both an alternative support, but also you're pointing out to me that you're teaching them the skills of how to work in a team and perhaps be assertive about being part of that team.

Virginia: Absolutely. And that integration part of making sure the students understand each other and know how to work comfortably with people they may not have met before, one of the other components here at Purdue that I'm very proud of is we vertically integrate. Our department heads invest in our boot camp. They want to know these students in the summer, and so the students actually meet faculty, and so diversity is not just something we do in the Minority Engineering Program office. It's across the College of Engineering.

When I have the department heads come down, we have a tutorial center and students study there, and I had a department head come down and say, "Why aren't these students up in my study area?" And, boy, I laughed. I said, "That is a good question." I like that when they want to own this. They don't want diversity to be in one area. So, how do we integrate? How do we vertically integrate students that come into our boot camps, or whatever we might call them, into the larger society? Because you don't want them to stay in this nest and feel like, "Well, I need to be here, so that I can get supported." But that support is university-wide and definitely within the College of Engineering. So, I just wanted to make sure that I mention that, because it's not just what we do here in our office. It's what others do to make students feel connected and involved.

Donna: And that also comes with that top down support. I'm curious. **When you've done evaluations of the boot camp, what kind of feedback from the students themselves are you getting as to what they find as most important in those five weeks?**

Virginia: Well, I'll say the first week of boot camp, everybody is ready to go home because it is very intense. But by week three, they're all knit together and by the end of the fifth week, you can't separate them. The one thing the students talk about is they have a family. I've been doing the boot camp now for a good 11 years. Those students are still connected. That family is very, very real. I think that's the aspirational goal that I would've had at the beginning, that these students know each other. The other thing is them waking up from the fact that, "Yes, I got into Purdue." Purdue's GPA to get in is a 3.93. So, you're a 4.0 student coming in, but when you hit that classroom, all of a sudden, all of those As have to be redistributed over the bell curve and only 20% of all these incoming will get an A. How do you wrap your head around that? And how do you position yourself to remain an A student.

So, they say that they learned that it's different being in college than it was in high school, and "I may think that I'm all that, but I need to rethink that because now I'm in a more competitive environment." They come back and say, "I was glad that I'm more prepared for the competition here at Purdue, and I'm glad that I found a family that I will not forget," and those were the two main things that I hear.

Donna: Good. Now, I want you to extrapolate. I know that you haven't, yourself, worked in a two-year college environment. What are the elements that you think for two-year colleges, many of whom the majority of students are working, half of them that are female from within our projects have children, so they can't do a boot camp for the most part because they wouldn't be able to leave their jobs for five weeks. **But what are some of the elements of what you're doing that would be transferable in the two-year college environment?**

Virginia: Well, I believe that in a two-year college environment, there are some similarities in feeling that you belong and feeling that you can do this. One thing that just comes to my mind immediately is how do you connect students that are in two-year colleges with people that have gone through that experience and they're very successful now? What were the best practices they used? How do you make sure that you're incoming students see people that look just like them and have had similar experiences and they're doing fine? That's where you almost have to find out what is the makeup of the incoming class? What are the things in common that they all share, and how can we get around that? We being the people that are putting together an intervention strategy.

For Purdue, in a similar way, we have a daycare center. So, is there a daycare center that can be a part of that community college. It may already exist. Is it that parents need daycare? Or is that there are some classes they could take online that would save some of the time that they otherwise have to spend

on campus? Where are the bottlenecks? And we talked about the studying. What's not happening? You have to know, for the community colleges, what are our metrics that we're trying to impact and then what are the things within our community, our student members, that affect those outcomes that we want? And based on that information, you come up with your intervention strategy.

For me, it was overcoming the stretch of being in a global classroom. We had to make sure we addressed that. So, each community college has a unique set of challenges, and I'm sure that the administrators and those that are working in that environment know very well what they are. How do you put together a camp that addresses maybe the top three things that cause people to leave? If it's retention that you're after, why are they leaving? Are there exit interviews? Do we know that 80% of the people leave because of these two reasons? And whatever those reasons may be, lack of childcare and maybe need to work extra hours, then you come up with the strategy to deal with childcare and extra hours.

Now, I'm saying things not knowing what the resources are, but I think that when you have administration that really understands we're in a different time now and we need to address, especially for women. We have children. We have needs and some schools are actually investing in the types of services that make their students feel welcome and feel enabled to complete the program.

Donna: I think your approach, in terms of really drilling down to looking at exactly where the bottlenecks are and where the issues are, but also looking at those who've been successful, who have those same issues, and bringing them in as role models, and also the self-efficacy, I think those are universal beyond Purdue, and something that everyone can learn from no matter what school level and what colleges. I think those are great recommendations and great suggestions.

 I see that we have some questions from our audience. The first one is, ***"Could you tell us about how the boot camp is scheduled and run? A little more specific information."***

Virginia: Okay. The schedule of the boot camp is a simulation of your coursework that you would take in the Fall semester. The schedule starts at 7:00 in the morning. Students have breakfast and then they go to their classes, and those classes, as we mentioned earlier. They take English. They take Calc 1, and they have a MATLAB course, and these are all scheduled through the day pretty much to match what the timeframe is for normal school, which is about 50 minutes per class. They do have a lunch break and they go back to classrooms. They have lab work and they have study sessions.

So, the day starts at 7:00 and the day's not over until 10:00 at night. That includes their study time. They do have incentives to avoid study time if they can maintain a 3.5 GPA. We do calculate GPA after week two, and we calculate that twice a week. So, the students know how they're doing, and we have had students who get to that 3.5 and that sort of surprised me because I was hoping they wouldn't be able to get out of the schedule. But some of them were able to do that. In that day, there's time to go to the co-recreational facility where they can work out or swim. You don't keep it so rigid that they don't have a chance to breathe and exhale. That's part of their time management. Putting all that in, so that when school starts, they also are putting in time for themselves.

Donna: Now, I'm curious. **Anybody not make it through the boot camp?**

Virginia: I've never had a student that didn't make it through academically. I did have one student that had to withdraw early due to a family situation. But they stay in and that's really amazing. It's not credit-bearing. This is a simulation, and, usually, they're shocked at whole low their GPA is at the end of five weeks, but it's so fast that I don't expect them to do well. I just want them to snap out of whatever high school mindset they have and get ready for this environment, and that typically happens.

Donna: You mentioned, I think you said 16 out of 18 students went. So, not 100% go. **How do you convince the students to participate?**

Virginia: Well, when I explain the program, I think the parents are the ones that threaten them if they don't come. But I let parents know the students have to really want to be here, and there are only 30 seats that we have. So, we don't try to grab everyone that's coming to Purdue, and it's an open program. Students can come if they like to, and it is hard for some students to let go of a potential job opportunity or just being home one last summer with family. That particular year, I was glad to get 16 out of the 19 African-Americans, but the balance were our Hispanic, Native, and we have Asian and white students that'll come as well. We don't find that many students just want to give up that summer, but when you think about it, it's sort of an insurance policy. It helps you to wrap your head around what's really coming down the pipeline.

One other thing that they do is they build a car. That's their project, and they build it from scratch. It's a boxcar, and they race it at the end of the five weeks. They have to go 100 laps, and they love that car project. I dread it every year because I don't want anybody to wreck. But they do have a project, and I think the project is important. That's where they get their hands-on and they can really do something that really connects them to the university, or connects them to the concept of what engineering is.

Donna: I would be remiss if I didn't ask you, are there females in the boot camp?

Virginia: Absolutely. We run probably 35% to 40% females. Some years, it's fewer, but I think we're averaging about 32% female. The academic performance of women to men is at par. Usually, there might be a 0.02 improvement, women over men, but it oscillates. So, it's pretty close, in terms of academic performance.

Donna: And is there a cost? One of the listeners has asked*, "Is there a cost of the boot camp to the students themselves?"*

Virginia: The cost to me is $4000 per student and the cost to the student is $1000, and there are scholarships that they can apply for. But we do try to offset that cost by corporate support, and also we have support from our department heads that will sponsor students to come to the camp. That's been very helpful and that's also their commitment to making sure these students know who they are and making sure the students know more about that particular major. There are 14 different engineering majors here at Purdue.

Donna: Okay. Now, one of the questions is, *"How does one get buy-in from the top through the bottom of your administration?"*

Virginia: Inclusive leadership is a growing mindset. You have some institutions that are going through institutional transformation in how they think, because by 2025, the majority of students going into

universities are going to be students of color. We've never dealt with that in this country. So, we're moving towards that. We need to think more inclusively. We need to think more about student success and we need to question whether what we've done in the past will work for a highly diverse student body. I think that you have more administrators coming into the field that come in with inclusive mindsets.

And you have some schools where it's not there, but I think that if you present the data to your upper leadership, the data's pretty compelling and data doesn't lie. I mean, you can manipulate it, but data, for the most part, is pointing to what needs to happen and I think that it's important to have leadership that at least will look at your data presentation of what the problem is, and then they should be willing to help you solve it. The biggest problem I've seen with other programs is when you can't put together a compelling business case for why your work is important. You have to do that because it's not an emotional thing. We've got to do something for this. It's got to be a compelling business case of why we must do this as a university. And what's at stake if we don't? I think people will follow a good business solution.

Donna: Now, one of the things, in terms of a business case, is that nationally about 50% of STEM students are not retained. Those schools are losing the potential tuition income of the students, and they've had a cost to recruit them. I think that goes with the business part of it, but I'm also wondering. **Your other hat is national president of the National Association of Multicultural Engineering Program Advocates. Is that a group that our listeners could connect with to learn how others have garnered support within their institutions?**

Virginia: Absolutely. NAMEPA, which is how we say the long name of the organization.-

Donna: That is a long name. Yes.

Virginia: Is an organization that does just that. We come together annually to celebrate best practices. Actually, we're participating in a conference at the end of the month called Collaborative Network for Engineering and Computing Diversity (CoNECD). And the CoNECD conferences bring in American Society of Engineering Education (ASEE), NAMEPA, Women in Engineering ProActive Network (WEPAN), and the ASEE division of MIND, which is Minorities in Engineering and the Women in Engineering Department. We're coming together with some other diversity groups to really celebrate the need for research and practice to come together and inform each other, and this conference is the first of its kind and we're launching it in the Washington D.C. area, actually, Crystal City. Crystal City Marriott is where we're going to be April 29th to May 2nd.

We come together to talk about what works and what doesn't work, and it's amazing. We can literally put together programs sitting there collaborating, because we sort of know what each other may be struggling with, and we do have community college members. We have historically black colleges and universities (HBCU) and minority-serving institutions and we all want to learn from each other because we all are trying to deal with the retention issue. We're all trying to deal with graduation rates. I didn't even tell you about how our graduation rates are doing. We'll do that on the next summit. But we need to learn how to get these students out and to get them with the degree in their hand.

Donna: I think that this would a great place to find those who are doing this kind of work and have had success, but also the best practices. I have been to one of those conferences myself. I actually presented

and it was a wonderful place for me to learn from others who were having success. Now, another question that we have is, ***"Do your cohorts feed into internships and mentorships during their experience? Do you have work-based learning opportunities? Do you have mentors? Is that something that's part of the work that you do?"***

Virginia: Absolutely. And even with the boot camp format. During that five week period, those students will tour those facilities. We have facilities here in the Lafayette area. Caterpillar, GE, Alcoa which is now Arconic, and several other facilities, and the students end up with an internship. Probably last year, 80% of our boot campers had an internship that following summer. They were freshman. We do encourage internships and we actively try to connect students, because these students typically rise to the top, academically, and the other piece is research. We want them to go to grad school. We want them to get their PhDs. Yes, yes, careers are an option, but education is also an option.

We want them to meet the professors, learn about their research, get involved in research. Both sides are working and during the summer, they're introduced to that. And the last thing is global opportunities. This year, for the first time, our boot camp is going be seven weeks long and in the last two weeks, they're going to Brazil.

Donna: Whoa.

Virginia: And I'm scared to death. I'm like, "Lord, you taking these kids to Brazil. What's going to happen?" But I'm excited for them because we're connected with the Global Engineering Program and we want students to have international exposure and they'll get three credit hours from this particular engagement. We're really trying to expand what we do, but we started with just a simulation and five weeks and, "Let's just get over the fact that you're in the middle of the cornfields of Indiana and you're going to engineering school." That's what the boot camp initially was. "Let's get to know each other," but now it's really expanded and it's grown, because others have invested in what we do.

Donna: Well, if you need anybody to help with that Brazil trip, just let me know.

Virginia: Okay.

Donna: That sounds like a fantastic experience. Now, another question is, "Are there engineering majors", I know you said you have quite a few. I think you said 17. ***"Are there any that are more popular for the females?"***

Virginia: Well, of course, biomedical does attract a lot of female students. Industrial engineering and computer science are very appealing, but computer science is outside of the College of Engineering here at Purdue. We do have electrical and computer engineering, ECE, but I don't have a lot of women in that field. We are seeing a growth in mechanical engineering. I'd say your top three or four majors would be biomedical, industrial mechanical and here at Purdue, we have material science engineering and I've seen a lot of women go there.

Multidisciplinary engineering is growing too. We just had a young lady graduate and she did a textile engineering degree and she's now designing her own fabric with one of the top designers in the country, and she started that here at Purdue. I had one graduate with a video graphic engineering degree and she's now working with Black Entertainment Television (BET) and helping with their industry and all the

videography that they do. Students are able to shape their own majors and I think things are moving that way. I find that to be very interesting.

Donna: That is exciting. **I also got another question asking for where to get the information about your April conference? What is the easiest URL or place to go for them to get more information?**

Virginia: If they go to www.namepa.org, they'll see a link to the CoNECD conference, and also on the American Society of Engineering Education's website, there's a link, asee.org. It's a little bit harder to find there, but it is there as well. I think if they go to the NAMEPA website and register, it'll take them over to the ASEE site and if they are coming to the conference, I'd love for them to register as being connected with NAMEPA, and I would love for them to become NAMEPA members, if they're interested. We'd love to work with anyone on the call. We are a family, and we love working together.

Donna: Great. Well, I just want to thank you so much for participating in this session for the *STEM Success for Women Telesummit.* It's really been valuable to have this conversation and I really want to thank, also, all of our listeners for asking such questions.

Virginia: Thank you, Donna. I really appreciated it and had a great time.