A MODEL FOR ENGAGING TEACHERS AND STUDENTS IN AUTHENTIC STEM RESEARCH: THE MARS STUDENT IMAGING PROJECT. S. L. Klug[1], P. R. Christensen[1], P. Valderrama[1], B. Grigsby[1], B. Gootee[1], L. Rogers[1], [1]Arizona State University, Mars Space Flight Facility, Moeur Bldg. Rm. 131, Box 876305, Tempe, AZ 85287-6305, sklug@asu.edu

Introduction: Across the nation, in many classrooms, a growing problem is emerging. How do teachers, in the environment of high-stakes testing, provide engaging, hands-on, minds-on activities related to the fields that experts say are on the decline – science, technology, engineering, and mathematics (STEM)? This problem has many factors that feed into it and makes it more difficult to address: lack of professional development opportunities for teachers in STEM areas, low school funding support for STEM activities, lack of time in the school day to engage in any activities not directly tied to the "Test". NASA, by many educators, has been a lifeline of STEM programs and materials that give students a willingness to engage in STEM learning. Programs that can offer direct engagement of students and teachers are often the ones that inspire and drive both audiences into higher levels of learning and engagement. The Mars Student Imaging Project (MSIP) has been in existence for nearly 4 years. It was a proto-type program on involving large groups of students (grades 5 – 14) in authentic research using the THEMIS camera as it currently orbits Mars onboard the Mars Odyssey spacecraft. To date, over 11,400 students have participated in the MSIP program. These students are from 32 states and 4 countries. As of December 2005, a total of 258 student teams have participated. 91 teams have come on-site to the Mars Space Flight Facility at Arizona State University, 53 have been distance learning teams, and 114 archive format teams (these descriptions can be seen at the MSIP website – http://msip.asu.edu). Out of the 11,400 students, 952 have been female and 584 have been from underrepresented groups. MSIP has been not been formally evaluated (planned for 2006), but anecdotally, there have been many indicators as to its success. Teachers have been repeating MSIP in their curriculum. They have been expanding the numbers of students on their teams (teams range from 8 students to 200 – average is approx. 30). Teachers have been writing grants to expand participation on their part (there is no charge to participate in MSIP). There have been presentations on MSIP by educators who have participated at scientific conferences (AGU and LPSC).

Outcomes: There have been several exciting outcomes from the Mars Student Imaging Project that we are eager to quantify and evaluate. Students, as reported by their teachers, are highly engaged in this project and ask to be part of future teams or look for other NASA-related opportunities. Many students (we are currently starting to track teams and teachers) have gone on to higher levels of programs (e.g., Mars Exploration Student Data Teams, NASA Internships, etc.).

Future Prospects: The MSIP model can be used by other missions (not just Mars) to engage students in a realistic manner and give them experience in the scientific process. The Mars Student Imaging Project has deep experience in workable scenarios that make learning science accessible to students that have high technological capabilities, low technological capabilities and no technological capabilities.