Improving Agriculture and Geoscience through Educational Initiatives

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Research and innovation in environmental sciences, geosciences and agricultural sciences provide solutions to society's grand challenges, including food security and environmental degradation.

However, the number of science graduates is not meeting the need for professionals in these disciplines. Many recent educational initiatives aim to build a stronger scientific workforce by inspiring young people from communities that are traditionally underrepresented in science.

Hands-on learning experiences, such as engaging in fieldwork and research projects, enhance students' interest in scientific disciplines, inspiring more young people to pursue science careers and improving their academic outcomes.

Therefore, the College of Agriculture and Natural Resources – or 'AGNR' – at the University of Maryland College Park provides exciting student experiences through three innovative programs: AgDiscovery, Summer Opportunities in Agricultural Research and the Environment (SOARE), and SOARE: Strategic Work in Applied Geosciences (SOARE:SWAG). All three programs focus on students who are underrepresented in environmental sciences, geosciences and agricultural sciences.

University of Maryland AgDiscovery, a partnership with the USDA's Animal and Plant Health Inspection Service, empowers high-school students and gives them insights into academic preparation and agricultural science careers in government agencies.

During the three-week program, students gain hands-on experience through lab exercises, workshops and field trips, and participate in activities that build interpersonal skills. Additionally, all participants earn three hours of university-level credits, further encouraging them to pursue science degrees.

The AgDiscovery program is free for students, covering tuition, accommodation, meals and other costs. This levels the playing field for students, ensuring that financial factors don't pose a barrier to participating in the course.

The SOARE program is aimed at undergraduate students with an interest in agriculture, environmental science, nutrition, or food science. SOARE:SWAG is geared towards students with an interest in geology, earth science, environmental science, natural resources management, or soil science.

Undergraduate students participating in SOARE or SOARE:SWAG spend ten weeks working closely with experienced faculty members on a research project.

Students gain research experience and the opportunity to establish important relationships within their chosen discipline. At the end of the program, students often have tangible results from their research projects, which they can present at a special conference.

The student projects are highly varied. For instance, Dominique Desmarattes investigated the acquired resistance of insects to toxins produced by genetically modified crops, and Dania Khan studied how soil can be improved through organic fertilising methods.

The Graduate School at the University of Maryland provides career and professional development activities to the SOARE and SOARE:SWAG programs. These workshops and seminars give students insight to the graduate school experience, applying to graduate school, writing personal statements and professional networking, helping to provide a gateway between undergraduate and graduate study.

Together, the three programs are enhancing the number of underrepresented students pursuing education in key science subjects – with AgDiscovery bridging the gap between secondary and higher education, and the SOARE and SOARE:SWAG programs bridging the gap between undergraduate and graduate study.

Ultimately, such programs are crucial for ensuring sufficient trained individuals are entering the scientific workforce.