Increasing Female Enrollment by 46% and Improving Retention from a 64% Baseline to a High of 86%

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

Presenter: Carmen Lamha, Chair, Computer Networking & Information Technology, City College of San Francisco

Interview Transcript:

Donna: Hello and welcome! My name is Donna Milgram, Executive Director of the Institute for Women in Trade, Technology and Science, and I'm so excited to welcome you to this session of *the STEM Success for Women Telesummit*, funded by the National Science Foundation. We have an interview with a very special guest.

Our guest today is Carmen Lamha, professor for computer networking and information technology, CNIT, at the City College of San Francisco. She's a department coordinator and the former chair of the department. She's also the PI, principal investigator, of a National Science Foundation funded grant called TechSpot 2.0, in the ATE Advanced Technology Education program. Carmen is actually nice enough to join us while she is on sabbatical and she's in her home country of Brazil right now. Carmen was also my co-principal investigator for the CalWomenTech Project, which was highlighted by the National Science Foundation for demonstrating significant achievement and program effectiveness following an expert panel review.

CCSF was actually one of our most successful colleges and I'm so excited to have Carmen here, sharing the strategies that worked for City College San Francisco on recruitment and retention of women and STEM. I also want to mention that Carmen is a WomenTech Educators Training consultant for us, and has been for several years. We're so fortunate to have her because she's actually carried improvement throughout in her own CNIT department.

Welcome Carmen, and thank you so much for joining us from Brazil for the STEM Success for Women Telesummit.

Carmen: Hi Donna. Hi from Brazil! I'm so happy to be here and share with you our story and my enthusiasm for this program. It's really great to be here and talk to you.

Donna: Great. Well Carmen, anybody that knows me knows that I am very outcome-oriented, and I want to actually have you start with your numbers in terms of the improvements that you've made with female enrollment in CNIT and also the improvements in retention for both your female and male students. So can you start out with the numbers and then we'll go to the strategies.

Carmen: Oh sure. Well before getting involved with the CalWomenTech Project, the number of females in CNIT was very small. We didn't know exactly how many females we had. CNIT is the computer networking and information technology department of the academic department program at City College. We have over 2,000 students, so it's a very large department. We offer degrees in IT, academic

certificates, industry certificates such as Microsoft, Cisco and so forth. Before the CalWomenTech Project, we did not track our females. We didn't look at the data. We just looked around and our classroom and labs did not have enough female students in there. It was so frustrating because we had all this wonderful programs, a brand new AS degree in CNIT, one of the first in the nation, and our female students weren't taking advantage of our program.

As a direct result of our training, CNIT has increased the percentage of female students by quite a bit. We started tracking it and we went from 18% to 26% increase in enrollment. And then as far as retention, 64% to 86% and even better, the retention of male students went from 61% to 72%.

You mentioned my TechSpot project, I wanted to mention to you that we're currently working on getting our TechSpot at 50% female students in it. So we are looking forward to 50% female students and 100% graduation of female and male students. So I'm very excited about that.

Donna: That is great. I just want to mention for our listeners that these are aggregate numbers over multiple years and I'm so happy to hear that you have maintained these gains several years later, and then now actually bringing these same principles to the other projects and students that you are working with. That is outstanding.

Carmen: Exactly. Yes, that's true.

Donna: Now, one other thing that I want to talk about on numbers before we go to the strategies. One of the things that are also important to us is focusing on women of color and ethnic minorities. So, can you tell us in terms of CNIT what the demographics were? Did you have women of color as part of those numbers?

Carmen: Well, it's interesting because it's also one of our missions. The demographics were great and we continue to improve on them. But during the program for the CalWomenTech Project that we had the actual numbers, we had 20% Hispanic, 10% African American, 30% Asians and 20% Caucasian. As you know, we also continue to recruit more minorities into the program and we have relationships with the southeast campus, which hosts a lot of programs have a large African-American population. We have a very close relationship with the bridge to CNIT from the southeast campus so we're looking at improving those numbers even more.

Donna: That's great. One of the things I want to make sure that we talk about is what specific things that were done in terms of recruiting women of color, specifically to CNIT. I know that you did many things with regards to recruitment, but I want you to talk about what you saw as maybe the top three most effective strategies for helping you increase the number of females overall from your baseline. External evaluators worked with your institutional research department and that's where we got the 18% baseline, and then you went to 26% female overall.

So, what are the top three strategies that really worked that you used? Tell our listeners, I know they would like to hear about that.

Carmen: Right. It all started with our leadership team at the CalWomenTech training that we had where we developed those strategies. The team debated several strategies that we're learning from you based on research and so forth, to see what would work for us spending as little money as possible and being able to be very effective. One of the things that we came up with was targeting the Intro to Computer

classes where there were a lot of female students. Another one was presenting to counselors, so I'm going to mention them there. We had outreach posters, and I want to talk a little bit about personal encouragement. But let me tell you a little bit about the details of each one of these.

The targeting of students in the Intro to Computer courses was an interesting thing because when we started looking at our data, we noticed that most of our females were in the CNIT intro classes. They weren't necessarily moving onto more advanced classes and they weren't taking our certificate. For example, the CNIT 100 is our Intro to Computer class. We have between 10 and 14 sections of those, with about 40 students in each one of them. So, we could have like 700 students every semester, and out of those, 50% would be females. So our target audience right there is 350 students.

This is something we're able to figure out as we're going through our training, and figure out where we could find our females. This would be a really low-hanging fruit. A lot of students were there and they were not moving onto our higher classes. So we decided to write a very friendly email to them at the appropriate time which was right before registration encouraging them to take the more advanced classes. That email was friendly, just what kind of jobs they would get, tech support jobs, helping people to use the computers, how much the pay was. So starting maybe with $20 an hour and then depending on the skills up to $50 and we added the companies that were hiring for those jobs. We also got some quotes from females in the field. I still remember a quote from Valerie Stuart, remember Valerie?

Donna: Yes, I do remember Valerie.

Carmen: Right, so she said something like "If you're married and have kids, don't stop. Be persistent. Continue, even if it's one class a semester. Even if it's one class each year." She was one of those female students and today she is very, very successful.

Donna: If I can just interrupt you for one second. I think this is such an important point of going to the feeder class and targeting those students. I'm curious, was Intro to Computers a requirement for all students at City College of San Francisco or was it optional?

Carmen: That's a good question. That class was a requirement for CNIT students, right, but also was a class for general education for City College. It was an option for any CCSF student to have general education class that counts towards general education and also, as a transfer class to San Francisco State. So a lot of those students would be in the area of undeclared major and somebody that is just starting to see which way they wanted to go. It was really a great place to recruit students from.

Donna: If I remember, your department actually was teaching that course so it's a natural feeder. Do I remember that correctly?

Carmen: That is exactly true. Yes, we teach that course. Before the training, we never thought of going there and saying "Hey, let's continue with all these great things we have."

Donna: So I just want to also mention that great email that you sent out to those female students is actually one of the sample examples that we provide in our WomenTech Educators Training that had actual success. Of course, we show participants in the training how to go after the low hanging fruit and that was your low hanging fruit with that Intro to Computer class. Those were students that were already taking courses in your department and also really important had a prerequisite, that you knew

they had those intro to computer skills that would be needed for them to be successful in your program. So that was such a great audience, target market for you, so to speak.

Carmen: Yes, and Donna, we still go back to that with new programs and everything. So that's a strategy that's there. We go back to it and we use it often.

Donna: So you've institutionalized it.

Carmen: Yes, definitely.

Donna: So tell us some more detail about you said: working with the counselors.

Carmen: So, going back a little bit to our leadership team, we had counselors in there and got some feedback on how to work with counselors and so forth. In IT, we think we have this wonderful website and all of our information is there so people can just look it up! But that's not the case. We learned that we needed to work more closely with the counselors. We created flyers for them, we brought the posters and then we scheduled some presentations with them.

I remember as soon as you walk into the room, they hit you with questions very quickly. Are there jobs in there and where? How much does it pay? How long does it take? Because that's what students asks immediately as they walk into their office. So, you know, once you are able to give them that answer, they say "Okay, I am interested in learning now about the course sequence and which course and so forth." Oh another question is how much math is involved? There is a perception that in some courses there is this really advanced math, which is not the case for a lot of computer courses anyway.

Then you know they are willing to work with you, happy to recommend these to students, you bring the posters and the flyers which have the population that you are interested in recruiting and we still get results from that. We still get referrals from our counseling department.

Donna: When you are talking about bringing the flyers and the posters just for our listeners, these are ones that we developed for you that had female role models, your actual students that had graduated from that program.

Carmen: Exactly. Those are the flyers that you developed for us. We still use that same kind of model of those flyers. They work well. Before, we thought everything is on the website, but it makes a big difference to have a flyer in your hand that you can hand out to somebody and students come into my office with those flyers in their hands. You know that that works as well.

Donna: So that really speaks to the importance of the personal encouragement, which is one of the big finds that we found when our external evaluators surveyed the women across all the colleges. Being personally encouraged by a counselor or an instructor was really key, in addition to the role model material. I just want to also talk about the fact that the posters and brochures were ethnically diverse. You had success recruiting women of color, and I think that that contributed to it as well. The role models were ethnically diverse.

Carmen: Right, right. The posters are wonderful because not only it's good for the recruitment of having them at events, and I mentioned to you we used to go to college counsel where administrators meet with department chairs and deans and so forth. Usually, there is a minute or two at the end where you can speak. We would bring our posters, and they are beautiful posters, with you know very nice colors,

happy, role models working on the equipment and so forth. So we would pass them around and talk about the program. We also had the posters in my office and all over CNIT. When we bring somebody in for a conversation, personal encouragement conversation, or something like that, the place already tells you belong here. "Yes, we want you here. You are welcome." The poster works not only in the recruitment piece, but also with retention as well. We have them in the labs and all over the place.

Donna: I remember, back to when we first started the project, and now a number of years ago, and you gave me a tour. I remember thinking "Oh wow, it didn't look that attractive or that welcoming." Then it totally changed when you had the posters of the female role models up. It was a totally different kind of space.

Carmen: Very, very welcoming and very nice. Well, Donna, I also want to talk about on a smaller scale the personal encouragement because it worked so well. Again, no one has a lot of time to talk to every student and I have learned to make time for this. I'm now learning to stop what I'm doing to talk with students that I wanted to encourage into a program. I've seen it work so many times. It almost became like a habit. I recruit females for TechSpot. If I see them in the hallway, I invite them into my office and then in my office, they see their faces in the posters.

This is like a 3- to 4-minute conversation: I want to give you this brochure, read about this program, and then I introduce them to our TAs, we have wonderful student workers that we call our TAs, teaching assistants. They are also very encouraging. I also refer them to our female teachers and this is no more than a 3-4 minute conversation and that gets them started. This is so effective and so happy to do it! I remember resisting: I don't have time. You know I don't have time, but it worked really, really well.

Donna: You mentioned a couple of things I would really like to call out. First is that you had TAs that were both female, as I recollect, and you personally were in charge of making that happen. These were student TAs. They were also racially diverse, which is reflective of who you told me was in your population, and I think that was such an important part of things.

The other thing that you did as department chair at that time was you also started to look to increase the number of female faculty. So can you talk a little bit about both of those things?

Carmen: Yes. So, through our leadership team we learned a lot about the resources at the college. We had people from service learning on our team, and we learned about scholarships and work studies. We learned how students make money working for the department, getting paid through federal programs, or different kinds of scholarships.

We started recruiting those students to work in the department and getting paid through those courses. We're able to recruit in the demographics that we wanted to motivate so we are able to get a lot of females, a lot of minorities, a lot of African-American males and females working the CNIT department. And then they start sharing with each other how you get those resources, how you get those scholarships, how you get the opportunities at City College. A lot of times, these students said "Hey, I want to do what you're doing." That's how we started with the idea of TechSpot actually. It was just recruiting all these students who wanted to be part of the program. So, that was one piece of that on the student side.

Donna: Yes, and so I wanted to say that if you have a predominantly male faculty or white male faculty, it can be quite some time until a position becomes open and you can diversify your faculty. Although

you did that, ultimately, you also improved in that area with teaching assistants because that can happen a lot quicker. That was something you were able to do the next semester.

I think it's a really important strategy for everyone because that is a way, again, for students to feel like, "Okay, I can fit into this department in the short term." You also did actually hire a more diverse faculty as I recollect. So tell us about that and also tell us what TechSpot actually is and does, after you talk about the faculty recruitment.

Carmen: Yes. I think when we started CNIT, there were two females out of eight full-time faculty. It was a new department, so we had about 20 adjunct and only about 8 full-timers. We were working towards getting more full-timers into the department. We have not gotten to a much greater number because we had some retirements, but we were able to balance it a lot more now. There are 4 females out of 8. Because some people retired, we were able to hire more females. But again, it was about recruitment. Recruiting great teachers where they are, opening more of where we announced our jobs. The department had a desire to hire more females and to be more of a diverse department so everybody shared and participated in that goal. So, it was through referrals and looking and posting jobs in different areas, not just relying on the postings of our own HR department.

Donna: So four out of eight on the full-time faculty now, that's terrific. But you also have a lot of adjunct faculty and they were actually very engaged in this project. My recollection is your adjunct faculty was somewhat diverse as well, if I'm remembering correctly.

Carmen: Yes, and it's the same strategy of recruiting people more broadly, posting jobs in the communities of where you know you're hoping to get people to come and see that you are a good diverse department. Diversity attracts more diversity. People bring their friends and colleagues and the recruitment becomes its own thing. It's really interesting because now, we've been able to get another female faculty who is also African-American and came out of TechSpot. I'm very excited about that because she is also somebody that we met in the hallway and encouraged to come into our office and talk and go through the program and so forth.

Donna: Excellent. So I know what TechSpot is and what it does, but tell our listeners about it!

Carmen: Well, TechSpot is really exciting to me because our students have a very difficult time getting an internship in the industry. The internships are so competitive. Some of them are paid internships, and even the unpaid internships are competitive because they lead to this really fabulous paying job of three figures right away. I had students that started making three figures in their first year. So these jobs are very, very competitive in the IT industry and you can get them through internships. So the internship became like the job, right? So TechSpot is a technical support center that hires students so this would be the internship to help students with their technical issues. So it's a little technical support center. If you think Best Buy or something like that, where students bring their computers, their problems and then our interns, that's what we call them, they have an opportunity to have hands-on experience with real-world problems, practice their soft skills with their customers, which are our customers. It's a two-semester program and it's a grant from the National Science Foundation. It's working really well. I'm looking forward to seeing our numbers at the end of the semester.

Donna: That's so awesome. It's like the Geek Squad for City College of San Francisco. So students with problems with their computers can bring them by and are they actually paying? I'm just curious, do they pay to have their computers repaired?

Carmen: You know, Donna, that's part of our sustainability model that we have not put into place yet. We have that vision where after the grant goes away, the project can continue. So students can pay a small amount of money to have their virus scan updated or their hard drive replaced or something like that and the students are actually comparing to the prices around and they see how expensive it is and how cheaply we can do it. It is part of our plan, but it's not implemented yet. It can easily be. First, we want to get the structure of the actual service center going and have the training going and being self-sufficient technically as well, and then it's able to go on without a lot of our interference.

Donna: So you have ultimately the vision of an entrepreneurial model that will make it sustainable so students can get this experience. I just want to say that there's another element of what you're doing with TechSpot which I really love. You're giving students experience. In what I've seen over the years, and I talk about this in the WomenTech Educators Training, is that the more actual hands-on experience you can give students through internships. In particular, female students or students of color, when they go into the workplace, if there are few of them, people are looking harder at them. They have the advantage of having some experience it helps level the playing field for them.

Carmen: You're right.

Donna: They have experience and they gain confidence that comes from that experience. Of course, we would love a world where they aren't going to be looked at more closely but it's not the case. Our organization has also worked on that as well, you know, preparing the workplace to be more friendly. But the reality is, it's not there yet. Having a program like TechSpot provides them with some hands-on experience. This is true of internships in general. I really think they are a huge plus for helping students, whether they be women or students of color, or students with disabilities. They are going to be that much ahead of the game if they have an internship. So I applaud you for the work that you're doing with TechSpot. I think it's fantastic.

Carmen: Thank you, and also you mentioned the entrepreneurship part because that is part of our phase 2. We can bring some business skills, so people can develop a business plan. What we found is that a lot of our students don't want to go and work for an IT company. They want to go and work in their own community. They're already doing tech support for their family and now they found out for free that they can be making some money, and some of them are! Successfully! So this is wonderful. I have a father and son who now work as a team doing installations and tech support and so forth, supporting their families, very proud of what they do and making really good money. That is another angle that we are looking at as well: combine some business skills so that people can be more prepared. They are getting ready on the technical part and they are getting ready on their soft skills.

Donna: That is terrific. Let's go back, there are some other things that I want to talk about and one of them is mentioning a leadership team and how the leadership team was a resource. I also told you about some funding sources for you to pay your student teaching assistants. Can you talk a little bit about the WomenTech Educators Leadership Team that you developed? Who was on it? And what roles they played?

Carmen: Well, when we looked at that list and I remembered working with Pierre the times I thought, "my God, how are we going to get these people to join?"

Donna: The list I gave you of all the potential people that we had on the leadership team?

Carmen: This is impossible! Dean of what? I just remember Pierre sitting in his chair, going "Oh Carmen." Anyway, he took that list and he went "We just had to ask, really." People were happy to be part of it. They were happy to join. A lot of times, we just don't know that people wanted to be approached for a really good project.

So we got our public relations officer to get into the programs. She was very enthusiastic, and she got us into the catalogue, time schedule. If there was a chance for a little news somewhere, she got us in. It was terrific to have her there. As I mentioned, the counselors talked about how to talk during counseling, how to work and approach them. We still get those referrals. The service learning people and also women's studies, they brought their great perspective into our plan.

The administrator became familiar with what we're doing and more willing to approve our efforts when it came time to move things forward; that was really helpful as well. We had someone from the grants and research office so she understood what we are doing. Whenever we needed those data and for her to talk to our external evaluator, she was willing to do that.

The college as a whole learned about CNIT and then it made it much easier to implement. The implementation piece — well, a lot of times we didn't know how to do things. These people brought in their knowledge, their experience and their support when it was time to actually implement something. So you know I don't see any other way to go. You have to have that team, but at first it was like "Oh my God!"

Donna: I do remember when we first started the project and, of course, Dr. Pierre Theory was the co-leader and you were the key leader. You both were like, "Oh no! We agreed to do this project but do we have to go outside the department? We only wanted to do this inside our department." Here we are over 5 years later, our active involvement, I think it's more than that at this point, our active involvement with the school, it's been at least three years since I was actively involved with City College of San Francisco, yet you institutionalized the strategies and you are continuing to use them. When the project funding from the National Science Foundation went away and when we were no longer coming on-site or doing WomenTech Educators Training or the follow-up support that we did, you maintained those practices and those gains I believe because you had a WomenTech Educators Leadership Team.

Carmen: I do, too. Looking back, it's like "Okay, you were right."

Donna: You had support outside of your department and it's so important that it's an initiative that is supported by the college as a whole, not just by a particular department or individual instructor. Now sometimes, an individual instructor can really make a big difference and maybe they aren't in the position to gain the support or maybe it's not the right time. But, you know, in my experience schools, colleges, they can have the kind of changes you've had at CCSF when they have a leadership team.

Now, having talked about that, I want to move onto some of the details of retention. You really had a lot of success with increasing retention of female students. I think you said 64% to 86% which is a big leap.

You also increased male retention as well. Can you talk about again like the top strategies that you think really made a difference on retention for your female students and your male students too in CNIT?

Carmen: Yes, so I think the key ones are the expanded open lab hours and the lab staff by females and the other minority students and students of color. Everybody benefits from that. The first thing that we came up with is that people needed more hands-on experience, especially females. They are not used to dealing with equipment, how to hold a screwdriver or familiar with what they are. That was a very important thing.

We also created that poster that had the different tools and identified the tools so you are in a lab situation. You ask about the tool, you can look up and see what that looks like and immediately identify it. That helps females and helps boys that don't like to work with tools. It helps people that don't speak English, different backgrounds and so forth. So the extended lab hours have helped everybody. We staff them with those friendly TAs that I talked about as well. So the environment is welcoming, the posters are there, the posters are outside of the door, inside of the door, and everybody really benefits from that and I think females benefit more so than the other students.

Donna: May I interrupt you and mention something? That initial tour that I went on was of your labs and I remember that they looked terrible. I remember you telling me that very few female students were using them. Also, the desks were all crammed up against each other, so you were sitting at a desk you were going to end up touching knees if you are a woman, most likely a male student, because it was most likely male students. So you really not only staffed the lab, created more open lab time, staffed the lab with female and students of color as TAs, but you also, as I recollect, made those labs look a lot more attractive.

Carmen: More attractive and more spacious, too. We tried, we did talk about the cramped spaces where females and some other students would not feel comfortable so they did not stay for the extended lab time. With the extended labs, there is more room for students to actually complete their work. Another thing is that we are trying to monitor very closely and the work with our faculty on the issue of some students, mostly male students coming to a female student, saying "Hey, let me show you how to do this" when she does not need that help and not welcoming that help.

So faculty is very much aware of what makes people comfortable in their labs and what doesn't. The teamwork in the lab, rotating roles, so many things that we're doing that allow for all students have the experience of not only taking notes, but everybody takes notes, everybody takes the computer apart, so they screen and see what's going on. So by rotating the roles, you give the opportunity for every person to be involved in every task in the lab.

Donna: That is so key. While it may seem like as a male student says "Oh, let me help you with that" is a good thing, it may not give that female student an opportunity to actually know how to do it herself and she misses the learning. So, that is, that's really something very key in terms of the having the open lab.

Now I also remember that they have other areas that I call in our WomenTech Educators Training, building block skills that female students tend to have less experience with, such as math. I remember back to the binary numbers, that's a challenge area. Can you talk about what you did there? I remember that that was also something that you felt was critical to the improved retention of the female and male students.

Carmen: It's really amazing. We did some videos with our faculty, our female faculty, teaching about binary numbers. It's very simple, and we thought videos are expensive, and how much it costs and how much work it is. But what you do is you need to have somebody that likes to do a little video and the faculty willing to do it, but for the most part people are willing.

We started by creating the binary one and if anybody is interested in taking a look, it's under CNIT website in our YouTube channel. If you just go to the City College site, City College of San Francisco, just go to CNIT there is a YouTube channel there with some of the videos that I am talking about here. So one is about the binary numbers, and what's interesting is a lot of people like them. I told you I had about 2,000 students per year and we've been doing this for about 5 years. More than 250,000 have watched this video online, so it's kind of interesting how other people have enjoyed those videos and have some nice comments about it.

Donna: I noticed when I have gone and I looked at some of the comments, you know, students saying I couldn't understand binary numbers before but now I get it. Thank you so much! And you know having this supplementary content on binary numbers has helped so many students not only in CCSF, not only females, but also males, too. How much they've appreciated it.

Carmen: Yeah, and the idea is to not to think that everything takes too long and everything is so expensive. These things are simple, a couple of hours project, it's a three minute video, and it does so much for the students. So we have some others in there that is taking computers apart, showing the different pieces, and we're planning to make more of those. They are very simple and not very artistic, at all, but it really does the job.

Donna: One of the things that really struck me about City College and your department was the number of adjuncts that also participated in the training. I think that we got all of the full-time faculty, and we got the majority of the adjuncts as well. They were really using these strategies that they learned and were really bought in.

I'm wondering if you could talk about how you did that. So often what I'm told is we can't get the adjuncts to come. And of course, the majority of adjuncts are teaching in the field, so they are very knowledgeable, and they often make up the majority of the professors in a department, especially in a two-year college like City College of San Francisco. If you don't include them and they don't learn these strategies, then you're going to miss out on the majority of students who are taking classes. So could you just talk a little bit about how you engaged them and got them to participate?

Carmen: Yes, and you're correct. I think we have about 23 to 25 total faculty and about 8 are full timers, so the majority are adjuncts. It's interesting that you know these people make so much money in the industry and they are there because they love to teach and love to really share what they do and want to help students.

I think one of the challenges in getting them involved is just figuring out when they can join the meetings and not waste their time. The program was great, they wanted to participate, I wanted them to participate but at the same time, how do we work this out? So, we included the training in our regular monthly meetings and we made it work so that we met during lunch or at the end of the day. Of course, food is a great thing, Donna, if you bring food for lunch, so you can have a working lunch and expand it another hour and then before the end of the day we had pizza and so forth. Everybody is really in a good

mood and feels good and they really participate better. So I think not wasting people's time and being aware of their time and working it out around the lunchtime and prior to the evening class work the best.

Donna: I remember how valuable it was because as part of the training, you developed a plan. Then you had all of your faculty, including adjuncts developing the strategies. Everybody knows that when you are a part of developing the plan, the more likely you are to carry it out. So they came up with the strategies for doing the supplementary videos. I also remember there was a Google doc. If they found supplementary content online that they thought was useful, they will share with each other so they could push it out to the students.

Carmen: That's right, yes, yes.

Donna: So I think that having the faculty being a part of actually making the plan is so critical for the retention side. I remember how excited they were as we brought the numbers from our external evaluators showing as they were improving on the retention side and the follow-up support component.

Carmen: It was also a great opportunity for us because when we need to talk about curriculum and so forth, these are great meetings. We put in the lenses of the female perspective, we start looking more into the teaching sequence, what's the prerequisite, or what you're calling the building blocks of one course or the other and what works better. People are really excited about sharing "Oh, I teach it this way and this is how they get it and then I teach the other way, so people like that." They really love sharing their best practices. That is great.

Donna: I think that is important because how to teach is not part of what these instructors learn. Nobody teaches them how to teach, especially adjuncts. As you point out, they are making a lot of money in the industry. If your student graduates are coming out of AS and making six figures and after internship, then they are making a lot of money, they are there because they care about teaching and they are committed. Yet, they don't actually have any background in how to teach. So when you have a community of computer networking instructors that are sharing with each other "hey I did this and that's what worked", that's a beautiful thing.

Carmen: It is, it is, it is.

Donna: So I wonder, as we are wrapping up this wonderful interview, what advice do you have for educators who are listening who would like to get started and do the kind of things that you have been doing at the City College of San Francisco? How do you recommend they get started?

Carmen: Well, you know for us, the training was key. It was really the way to get started. We had the desire to increase the female students in our programs, but we didn't have the strategies. Through the training, creating the leadership team, how their knowledge, their role in the institution, and how they help us implement the plan and also develop a plan that fits the institution. A lot of times you look at a lot of different strategies and you say, "Oh how nice! Let's do that." But then it's like what does it take? When does it start? When does it end? Who is going to help and so forth? So each little strategy, it doesn't even matter how small they are, they need to be thought out in terms of when it starts, when it ends, who is going to support throughout, in addition to the resources.

For us, when we did the training with the leadership team and came up with the plan, that was the way to do it because now, we still have a plan and the plan has dates, deadlines, has key people that are involved in projects. The plan is flexible, the plan can change. It's not something rigid that we have to have that particular task. It's fine to say this is not going to work out, let's change this strategy to another strategy. So, the training was key for us, Donna, because the strategies that were proven to work. We decided which ones worked for us, which ones fit our resources and our culture at the college, and which ones the leadership team and faculty were willing to support.

That's how we started and there is no stopping us. I think our culture now is of diversity and inclusiveness and we think that every time we look into a classroom, we are counting how many are there, and how many females are there, and if this poster looks right or not and what message are we giving in our website and so forth. I think it all started there.

Donna: Well, thank you so much, Carmen, for joining us from Brazil for this STEM Success for Women Telesummit and providing us with your unique perspective. Thank you.

Carmen: Thank you, Donna. Thank you for all the great work you do.

Donna: Thank you so much.