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Local teacher, students conduct research with NASA

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Posted: Sunday, July 28, 2013 10:00 pm

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Theresa Paulsen, a local science teacher, was selected last year to be part of the NASA/IPAC Teacher Archive Research Program. The program partners small teams of educators and students with a mentor astronomer to conduct an original research project. Paulsen met her team in January while attending the annual American Astronomical Society meeting in Long Beach, Cal. Through the winter and spring, the team collaborated via weekly teleconferences to draft a scientific proposal that was later approved by the program leaders at NASA.

SUBMITTED

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Pictured from left are Elizabeth Pankratz, Laura Paulsen, Shayla Michel, Hannah Juoni and instructor Theresa Paulsen next to a model of the Mars Curiosity Rover at the California Institute of Technology, home of NASA's Jet Propulsion Laboratory.

Paulsen was working in the Mellen School District at the time the project began. Three students from the Mellen High School, Hannah Juoni, Shayla Michel, and Elizabeth Pankratz, as well as Laura Paulsen from the Washburn High School were selected to participate in the project. None of these students had taken an Astronomy course, so they had their work cut out for them. "Astronomy is something that always interested me and this will definitely help me get a greater understanding of it. I really like being a part of this so I can help conduct research for NASA and widen my knowledge of science. I feel this is a once in a lifetime opportunity and it could open many doors for me in the future," explains Pankratz. Students spent the spring semester, learning about galaxies, active galactic nuclei, black holes, the electromagnetic spectrum, and what can be learned from studying the magnitudes, color indices, and redshifts of luminous objects in space.

Last week, Paulsen and her team of students flew to California to meet with their mentor astronomer, Varoujan Gorgian, from JPL, and the other teacher/student teams from Connecticut, New Hampshire, and Tennessee. The entire research team began downloading data from NASA's abundant archives to produce color magnitude diagrams of active galactic nuclei. This research will hopefully provide a method of verifying the work of Edwin Hubble to determine distances to galaxies. These distances are used to determine the rate of universe expansion so it is important that they are accurate and verifiable.

While at Caltech, the group toured the Jet Propulsion Laboratory where the Mars Curiosity Rover and many other fascinating mission instruments have been designed and tested. "The brain power behind each mission is phenomenal, yet we learned that you don't have to be Sheldon Cooper to work at places like Caltech or JPL. We met very normal, happy people with a lot of passion for what they do. I hope this trip has inspired my students to reach beyond the stars. They can be anything they want to be," says Paulsen.

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In August, Theresa Paulsen will begin working for the Ashland High School. She would like to expand her team with

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up to four more students from Ashland. These students will collaborate with current team members to complete the data analysis and draw conclusions. Paulsen and her team of students will attend the next annual American Astronomical Society meeting in National Harbor, Maryland in January 2014. They also plan to present their project and experiences with NITARP program at area high schools and at the upcoming Wisconsin Society of Science Teachers Convention, provided funding for travel is available. Interested students can find the application online at diggingscience.weebly.com. Applications are due Sept. 13th. If you or your business would like to support the project with a donation for uncovered travel expenses, please send it to the Ashland School District care of Theresa Paulsen.

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