962-N1-342   **Kathleen M Shannon*** (`kmshannon@ssu.edu`), Kathleen Shannon, Chair, Dept. of Mathematics and C.S., Salisbury State University, Salisbury, MD 21801, and **Michael J Bardzell** (`mjbardzell@ssu.edu`), Michael J. Bardzell, Dept. of Mathematics and C.S., Salisbury State University, Salisbury, MD 21801. *PascalGT: Conjectures, Explorations, and Reasoning in Mathematics.* Preliminary report.

PascalGT is a program we have developed to engage students at varying levels of mathematical maturity in reasoning and visualization exercises which deepen their understanding of, and strengthen their intuition about, mathematics and can lead to substantive undergraduate research projects. It produces images and animations of one and two dimensional cellular automata based on modular arithmetic or other group multiplication. One such 1-D cellular automata is Pascal's Triangle mod n where the patterns and their complexity vary depending on the modulus n and its properties. PascalGT also generates versions of Pascal's Triangle using non-cyclic groups. Similar 2-D automata present questions relating to the patterns of the iterations, the relationships among the size of the grid, the properties of the integer or the group used to generate the automata and the period of the steady state cycle it eventually reaches. It is our hope that this paper will interest faculty in using this program (available at: http://faculty.ssu.edu/ kmshanno/pascal/pgtdown/) or in developing similar exploratory packages. We will demonstrate the use of technology with students both to aid in exploration of existing mathematics and to generate new avenues of mathematical investigation. (Received September 11, 2000)