Committed Building to a Diverse Workforce

Utah's demographics are changing, just as they are across the United States. The minority share of the state population has risen from just over 2% in 1960 to 20% today, and it's predicted to reach 30% by 2050. Already in Salt Lake City more than half of children under the age of 15 identify as minority group members. This means the Utah workforce of tomorrow will be more diverse than ever before.

Yet women and minorities' participation in science, technology, engineering and math (STEM) careers remains disproportionately low. If Utah is to stay competitive in STEM fields, we must improve

recruitment and retention from within these under-represented groups. To support this effort, iUTAH has engaged with multiple statewide and national diversity programs to engage, empower, and equip students of all backgrounds in STEM opportunities, including iUTAH WaterGirls, attendance at state and national meetings promoting diversity and STEM, and support and presentations of "Water Runs Through This Book" by Nancy Bo Flood.

iUTAH's commitment to reflecting the state's changing diversity is also shown in the many individuals participating in iUTAH activities and programs.

iUTAH EOD is serving Utah's population with participation by...

Women: **50%**
Under-represented minorities: **10-15%**
Students grades K-12: **28,965**

> "We have built a culture of collaboration that extends to all aspects of our scientific enterprise...."
>
> - Michelle Baker, iUTAH EPSCoR Project Director

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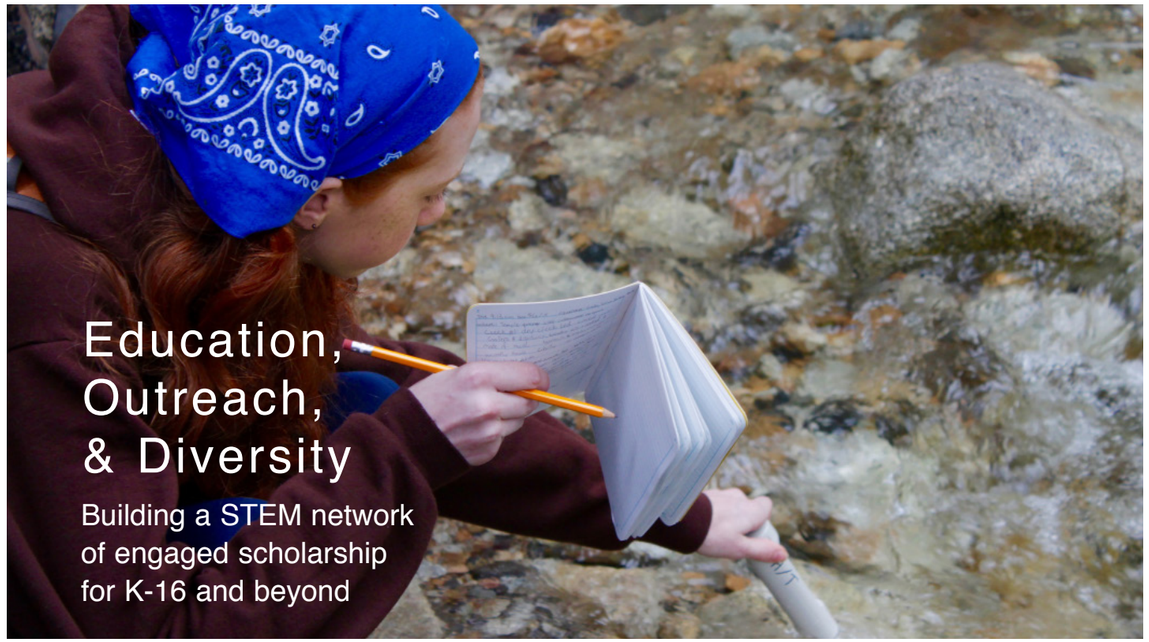
iUTAH EOD

Science for Utah's Water Future



iUTAH's Education, Outreach and Diversity (EOD) programs engage students and stakeholders throughout Utah in water research and education. We work with our many partners to share the latest information about water and the sustainability of Utah's water systems, and we seek out opportunities to enhance Science, Technology, Engineering and Math (STEM) education in Utah, with special attention to groups that are under-represented in science. Our goal is to reach a variety of learners in different ways at many levels to help improve educational and workforce-development outcomes. Through these efforts, we are creating a pipeline towards a diverse STEM workforce to help Utah build an inclusive, water-wise, and STEM-literate society of tomorrow.

> "The discussions in our iFellows meetings gave me confidence in pursuing a graduate degree."
>
> - Sean Bedingfield, iUTAH iFellow,'13

iUTAH Collaborations
Strengthening Utah's STEM Workforce

iFellows Research Experience for Undergraduates

The iUTAH Undergraduate Research Fellows (iFellows) Program provides an opportunity for undergraduate students from any Utah institution of higher learning to gain first-hand research experience in the labs of iUTAH project scientists. All iFellows, regardless of their home institution, are placed at either the University of Utah, Utah State University, or Brigham Young University for the summer.

Throughout the summer, iFellows train side-by-side with iUTAH researchers and graduate students. They participate in cross-institutional and multi-disciplinary studies and contribute to iUTAH project research. They gain professional skills through creating science posters and oral presentations, and engage directly with panels of STEM professionals from a number of different careers. Ultimately, they make contributions to science for Utah's water future.

Native American students working alongside iUTAH faculty, staff, and graduate student researchers

Native American Student Mentorship

iUTAH has joined forces with Utah State University to offer opportunities in water research for Native American students attending USU's campus in Blanding, Utah. The Native American Student Mentorship Program brings students from southeastern Utah to Logan for a four-week immersion that introduces them to the daily activities of scientific research at USU's main campus. During the orientation week, iUTAH hosted a half-day session for the 21 Native American students, beginning with an introduction to critical Utah water issues, followed by an opportunity to ask questions and discuss the material presented, and ending with a guided tour of water science and engineering facilities on the Logan campus. Two of the student mentees, Joydino Beyale and Logan Harvey, both engineering majors, then spent the next three weeks in iUTAH labs learning about the breadth of water-focused science. In addition to working in labs, Logan and Joydino worked and learned alongside participants in our iFellows program. This year Joydino has an 11-week paid research experience as an iUTAH iFellow.

> "Many students aren't exposed to female scientists and it is hard to imagine a career path when you don't know it exists."
>
> - Maura Hahnenberger, WaterGirls Coordinator

iUTAH WaterGirls Field Science Program

Engaging middle school girls in science through lab and field experiences

iUTAH WaterGirls was developed by Maura Hahnenberger as a collaboration between Salt Lake Community College, Salt Lake City School District, and iUTAH to get middle school girls out into nature exploring their local outdoor environment and learning for themselves about water in Utah's canyons.

Studies show that the middle school years are a critical time when female students begin to lose interest in a STEM career. An effective method to retain female students' interest in science and desire for a career in STEM is laboratory and field experiences. Exposure to field research helps students experience the true nature of science and research, while nurturing a sense of curiosity about the world around them.

Last year, WaterGirls students visited Little and Big Cottonwood Canyons. On each field day, students were tasked with collecting water quality data. Weather observations were completed using hand-held instruments to record temperature, wind, and humidity, as well as cloud and precipitation data. They then collect data at different sites in the canyons. Discussions at each site include learning about variations in the environment that influence results.

Following the field experience, students attended a wrap-up and reflection session to communicate their findings to audiences of their choosing. This could include their fellow students, their families, and the community, or others. The goal of this step is to help students improve communication skills and demonstrate their interest in science to others. By communicating the impact of water systems to their home place, students begin to create ownership of both their environment and their interest in STEM fields.

Summer Research Institute

The iUTAH Summer Research Institute brings together high school and undergraduate students, along with middle and high school teachers, to conduct research on water sustainability in Utah. Designed to help current and future teachers, SRI demonstrates what scientists do and how they work with each other. It engages students in hands-on research, working with university faculty in small teams on issues of water quality, vegetation and soil moisture, microbiology, social science, and more. Participants collect data and share it with other teams.