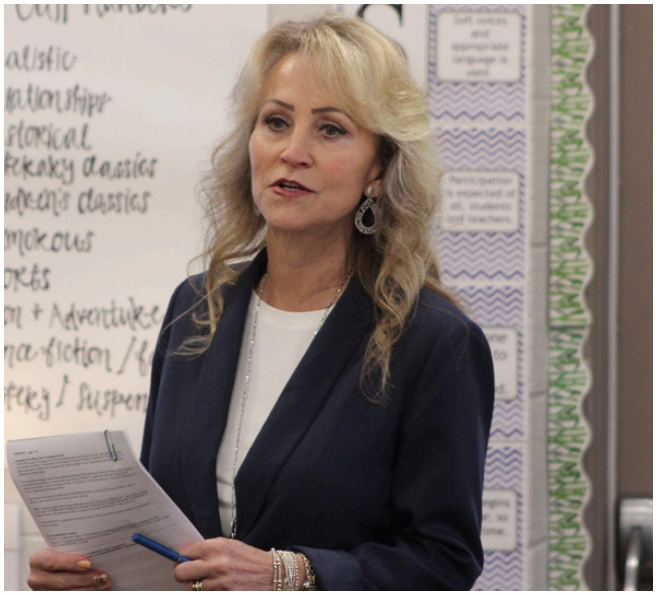
CROCKETT MIDDLE SCHOOL INITIATES STEMOVATE PROGRAM FOR SIXTH-GRADERS



Above: Crockett County Middle School Principal Becky Winegardner ("Mrs. B") introduces the STEMOVATE initiative from the school library Monday. (Photo by Ron Barry)

Are you smarter than a sixth-grader?
Odds are – if you're an adult and you stick around Crockett County – you won't be, at least in a few years.

That's because Crockett County Middle School has partnered with the University of Tennessee—Oak Ridge Innovation Institute, Tennessee 4-H, the Oak Ridge Institute for Science and Education (ORISE), and UT-Battelle, operating contractor of Oak Ridge National Laboratory for the Department of Energy, as one of 21 counties to launch an interactive classroom program called STEMOVATE, providing lessons in science, technology, engineering, and math (STEM) to sixth-graders.

CCMS Principal Becky Winegardner introduced the program Monday, flanked by members of the ORISE staff, the Tennessee Department of Education, 4-H and UT Extension leaders, and Crockett County School Board members Will Spence and John Cole.

Taking the lead at Monday's gathering in the CCMS Library was Dr. Keith Carver, former Crockett Countian and UT-Martin Chancellor, who is now the Senior Vice Chancellor and Senior Vice President of the University of Tennessee Institute of Agriculture. The affable Carver prefers to boil that title down to "CFO": Chief Farming Officer.

Carver told the gathering that agriculture and timber remain the state's largest economic impactor and that Tennessee also has the largest number of 4-H students than any other state in America. But he also cautioned that the state is rapidly losing farmland every year, which is a major reason to bring more technology into the agriculture field.

"With less farmland each year, we've got to find scientific answers as to how to get more crop yields per square yard and more milk per dairy cow and higher quality beef per cattle herd," Carver said. "The STEMOVATE program is a way to get more students in rural areas more interested in scientific approaches to agriculture and problem solving. It will begin this year in 21 of Tennessee's 95 counties. Next year we hope to be in all 95 counties, and in the next five years we hope to expand the lessons to seventh- and eighth-graders as well."

Carver said that UT Chancellor Randy Boyd has been introducing these sessions across the state, but that he (Carver) specifically requested to do this one at CCMS, having grown up in Frog Jump and attended school here.
"I respectfully elbowed him out of this stop," Carver laughed. "It's my hometown school, and I definitely wanted to be a part of this special day here."

The mission of the STEMOVATE program is "to completely remove the notion that there are limits on the developments youth can contribute to Science, Technology, Engineering, and Mathematics fields. We believe that everyone has an infinite capacity for innovation and creativity. Our programs build a lasting interest and love for science, technology, engineering, and mathematics through creative expression and hands-on learning."

Carver turned the program over to Shelby Cross of the UT Extension. She is the Crockett County 4-H Youth Development Agent, and she proceeded to take the gathered leaders into an adjacent classroom where a special STEMOVATE "Are You Smarter Than a Sixth-Grader?" challenge was to occur: Which group could build the "fastest, coolest, and safest" roller coaster.

The adults were to be challenged by a sixth-grade class of students taught by Leslie Essary. A video was shown of the Wild Eagle ride at Dollywood, and then the various groups in the room broke off into teams to build their own roller coasters, learning the STEMOVATE emphasis on kinetic energy and potential energy.

The best part of the challenge occurred when Carver, Winegardner, and Crockett County Director of Schools P. A. Pratt – rather than team with the other adults – each dove into the project with a different group of students. To see the engagement of the sixth-graders with the requirements of the STEMOVATE lesson was an indication that the program will be a successful venture.

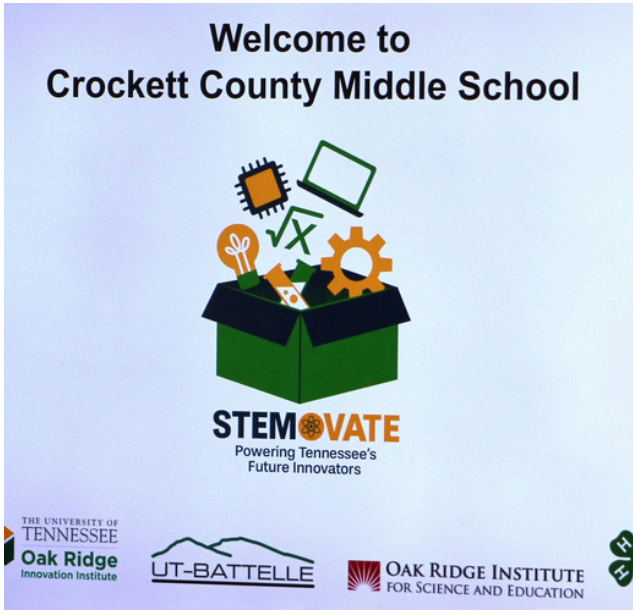
The students were tasked to identify the positions on their tracks where the highest levels of kinetic energy and potential energy were located (the science part); determine the length of time it took a marble to go from start to finish (the technology part); secure the track tubing together with tape and establish their hills and loops while still keeping the marble from leaving the track (the engineering part); and then compare the speeds of their various runs to maximize the "thrill" of a roller coaster (the math part).

STEMOVATE lessons are focused on nuclear energy, artificial intelligence, engineering design, and agriculture are aligned with state standards and emphasize areas of growth for Tennessee and the nation. Interactive STEM experiences engage students in critical thinking, problem solving, and teamwork, while connecting abstract concepts to real-world applications.

Winegardner said the STEMOVATE lessons will be taught once a month. The lessons are actually developed by the ORISE team of educators, who are just an email away if local teachers have any questions.

The 4-H agents in Crockett County and Overton County participated in a pilot of the STEMOVATE program last year. STEMOVATE is aimed at sixth-graders, according to Stephen Streiffer, president and CEO of UT-Battelle, "because engaging with students early is critical to sparking an interest in science and building the future STEM workforce. The STEMOVATE program will be a creative way to reach students and their teachers where they are, introducing them to the fascinating questions scientists are trying to answer today."

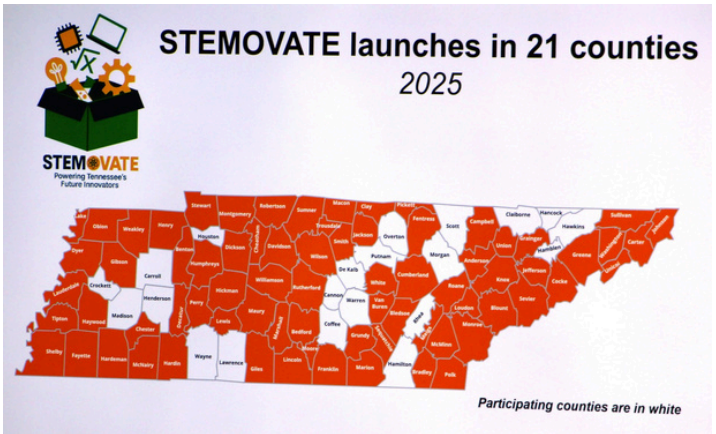
Following the STEMOVATE session Monday, Carver was then taken on a tour of some of the newest areas at the high school, where FFA students guided him through classes featuring some of the distinct offerings that Crockett affords its students. A story focused on that tour will appear tomorrow.
[Portions of the information in this article were furnished by Bridget Waller, Director of Communications at the UT—Oak Ridge Innovation Institute.]



Above: The official "Welcome" slide. (Photo by Ron Barry)

Below: Former Crockett Countian Dr. Keith Carver -- now "Chief Farming Officer" (CFO) of Tennessee -- tells Monday's gathering why he's so excited about the STEMOVATE launch at CCMS. (Photo by Ron Barry)





Above: The 21 counties (in white) that are initiating the STEMOVATE program this school year in Tennessee. (Photo by Ron Barry)

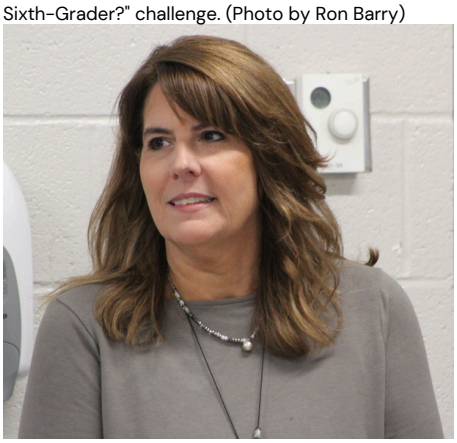
Below: Shelby Cross ("The 4-H Lady") of the UT Extension, the Crockett County 4-H Youth Development Agent, explains to Monday's gathering what they are about to experience. (Photo by Ron Barry)

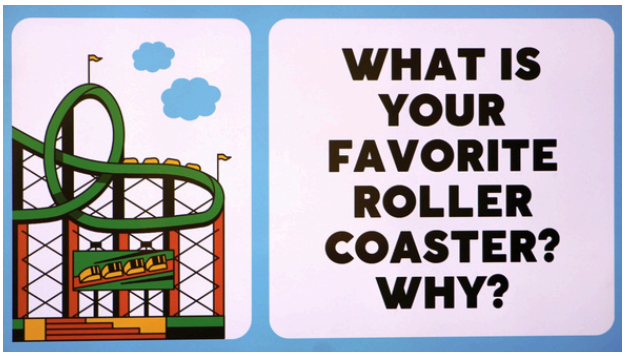




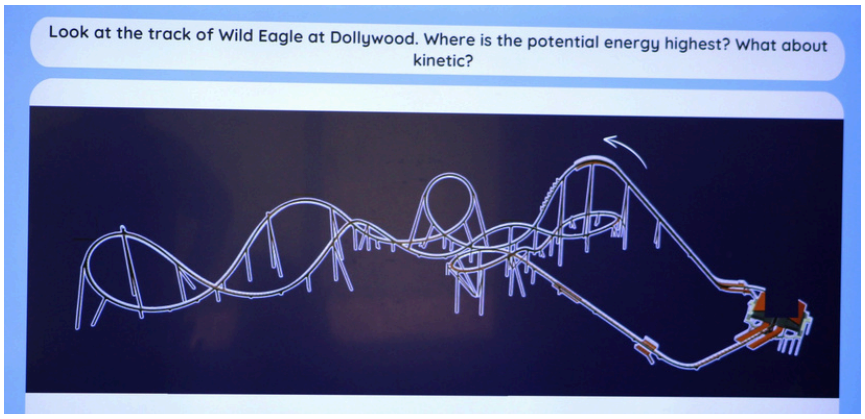
Above: Natalie Fahhoum, an ORISE Project Manager Specialist, describes for the group why these lessons are geared toward sixth-graders, in the hope of getting them engaged in the future of STEM. (Photo by Ron Barry)

Below: Leslie Essary, a sixth-grade science teacher at CCMS, will furnish the class that will compete against the adults in the "Are You Smarter Than a Sixth-Grader?" challenge. (Photo by Ron Barry)



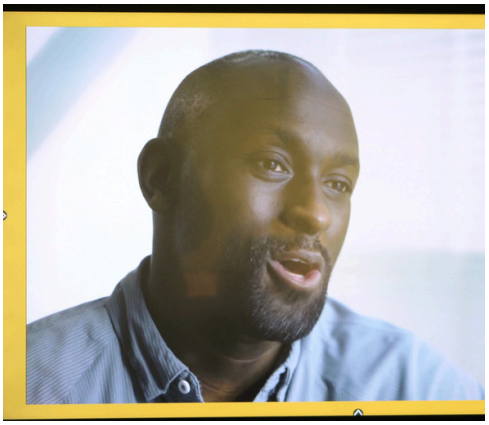


Above: The ice-breaker slide, designed to immediately engage the students in telling their experiences of riding roller coasters. This won't be your ordinary science class, they think. (Photo by Ron Barry)



Above: Then the teacher brings the science in, asking the students about kinetic energy and potential energy on this diagram of the Wild Eagle. (Photo by Ron Barry)

Right: A video is shown, featuring the story of Donnelly Williams, who studied mechanical engineering in order to... design roller coasters! (Photo by Ron Barry)



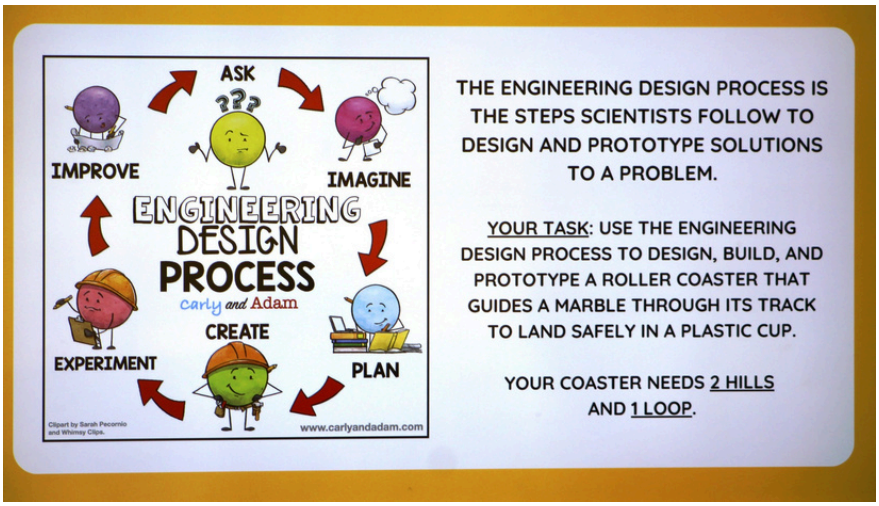


Left: The students begin to perk up and engage with the question-and-answer period. How can you make a roller coaster the "fastest, coolest, and safest?" (Photo by Ron Barry)

Below: Then the actual assignment is given, featuring the Engineering Design Process in an easy-to-understand graphic. (Photo by Ron Barry)



Above: A ride on one of Donnelly Williams' creations -- the Wild Eagle at Dollywood -- is simulated in the video, grabbing the students' interest as they are encouraged to raise their hands when going fast. (Photo by Ron Barry)



Below: The students begin to put pencil-to-paper as they flesh out their design ideas. (Photo by Ron Barry)





Above: Each group has ideas percolating. (Photo by Ron Barry)

Below: The excitement on Natalie Fahhoum's face is obvious as the students rapidly engage in a lesson that she has helped to create as a member of the ORISE team of educators. (Photo by Ron Barry)





Above: One of the most competitive "kids" in the class shares some strategy with his group. Yes, it's Crockett's Director of Schools P. A Pratt. (Photo by Ron Barry)

Below: Keith Carver has jumped into a group too, and he has this young lady's mind buzzing with thoughts on the best possible design. (Photo by Ron Barry)





Above: This young lady is closely analyzing her group's final drawing to see if it has any obvious flaws. (Photo by Ron Barry)

Right: Not to be outdone, Mrs. B jumps into a different student group and starts strategizing with them. (Photo by Ron Barry)





Above: These students in Mrs. B's group are trying to decide how high their initial hill needs to be to generate maximum speed. (Photo by Ron Barry)



Left: Meanwhile, an adult group in the corner -- featuring Crockett's Director of Special Education Cody Dew -- is plotting to actually BE smarter than the sixth-graders. (Photo by Ron Barry)

Below: These students in Keith Carver's group have their measurements made and are ready to solidify the loop in their roller coaster track as Carver holds up the launch point. (Photo by Ron Barry)





Above: ... but can it compete with this design right next door? (Photo by Ron Barry)



Above: One more tweak on the tape at the top ... (Photo by Ron Barry)

Below: Somebody had a good idea over in THIS group. It's clear to see that the STEMOVATE lesson has excited this batch of sixth-graders. (Photo by Ron Barry)





Above: Before Keith Carver left for the day, he ran into one of his favorite students from his UTM days, Ellary Brewster -- now an Algebra 1 teacher at CCHS. (Photo by Ron Barry)