Oklahoma Innovations Radio Show

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Guests: **Edna Manning, General Ben Robinson, Caleb Cook, Jessica Oliver, Suzanne Donnolo, James Thrasher, Carlos Rubio,** and **Kyra Atekwana** all from the Oklahoma School of Science and Mathematics

[Music]

From the OCAST Radio Network, this is *Oklahoma Innovations*, a weekly science and technology radio magazine brought to you as a service of OCAST, the Oklahoma Center for the Advancement of Science and Technology. OCAST is the state's only agency whose sole focus is technology, its development, transfer, and commercialization. OCAST mission is to identify and fund promising research in technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of the state's most gifted and talented scientists, inventors, entrepreneurs, manufacturers, and business leaders who all have one common goal, developing technology-based economic growth for all Oklahomans. Now here are your hosts, Gary Owen and Steve Paris.

>> Gary: We are on the road this week and we are located on a 32-acre campus just south of the state capitol and across from the Oklahoma Health Center. The campus is the Oklahoma School of Science and Mathematics, Steve.

>> Steve: You know, Gary, this place is OSSM and I mean in several ways. When you talk about OSSM the Oklahoma School for Science and Mathematics, you're talking about an idea that started well, well before 1990. I think you came into being about 1990.

>> Dr. Manning: That's correct.

>> Steve: And we're, we're. We're here today to find out just where we are because we, we've featured OSSM on, on *Oklahoma Innovations* in the past. Been quite a while back.

>> Gary: A long. Yeah.

>> Steve: And a lot of great things are happening. That's why we have with us today Dr. Edna Manning who is the director of the school, President. And we also have General Ben Robinson who's Vice President of Institutional Advancement. And we're going to talk to both of these folks here just very quickly. I'll start with Dr. Manning. Let's kind of give a. For the folks who may not have heard, and I can't imagine anybody out there who hasn't heard about OSSM. But let's talk about where OSSM kind of got started and bring us up-to-date what's happened in the last, what is it, 20 years, or so?

>> Dr. Manning: Twenty years we've had students. The school was actually created in 1983 by an act of the Legislature. The bill was signed by then-governor George Nigh. The Board was appointed and they began meeting in 1985. The site was selected in '86, late '86 or early '87, but no funding came through.

>> Steve: Isn't that strange how that happens sometimes in Oklahoma. Well, yes.

>> Dr. Manning: Well, the main things got it enacted.

>> Steve: There you go.

>> Dr. Manning: And we can work for the funding later and that's exact.

>> Steve: You have to start somewhere.

>> Dr. Manning: That's right. And that's exactly what happened here. The first funding was in 1988. I was hired in August of 1988 to try to put the school together, working with the Board of Trustees that, by the way, is chaired by Dan Little from Madill. And Dan is the first and only chairman the Board's ever had.

>> Steve: Okay.

>> Dr. Manning: He was appointed by Governor Nigh and been appointed by subsequent governors right up through Governor Henry. During that time, we took our first students in the fall of 1990, so the first class graduated in 1992. The class that we just admitted this year is a 20th graduating class.

>> Steve: Wow.

>> Dr. Manning: Time does fly.

>> Gary: It does, doesn't it?

>> Steve: Right.

>> Dr. Manning: We have these young people only two years, their junior and senior year of high school. And during those two years, we work them pretty hard. They take the equivalent of about 23 to 25 semester hours.

>> Gary and Steve: Uh-hmm.

>> Dr. Manning: They have to take, regardless of what they've had at their home high school; they must take four-and-a-half years of science. A year of biology, a year of chemistry, a year-and-a-half of physics. And then a year of their choosing. They also take mathematics every semester, and must complete a minimum of two semesters of calculus and most of them take more.

>> Gary: Wow.

>> Dr. Manning: They get two years of literature, two years of history, two years of foreign language, two years of physical education. Some of these students are athletes and some have never broken a sweat. But we want to give them some life-long practices for healthy living.

>> Gary: And surprisingly it's competitive to get into the school, is it not?

>> Dr. Manning: It is extremely competitive to get in the school.

>> Steve: Well, talk to us about that. You know, the best and the brightest in the State of Oklahoma, that's what comes to OSSM.

>> Dr. Manning: Yes. Some of the best and brightest.

>> Steve: Well, sure.

>> Dr. Manning: I think we need to make it clear that the school's not for everybody. But the school is for young people who are bright, who have a special interest in science and mathematics. And who think that they want to pursue a career in a field that involves extensive use of mathematics and science.

>> Steve: Well, I was looking at a list that you provided us and it talks about the first 1,000. The first 1,000 students since 1992. And, you know, there are some pretty interesting figures there. Could you look? Here's some of those lists.

>> Dr. Manning: Yes, I, I can. I think we're really on the verge of beginning to pay back the investment the State's made in the school.

>> Steve: It takes time, doesn't it?

>> Dr. Manning: Yes, it does.

>> Steve: It's not immediate.

>> Dr. Manning: It is not immediate because in looking at the first 1,000 students who graduated since '92, only about half of them have had time to earn a degree and go to work.

>> Steve: Sure. Right.

>> Dr. Manning: And of those young people who have been out long enough to earn a degree and go to work, more than half of them are working right here in Oklahoma and we're very proud of that.

>> Gary: That's impressive. That's very impressive.

>> Dr. Manning: Of that group, we have more than 300 practicing engineers. We have almost 80 medical doctors. We have 50 who have earned a Ph.D. in an academic field, 25 attorneys. We have 5 D.O.'s, 2 veterinarians, 2 dentists. We have 3 that are actively serving in the ministry, and we have a minimum of 75 that have served or are serving in the Armed Forces.

>> Gary: Wow.

>> Dr. Manning: We're also pleased that 85% of these young people have stayed in careers that involve math and science. Think another interesting fact is that ten of these young people have started their own businesses in Oklahoma. And these are the young people who are going to help grow the tax base for all of us and create jobs for the future.

>> Steve: Absolutely. Let's talk about some of the places where these young people are now teaching. Because some of them are involved in academics far long after they left OSSM.

>> Dr. Manning: Yes, they are. In fact a, a funny story about that. A man from Enid called me one day and said you know, Edna, I really appreciate what you did for my son. But now you have to tell me how to get him out of school.

>> Gary: Oh, yes.

>> Steve: A professional student I, I take it.

>> Dr. Manning: Absolutely. That young man now has a Ph.D. from MIT. But we have young people who graduated from here and went on to some outstanding universities. And those young people are teaching at MIT, Stanford, Michigan, the Air Force Academy, the Air Force Institute of Technology, John's Hopkins College of Busi, of Medicine. Duke University College of Medicine, White Forrest College of Medicine, the Citadel, and the University of California at Berkeley to name a few.

>> Steve: Oh, my.

>> Dr. Manning: My goal is to have the faculties at the universities in this state populated by OSSM graduates. And I think it's only a matter of time till we begin to recruit them back for that.

>> Steve: And we wish you well on that mission. That, that is. That is an outstanding mission to, to have adopted. Well, let's get General Ben Robinson on the line here. General Robinson, Vice President of Institutional Advancement here at OSSM. And I, I'm not real sure how long you've been on the, on the scene here. I know it's been a little bit of time here.

>> General Robinson: A little bit of time is right. Actually how about 1, November of this year.

>> Steve: Okay. All right.

>> General Robinson: So how about, about six weeks. But I was associated with OSSM for about six months after I retired from Boeing. And then I've had a relationship with Dr. Manning for about two years now.

>> Steve: Sure.

>> General Robinson: And just absolutely fell in love with, with the mission of OSSM and, and her leadership. And decided I wanted to be part of it.

>> Steve: But I want to know a little bit about your past too. Let's, let's tell the folks where you came from because you have an illustrious career, several illustrious careers, before you came to OSSM.

>> General Robinson: Well, the scariest part is my academic background. I actually flunked out of college. I had a medical condition, condition known as academic unconsciousness. And I discovered that, that three years in the Army cured it and I went back to college and graduated and went on to a. In, in follow-on years I managed to make it to MIT as a, as a fellow in inter, international relations. So I managed to recover nicely.

>> Steve: And you became a general in the Army?

>> General Robinson: Thirty-three years in the Army.

>> Steve: Or the Air Force.

>> General Robinson: And the Air Force.

>> Steve: Yeah. Yeah.

>> General Robinson: And I re, retired from Tinker Air Force Base as the wing commander of the AWAC's wing. Went to work for Boeing and I was the executive director for Boeing Aerospace Operations here in Oklahoma, which actually covered about 22 sites worldwide.

>> Steve: You and I were talking before you came on, on the. On the, when we started the show. And, and you indicated that you've kind of achieved a lot of your goals. And what you're doing now is giving back.

>> General Robinson: Well, actually I had. Is, is in my relationship with the military and with Boeing high technology. Air Force is a very high technology Armed Force. And, and Boeing relies very heavily on really smart business people, great engineers, great software designers and, and, and users of software. And I realized that, that. And I met an OSSM student as an intern at the Boeing Company, and I asked him what he was doing. I thought I got to find out more about this place.

>> Steve: Wow.

>> General Robinson: In which eventually led to a relationship with Dr. Manning. And I've got a tremendous support for our teachers and education and in Oklahoma especially. We've got a great aerospace energy, industry. We've got great manufacturing, energy, health care. All of those required critical thinkers in science and math.

>> Steve: There you go. And so that's what your job is here, is to work with this, this wonderful group of students.

>> General Robinson: Absolutely. Absolutely. You used the term and, and you and Dr. Manning discussed this concept of paying it back. These students are. What I think we're doing it's, it's equally if not more important is paying it forward.

>> Steve: Exactly.

>> General Robinson: We, we have the critical thinkers here that will solve the math and physics problems to take us to Mars. We have the critical thinkers here that will develop new surgical techniques. That will, will work on world hunger. That will negotiate peace treaties. We have the capability here to make this a better world for all of us through the study and application of science and mathematics. And you can't find a better mission to go after when you're at that point in your life where you want to do something really meaningful and significant.

>> Gary: I'm glad you brought that up because I've always. And I've talked to Steve about this many times on the program. I've always felt that our youth are going to change our world and that. And what you just said encapsulizes it all. It's just, that's wonderful. Steve, we only have a couple of minutes left on this segment. I'm curious as to his involvement, more involvement with the school.

>> Steve: Yeah. Exactly what, your new mission. Talk about that if you will.

>> General Robinson: Well, that term Institutional Advancement, Dr. Manning wants me to, to advance the position of the school itself in regard to what we need to be able to do to change that, that intellectual culture and landscape of Oklahoma.

>> Steve: Yes.

>> General Robinson: How do we influence science and math education across the state? How do we also advance the position of these students? And I've mentioned to you about our contemporary speaker's program.

>> Steve: Yeah.

>> General Robinson: Where we have great science and math professionals come in and speak. We're working with the, the National Race to the Top initiative led by former Tulsa Mayor, Kathy Taylor. That. By, by doing that we're working some of our OSSM initiatives and OSSM curriculum into the overall educational landscape of Oklahoma. So we're going to take our school as a center of excellence, and advance the entire State of Oklahoma through the influence of this Center of Excellence.

>> Steve: Outstanding. The, one of the questions that always comes up, and I think this may be a, a question for one of our, our guests here in a couple segments. But how in the world do you get into OSSM? First of all, you have to qualify, right?

>> Dr. Manning: It's a competitive process, but we're just looking for bright, young people across the state who do have an interest in science and math and who are beginning to work hard. Leave it to our Director of Admissions.

>> Steve: Right.

>> Dr. Manning: To give you all of the details. But we have about four times as many young people apply each year as we can accept. And that's why we're particularly excited that Governor Henry and the Legislature have worked to give us some money to add on to the dormitory.

>> Steve: Want to talk about that very quickly.

>> Dr. Manning: Well, we.

>> Steve: You've got some new buildings coming online here.

>> Dr. Manning: We do. We have raised $4.5 million in private money. The state is now coming up with the $2 million in stimulus money. So we will begin to build onto the dormitory to double the bedroom space we have, which means in time we'll be able to take up to 280 instead of the 140 that we're limited to.

>> Gary: Coming up on the next segment, we're going to be talking to some students as we continue our broadcast on the road from the Oklahoma School of Science and Mathematics on *Oklahoma Innovations*.

[Music]

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[Music]

>> Gary: If you've just joined us, Steve and I are coming to you from the Oklahoma School of Science and Mathematics. And now we're going to interview a couple of students who are juniors. One is from Grove, Oklahoma, and the other student is from Holdenville, Steve.

>> Steve: That's right. We, we have Jessica Oliver of Holdenville, Oklahoma. That's down in Hughes County in pretty much southeastern Oklahoma. Not too far from I-40. And we have Caleb Cook who's from Grove, Oklahoma over on Grand Lake. On the shores of Grand Lake in, in. Is that Delaware County?

>> Caleb: Delaware County.

>> Steve: Yeah, that's what I thought. You folks, both of you are juniors. You're here at OSSM. We want to hear your story and I'm going to. And I'm going to be, I'm going to be a gentleman here. We're going to let Jessica go first.

>> Jessica: Thank you.

>> Steve: And Jessica from Holdenville, Oklahoma, tell us how you came to be at OSSM. And what, what your field of endeavor is.

>> Jessica: Well, I really didn't know what OSSM was at first. But after I heard about it I think a month before interviews were done I, it was time for me.

>> Steve: There you go.

>> Gary: Were you nervous?

>> Jessica: Very, very nervous.

>> Steve: Yeah. So you applied?

>> Jessica: Yes.

>> Steve: And that process I'm sure was intimidating.

>> Jessica: Yes. There were several essays you had to fill out and I was afraid that I was going to make wrong mistakes and I was just not going to get accepted.

>> Steve: So you were just being very natural like everybody would be, right?

>> Jessica: Yes.

>> Steve: Fearful of this process. But I think that would be normal. Now when you came here you had been going to I assume Holden, Holdenville High School?

>> Jessica: Uh-huh.

>> Steve: Okay. And you came to OSSM. And you, your field of, your interest at that time, I think you told us you wanted to be a cardiovascular surgeon.

>> Jessica: Yes. I wanted to be a doctor. It's the only thing that I thought was big enough for me to accomplish and O.U., you know, was good for that and so.

>> Steve: Sure. Yeah.

>> Jessica: So I wanted to go.

>> Steve: Okay. So you came to OSSM. You've had some experiences here and, and your curriculum. And by the way, it's a very intensive program. They don't give you much time to rest, do they?

>> Jessica: Not really.

>> Steve: And, and now that you've been here for a little while, what's changed?

>> Jessica: Now I've like realized how many other classes there are. I actually have seen different fields that I could work in. And so now maybe vertebrate zoology or some kind of, something intricate.

>> Steve: Vertebrate zoology.

>> Jessica: Uh-huh.

>> Steve: Something Gary and I probably have never heard of before. So give us a little idea of the kind of courses you're taking in vertebrate zoology that lead to that, to that field of endeavor.

>> Jessica: Right now, I started just with the basics, so reptiles and amphibians and such things like that. And I also like my physics classes and, let's see, my humanities. I like it all, but that's where I'm really going for.

>> Steve: So you've had kind of a change in direction since you first came here, right?

>> Jessica: Yes.

>> Steve: Okay. Did you envision anything like that could ever, ever happen before you came to OSSM?

>> Jessica: No. Boarding schools and as big as this school is it's just something I've, like a fairytale sort of.

>> Steve: Yeah. I got to. I got to ask a personal question. How, how difficult was it to leave your friends at, at Holdenville High School? And, and of course you developed new friends here, right?

>> Jessica: Yeah. But I had grown up with these kids for 11 years, you know. It was really hard. But I knew this was going to be a good thing for me.

>> Steve: Very good. Well, Caleb. It's your turn, buddy. And get up close to that microphone if you would. You're from Grove, Oklahoma and you came here. Actually, you had some involvement with one of the 19 regional schools that OSSM has out there around the state. And which one was that?

>> Caleb: That would be the Afton Regional State.

>> Steve: Afton Regional for, for the, for OSSM. And, and you kind of learned some things there that you probably were not learning in your, your traditional local high school courses. Is that right?

>> Caleb: Oh, definitely. It definitely offered, you know, opportunity to take classes I've never had and will take at Grove.

>> Steve: There you go. And so you applied and you wound up here at OSSM here in Oklahoma City. And what were you wanting to be when. What is they say? What were you do, what do you want to do when you grow up? I, I got asked that question when I was your age.

>> Caleb: Well, back at the regional center I was, I really liked my own math teacher so. And we got, we were really involved. And so when I came here I wanted to be, I thought I wanted to get a degree in like pure mathematics. But now I'm taking electricity and magnetism here. And like the course is so interesting, I like it a lot so. But like right now at this moment I'm, I'm probably oriented towards physics. But I'm open-minded enough to realize I could change, you know mid-semester so.

>> Steve: Yes. It opens up a whole new world for you, doesn't it?

>> Caleb: Yeah. Coming here really shows you how unexposed you were before as far as academia is concerned.

>> Steve: Yeah. And, and the world, the horizons change.

>> Caleb: Yeah.

>> Steve: Well, let's talk a little bit about dealing with, with magnetism.

>> Caleb: Sure.

>> Steve: I mean, you know, most of us have things hung on our refrigerator doors.

>> Caleb: Yeah.

>> Steve: That deal with magnets. But what you're studying is much more involved than that, is it not?

>> Caleb: Yeah. Basically well, we're kind of entering now is really on the downside of the semester so we're kind of wrapping it all up. First semester we talked mainly about electrostatics and then now we're kind of. We're kind of ending on the magnetism portion. And so right now, we're discussing like Maxwell's equations and how electricity and magnetism are really connected. Like how electric phenomena can create magnetic.

>> Steve: Yeah. I don't what you study but I, I know there's a big difference in what, in the little magnet that you put on your, on your refrigerator at home and the type of magnetism it's going to take to elevate a train.

>> Caleb: Yeah.

>> Steve: And run it down the tracks without touching those. Is that? Have you got into those kinds of potential opportunities?

>> Caleb: Well, those are the kind of little pictures you see on the side of textbooks so.

>> Steve: Yeah. They give you the concept.

>> Caleb: Yeah. Yeah. So.

>> Gary: So what kind of reaction have your parents had about all of this?

>> Jessica: My dad actually thought this was a month-long school in the, in summer.

>> Gary: Oh, really?

>> Jessica: Yeah. It wasn't until like two weeks before I moved in that I had to break it to him that this was a whole junior and senior year.

>> Steve: Dad, I'm going to be gone for two years. How did he take that?

>> Jessica: He was okay with it, but he wanted to make sure that I was not going to drop out so.

>> Gary: Yeah. Where, it's a serious commitment.

>> Jessica: Yes.

>> Steve: And that, was that ever an issue with you?

>> Jessica: No. Once I got accepted, I was going all the way.

>> Steve: There you go.

>> Gary: Caleb, how about you?

>> Caleb: How did my parents feel about it?

>> Gary: Uh-huh.

>> Caleb: Well, I'm living with my grandparents and they're pretty excited to see me.

>> Gary: That's great.

>> Caleb: Take this opportunity.

>> Gary: Yeah, that's great.

>> Steve: And they're, they're up in, up in Grove right now I take it?

>> Caleb: Yes sir.

>> Steve: Okay.

>> Gary: That's great.

>> Steve: Now how long have you lived in Grove?

>> Caleb: Four years. I moved there. Or about three. I moved there my freshman year so.

>> Steve: Okay.

>> Gary: You got about one minute left.

>> Steve: About one minute left.

>> Gary: If you can say something good about this school for parents and students who might be listening to this program, what would you like to say?

>> Jessica: OSSM has really broadened my views. I would have never heard of some of the things like vertebrate zoology and other type of electric and magnetism if not coming here.

>> Steve: There you go. Great opportunity.

>> Gary: Caleb?

>> Caleb: OSSM really offers you a chance to advance in the field you really want to study in which you. It gives you so many opportunities you would never have back in other high schools.

>> Steve: Tricky question. Where are you going to be five, ten years from now?

>> Caleb: Ten years from now?

>> Steve: It doesn't have to be accurate.

>> Caleb: Maybe, maybe still in school. I don't know.

>> Steve: Really? Okay.

>> Caleb: Getting a Ph.D. or something.

>> Steve: Yeah.

>> Caleb: I, I know I like academia and that's where I want to stay for a long time.

>> Steve: And, and learning. Learning is a life-long process, isn't it?

>> Caleb: Definitely.

>> Steve: How about you?

>> Jessica: Hopefully in a big mansion but.

>> Gary: Got a little materialism going here, but that's okay. That's okay.

>> Jessica: But I also want to sing, so I really like learning.

>> Gary: That's great.

>> Steve: Very good.

>> Gary: We're out of time on this segment. We're coming to you from the Oklahoma School of Science and Mathematics on *Oklahoma Innovations*.

[Music]

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>> Gary: Thank you for joining us on this week's edition of *Oklahoma Innovations*. If you've just joined us, Steve and I are coming to you from the Oklahoma School of Science and Mathematics. Now this is a state funded residential high school for students with exceptional

ability in science and math who plan to pursue careers in science and technology. Students from the across the state apply to this school during their sophomore year at their home high schools, although some have been accepted as a freshman. Admission is a highly competitive process initiated by written application. And as we learned earlier approximately 300 young people apply each year for some 70 to 80 places, so you can tell it's quite competitive. The admissions committee examines multiple criteria including standardized test scores, previous grades, academic. Academic recommendations from teachers, principals, counselors. Special talents and accomplishments. Semi-finalists are interviewed by committees before the final section is, selection is made. And in the school's 20-year history, get this, students have been admitted from all of Oklahoma's 77 counties which I think is great. Typically, about 50% of the students come from communities with populations fewer than 10,000. With 30% from cities with populations over 25,000. Interesting stats, Steve.

>> Steve: Very interesting. And we have a couple of individuals who are very closely involved with OSSM. And we have Suzanne and I'm going to. I didn't ask you how you pronounce your last name so I'm going to.

>> Suzanne: DON-NO-LO.

>> Steve: Donnolo. That was what I would have guessed. I should have just gone with it Suzanne. You're the Director of Admissions. We want to hear about that, about that job and what goes on with admitting students. And we have James Thrasher who is an OSSM graduate. And he has a Bachelor's degree from Tulsa University and a Master's from Stanford out in California. Worked at Los Alamos National Laboratory. And guess what? He teaches math right here at OSSM today. We're going to. Suzanne, the admissions process. Talk to us about what, what all is involved with it. But before you do, tell us about you. How did you get involved with OSSM?

>> Suzanne: I've been with OSSM since the very beginning.

>> Steve: Are you.

>> Suzanne: And I started in February of 1990.

>> Steve: Okay.

>> Suzanne: And I just love it here. It's a great environment. The kids are wonderful. The faculty's wonderful. So I've seen a little bit of everything since I started way back then. Admissions is not very complicated, but it is a very involved process. It starts out with a written application, and the application is made up of many things. One is an inventory that the students tell us their likes and dislikes. Another area are a sampling of six to eight essays where they actually have to tell us something about themselves. Why they want to come here, what their interests are. And then we also ask the parents to write a statement as to why they feel this would be a good match for their student.

>> Steve: If you don't have parental support, you've got problems.

>> Suzanne: Exactly right.

>> Steve: At a, at a boarding school. Is that right?

>> Suzanne: Right.

>> Steve: Yeah. So you want everybody on board here so that the students can have the best opportunity.

>> Suzanne: Right.

>> Steve: For success. I know this is a highly competitive process and I, I know that there's. And we're talking a little bit about marketing here which may not be your area. But how do you go about finding these students?

>> Suzanne: Up until this year, we have gone to all the high schools in the state and talked to interested students about the school. But this year, due to the budget constraints, we had to pull back from that. And so over the years we've compiled lists, various lists. Lists from the Duke talent search where we purchase the list of names of students who might be interested in attending.

>> Steve: So you known about these students before many of them know about you, is that right?

>> Suzanne: That's exactly right. And then we have a wonderful prof, Coach Lawson, who is our middle school coordinator. And over the last several years, he's helped by being very active in Math Counts, which is a statewide math competition. Actually a nationwide math competition. As well as a middle school math contest that we do here for sixth, seventh, and eighth graders. And that gets the students and the parents on campus so that they learn about OSSM. If people come, come here and see what the school's about.

>> Steve: Sure.

>> Suzanne: Then they love it. If they don't know anything about us then they go oh, I'd never send my child to a.

>> Steve: Right.

>> Suzanne: To a residential school, so.

>> Steve: Right. Yeah. Keep them home.

>> Suzanne: That's right. And then we work with the teachers. We have compiled lists. Now email has made it much easier to get the word out about the school. And in the spring. No, not spring actually, it's winter. We'll be hosting a, a meeting in Tulsa at Hardesty Library in the evening to try to get the word out more to that part of the state. Because many times if you're not in a certain SMSA or whatever, it's hard for people to know that there's actually the school.

>> Steve: I see. Okay, so you're looking at these students sometimes when they're still in like middle school? And then getting them, looking at them as, as potential candidates for OSSM down the road.

>> Suzanne: Correct. If. We have found recently that if a student does not know about us by the eighth or ninth grade, then it is too late in tenth grade for them to make that decision to apply.

>> Steve: I see. Okay. Have to, have to do things in advance. Well, James, you. You teach math here at OSSM.

>> James: That's correct.

>> Steve: And you've had an illustrious career already. You don't look like you're old enough to have been all the places that you've been, but I'll accept the fact that you are. Tell us a little bit about your experiences before you came to OSSM.

>> James: Sure. I grew up in. My hometown is Bartlesville, Oklahoma.

>> Steve: Okay. In Washington County.

>> James: Washington County. And basically loved math and science. And kind of my brothers and I and sister would kind of do experiments, science fair, what not.

>> Steve: You didn't blow up the garage, did you?

>> James: No.

>> Steve: Okay.

>> James: No. The garage is still intact.

>> Gary: But you should see his room.

>> James: That's correct.

>> Steve: Well, you went out to Los Alamos. I mean that's, that was a unique experience. New Mexico having some of the, the most I guess highly concentrated number and size of, of federal labs. And you worked there for how long?

>> James: I worked there for seven years.

>> Steve: Oh, wow.

>> James: If you count graduate school.

>> Steve: Yeah.

>> James: So basically after my time at Tulsa I decided that working for the National Labs kind of was a. The national security.

>> Steve: Sure.

>> James: Aspect of that was important to me. Making money was a little bit lower on the list, and so went out to the National Laboratories and it's a very dynamic, diverse group of people.

>> Steve: Right.

>> James: Who will basically do just about everything. And I think being here at OSSM really kind of helps prepare you for that sort of environment where you've been exposed to quite a variety of different sizes and math applications.

>> Steve: Right. Well, now you're a professor. Now you're teaching students here at OSSM.

>> James: That's correct.

>> Steve: Well, tell us about that experience.

>> James: Well, it's been great seeing the school from the other side of the podium, I guess so to say. It's been very fun working with the students. I mean it's a very bright, gifted group of kids. And it's basically made it very easy, my decision, to come here to teach just because the students.

>> Gary: Here's a. Here's a question for you.

>> James: Uh-hmm?

>> Gary: Generation differences. I mean you're not that far away. But when you think about today's kids compared to when you were going to the school, talk about that.

>> James: Well, today for example, the kids were. The students were moaning about the fact that they're not allowed to have cellphones here on campus.

>> Gary: Oh, my God.

>> Steve: Oh, no.

>> James: And in my generation of course, you know, the cellphones were these giant, you know.

>> Gary: Yeah.

>> James: Totes that you [inaudible].

>> Steve: But you didn't have to carry them.

>> James: Yeah. So that's one big difference, you know, is I think the level of connectivity that the students here are used to.

>> Gary: Yeah. Yeah.

>> James: And their network kind of so to speak shrinks a little bit.

>> Gary: Technology has changed though in the communication world and in the learning world.

>> James: It has.

>> Gary: So that's had an impact as well I'm sure.

>> James: I've, I've often debated whether to just email the students their homework assignments and communicate them via, via email as opposed to doing some of those, we're taking class time to do that.

>> Steve: Which is happening more and more at the college level.

>> James: That's correct. And even in the working environment.

>> Steve: Right.

>> Gary: But what about their attitude? Their learning attitude compared to when you were here?

>> James: Well, I think that the.

>> Gary: Is it compatible?

>> James: For example, today we looked at articles on Wikipedia in class, right? And that's something that didn't really. I mean Wikipedia didn't exist when I was a student. So I think that the opportunities to access information is a lot greater. And so it's nice to be able to point them to these resources that already exist.

>> Gary: Yeah.

>> James: Because it makes the information so accessible.

>> Steve: James, let's get personal just a minute. What years were you here?

>> James: So I was here between 1995 and 1997.

>> Steve: Well, it hasn't been that long ago, but yet it has been more than a decade ago so there are differences that as you indicated. When you came back and you saw the challenges ahead, you had a kind of a feel for it, what did you. What's your thought? These students come in here and you, you know, you have to motivate them and you have to get them excited about what they're doing. They're already highly motivated or they wouldn't even be here. But give us an idea of what, as a teacher, as a professor, what do you see as you go up to the classroom every morning?

>> James: Well, I think that the big change that happens in high school and in college and even in graduate school is learning how to study. I mean I think that that's the big thing that we try to, to teach the students or get across to them. Is just really how to be self-learners. They basically come in, you know, from their home high school which usually has done a really great job preparing them, you know, up until now. But we want to kind of take it up another notch.

>> Gary: Sure.

>> James: But the students have to take it up a notch, you know. So to some extent we're just coaches here, you know, and we try to basically push them. They're in an environment with very strong students, you know, just like athletics would be. They're kind of surrounded by.

>> Gary: Basically, more, more you'd. Helping them develop more discipline in their study habits.

>> James: That's correct.

>> Gary: Yeah.

>> Suzanne: What's also unique though about.

>> Gary: Go ahead.

>> Suzanne: What's also unique about James, two things. One is when he was here we did not have this campus.

>> Steve: Oh my! That's right.

>> Suzanne: All we had was the old Lincoln School.

>> Gary: That's true.

>> Steve: That's right.

>> Suzanne: Which is now the Manning Academic Center.

>> Gary: Yeah. He's.

>> Suzanne: So he was part of that immediate, of the pioneers as it were.

>> Steve: Yeah.

>> Suzanne: And had to ride the bus every morning from O.U. to.

>> Gary: Got you.

>> Suzanne: To Ok, Oklahoma City, and that is very, very unique. The second thing is he's donating his time, which is also unique, because he realizes that there, there is a need for math teachers here. And we have been constrained because of budget constraints.

>> Gary: Yes.

>> Suzanne: And so that's an amazing thing that he would be willing to do that through here.

>> Steve: Got a quick question for you, Suzanne. You know, I know they're, they're going to be building some new buildings out here not far from where we're sitting right now. And that's going to roughly double the, the number of students who will be coming to OSSM here at this main campus. And what kind of strain is that going to put on the admissions process? Very much at all?

>> Gary: Got about ten seconds.

>> Suzanne: Not really, because we really have a whole bunch of bright students out there. Last year we could have accepted over 120 additional students.

>> Steve: Okay. So you're ready for them, aren't you?

>> Suzanne: Yeah. We're ready.

>> Steve: Okay.

>> Gary: Outstanding. Well, I hope you are enjoying it as much as we are talking to people and students from the Oklahoma School of Science and Mathematics. And when we come back got a lot more to talk about. Stay with us on *Oklahoma Innovations*.

[Music]

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[Music]

>> Thank you for joining us on this week's edition of *Oklahoma Innovations* with Steve Paris and I coming to you from the Oklahoma School of Science and Mathematics. This is a 32-acre campus in Oklahoma City located just south of the state capitol. And interesting, interestingly Steve, schools similar to OSSM exist in 12 states. But the late Dr. Julian Stanley, a nationally known expert on gifted education, called OSSM the most rigorous academic program of its kind in the nation.

>> Steve: And I'll bet you that the students we're getting ready to talk to can, can attest to that fact. We talked to a couple of juniors earlier in the earlier segment and we've got two seniors

now. Two folks who have or about to go through the last semester here before very long here at OSSM. And they're, we're going to talk to them about the future. We have with us from Stillwater, Kyra Atekwana. And Kyra, you, you had some ideas of what you wanted to be when you came to OSSM. And share that with us.

>> Kyra: Well, first coming to OSSM of course I knew that I wanted to be a doctor. Particularly an obstetrician. But upon coming here after doing a research project in an anatomy physiology class, I realized that I really wanted to be an in vitro fertilization specialist.

>> Steve: In vitro fertilization specialist? Is that anything you had even heard of before you came to OSSM?

>> Kyra: Not at all.

>> Steve: Okay. So you've got your horizons widened and now you're looking at some opportunities down the road. Now I'll bet as a senior you're thinking about where you're going after OSSM, right?

>> Kyra: Yes.

>> Steve: Well tell us, where are you going?

>> Kyra: Hopefully I'm going to hopefully a really good school. I'm applying to 11 different schools right now.

>> Steve: Eleven?

>> Gary: Wow!

>> Steve: Eleven. Would it surprise you if you were, if you were accepted by all 11?

>> Kyra: Nope. Not to sound cocky or anything, but I think OSSM has really prepared me.

>> Steve: Yes.

>> Kyra: To be able to say that I honestly think I can get into most schools.

>> Gary: So now, it's not as intimidating to you.

>> Kyra: Yeah.

>> Gary: That's great.

>> Steve: Well, one of the things I, I would like to ask you is, you know, you have to set up a practice somewhere. And I know it's a little early, but you got any ideas where you'd want to be practicing in vitro fertilization as a specialist?

>> Kyra: I've actually been thinking a lot about staying in Oklahoma for some part of the time at least. Other than that, probably Massachusetts or somewhere on the East Coast.

>> Steve: Yeah. And eventually wind back up in Oklahoma.

>> Kyra: Yeah.

>> Steve: I'm sure. I'm sure folks who your, from your home would want you to be back here.

>> Kyra: Yes.

>> Would you all give her a gold star OK?

>> Steve: There you go.

>> Gary: Right.

>> Steve: We also have with us, we have Carlos Rubio who's from Carnegie, Oklahoma down in the southwestern part of the state. A great part of the world.

>> Carlos: Yes sir.

>> Steve: And you came as a senior, you're a senior now. You kind of liked. Kind of were. You were interested in chemistry and biology, and your ideas have changed a little bit since you've come here, is that right?

>> Carlos: Yeah. Coming in here the only classes, science classes that I really took were biology and chemistry. But when I got here I was exposed to a lot of different classes, a lot of environmental science classes. And I realized how much I do care about the environment and how much I do want to work to give back something to the world that's given so much to me.

>> Steve: There you go. I think the word today is we're thinking green.

>> Carlos: Yeah.

>> Steve: I don't if that this is what you're looking at. But give us an idea of where you see yourself as, after you get out of school and maybe you'll never get out of school. Maybe it's something you do for the rest of your life. Most people do or many people do in different forms. But you, you're going to. You want to be involved as you said in environmental sciences. Give me an idea of what kind of occupation that would be.

>> Carlos: Well, I definitely want to take some ecology classes so I'll have some understanding of what is actually going on with the organization. Maybe some chemistry. And also, some business so I'll be able to maybe manage the operations. Maybe work somewhere in South America or Africa and kind of work to conserve like rain forests.

>> Steve: Wow.

>> Carlos: And animals and stuff like that, because there's just not enough activists out there to do that.

>> Steve: There you go. Well, if we don't save the rain forest in Brazil.

>> Carlos: Yeah.

>> Steve: Then we're all going to be breathing a little heavy here in the future.

>> Carlos: Yeah.

>> Steve: Is from what I understand anyway. Okay. So both of you have. Well, let's talk about your, your plans for the future in which. How many universities are you applying for?

>> Carlos: About seven.

>> Steve: About seven.

>> Carlos: Yeah.

>> Steve: Okay. Give us an idea of some of them, what some of those might be.

>> Carlos: Some of the colleges I'm applying to are Williams College in Massachusetts. University of Southern California. University of Miami. Reed College. University of Colorado.

>> Steve: Very good. So think you'll have any trouble getting, getting accepted?

>> Carlos: I hope not!

>> Steve: Not, not really a fair question is it. Okay. Let's talk about leaving home, coming to OSSM. How difficult was that?

>> Carlos: It was particularly difficult for me because I'm really close to my family. I love friends and stuff, but I probably spent more time with my family than I did with my friends. But I still see my family up here. My brother sometimes comes and has lunch with me here. My mom will come and visit me and stuff, so it's not that much of a difference.

>> Steve: Very good. Kyra?

>> Kyra: I actually was pretty scared coming in because I was 15 when I came and I felt like I was leaving home for forever and I was on my own and everything. But actually, it's turned out to be pretty well. I'm going to go home most weekends so.

>> Steve: Okay.

>> Kyra: It worked out.

>> Steve: And you don't have to go very far. Stillwater's not very far from here.

>> Kyra: Yeah.

>> Steve: Very good.

>> Gary: Well, it's really fun to hear their stories.

>> Steve: Well, it is.

>> Gary: All these things and experiences.

>> Steve: And I, I know there's a lot more to tell here too.

>> Gary: Yeah. Absolutely.

>> Steve: Yeah.

>> Gary: But I tell you what, we want to get. We want to allow time, Steve. We had talked about having our early guests, Dr. Edna Manning who's president of OSSM, and General Ben Robinson, Vice President of Institutional Advancement, to come back with some final comments. Because they have some other things that we want to allow time for on the program, Steve.

>> Steve: We, you know, we cut them too short in the earlier segment.

>> Gary: We did. Yes.

>> Steve: So I want to get Dr. Manning on very quickly. Outreach. You all have an outreach program that, that reaches teachers.

>> Dr. Manning: Teachers.

>> Steve: And students.

>> Dr. Edna Manning: Teachers and students.

>> Steve: Talk about that.

>> Dr. Edna Manning: Throughout the state.

>> Steve: Talk about that.

>> Dr. Edna Manning: We have workshops for teachers in the summer. Generally we work with middle school math and science teachers. Have some workshops that are funded by the Hilly Foundation out of Tulsa. And Conoco-Phillips where we bring these teachers in for a week, teach them a little more math and science, new techniques, give them some equipment. And then support them when they go back to their home schools through the school year.

>> Steve: Okay.

>> Dr. Manning: So that we reach hundreds of students through them. We do a few workshops in the summer for students who come in, maybe take a two-day, three-day computer science workshop. We do workshops for students who participate in Math Counts. And then we have some regional centers at 19 different locations around the state.

>> Steve: Very good. Nineteen centers and, and I, I assume General Robinson probably knows a little bit about those 19 centers. I know you do. Talk to us about those, General, if you would please.

>> General Robinson: Well, it's all part of this concept of advancing the, the institution. We have a Center of Excellence, and what you've heard so far is students that are right here at the Center of Excellence and the, the, the curriculum we have here. But we're able to cascade that curriculum out to 19 regional centers.

>> Steve: Right.

>> General Robinson: And these 19 regional centers, you take one regional center such as the one over at Shawnee, it may serve there or four different communities.

>> Steve: Sure.

>> General Robinson: Better than Shawnee.

>> Steve: Right.

>> General Robinson: So the, the 19 centers times three to four more communities that are out there, we're talking about close to 80 different communities, 207 students right now. And these are students that, that understand they want to have a critical curriculum, critical studies in science and math. But at the same time, they've also got school athletics that they're involved in.

>> Steve: Right.

>> General Robinson: I met one young man that was the president of his high school senior class at his home town. And he didn't want to give that up, but he has to balance that between.

>> Steve: Sure.

>> General Robinson: Those desires to continue with his high school life. But at the same time understand there's an opportunity to have a rigorous education in science and math. So we have really brought the best of both worlds together.

>> Steve: Exactly. Now I understand there's a little bit of a difference in the, in the number of hours the students at the centers attend.

>> General Robinson: Right.

>> Steve: Versus the one here at OSSM.

>> General Robinson: Right. Right.

>> Steve: At the headquarters.

>> General Robinson: Traditionally they're out there for three hours a day. Scien. And the, and the courses are calculus and physics but very rigorous. And we demand the same standards of that level of education that we do here. We don't, we don't change it for a regional center. It's the same level of education.

>> Gary: Sure.

>> General Robinson: So these are young men, the young women that have an opportunity now to have that critical thinking path that they're going to be on as they go onto their college, their college career. So by doing so you're getting a lot more money.

>> Steve: Right.

>> General Robinson: Out of it. A lot more value out of the dollar spent by our legislators, and I think that's something that the legislative leadership around here can be proud of.

>> Gary: Exactly.

>> General Robinson: The decision that they've made to stand up for the regional centers along with the Center of Excellence and its outreach program that Dr. Manning. Now we're statewide opportunity for young men and young women and teachers across the state to improve the ability to teach science and math.

>> Gary: Well, when you speak loudly, it speaks loudly when we say investing in Oklahoma's future, you're doing it powerful.

>> General Robinson: Absolutely. Absolutely. And this is a great national marketing tool. To understand that, that. That Oklahoma is a great place to do business and this kind of business.

>> Steve: There you go.

>> General Robinson: When it comes to science and mathematics.

>> Steve: Now I assume a lot of the students who attend those regional centers wind up, some of them wind up here.

>> General Robinson: There is certainly an opportunity. And we've met some of them that, that were. They had, took the opportunity to join.

>> Steve: Right.

>> General Robinson: In their sophomore year.

>> Steve: It's not required but.

>> General Robinson: And they came on.

>> Steve: Yeah.

>> General Robinson: And, and there's also young men and young women who have repeated their junior year just to come here.

>> Steve: Wow.

>> General Robinson: Now that is a tremendous testimony to what the value that they see and their parents see in a school like this.

>> Gary: By the way, we want to give time here, Steve. A website where parents and teachers can investigate the school further?

>> Dr. Manning: Yes. They can see our website at www.ossm.edu.

>> Gary: Great. You guys have been great hosts. And we would like to thank Laurie Webster for, their Director of Public Information, for having you lined up to be on our show, Steve. I had a great time.

>> Steve: Gary, it's a wonderful place.

>> Gary: Thanks for joining us on this week's edition of *Oklahoma Innovations*. Have a good week.

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