In this talk we present aspects of the very rewarding but challenging experience of mentoring an interdisciplinary undergraduate research project on the retreat of glaciers in a changing climate. The focus of the project was to create a mathematical model to study the effects of different climatic factors on glacier area, and to simulate the evolution of glaciers using different projections of global temperature over the next century. In this talk we emphasize the timeline of the project, from recruiting the student and selecting a suitable topic to disseminating the results through publication and conference presentations, and discuss overcoming the various challenges encountered along the way. We highlight ways to keep students on-track and set appropriate expectations, and discuss how to create a supportive learning environment for students that will help them reach their full potential. Moreover, we describe the implications for faculty directing undergraduate research projects and present a perspective on this multifaceted enterprise. (Received September 07, 2014)