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Solar hydrogen fuel generation through water splitting is the ultimate goal of a nationwide solar energy research initiative called the Solar Army. A fluorescence-based device called HARPOON 1.0 is currently used in the Solar Army to test oxygen-generating capabilities of mixed-metal oxide samples and identify samples that might catalyze water splitting. The West Virginia Brigade of the Solar Army, including First2 Network and high school students, is developing HARPOON 2.0. Less-complicated, cheaper, and more classroom-friendly, HARPOON 2.0 allows students as young as middle school to carry out real solar energy research. A suspension of titanium dioxide nanoparticles in sodium hydroxide nucleates the formation of oxygen bubbles above the metal oxide samples. The bubbles are visualized using scattered white light. Progress towards standardization and reproducibility of results obtained from diverse users and samples will be reported. This research was made possible by Fairmont State University College of Science and Technology and NASA WV Space Grant Consortium.