Utah Women Stats
Research Snapshot

UTAH WOMEN & LEADERSHIP PROJECT

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Utah Women and STEM

Setting the Stage

Employment opportunities in Science, Technology, Engineering, and Math (STEM) sectors in Utah are estimated to reach 101,000 by 2018.[1] These jobs are recognized nationwide as being well compensated and generally recession proof. Yet Utah women continue to hold a lower percentage of STEM sector jobs than women nationally; in fact, Utah is ranked last in the U.S. in terms of the percent of women employed in STEM. In addition, Utah women work in STEM occupations at a rate that is less than half that of Utah men.[2] Recognizing the role women must play as an integral part of a strong statewide workforce, Utah educational and civic leaders are working to increase opportunities and pathways for more Utah women to enter and thrive in STEM fields.

This research snapshot reviews three key areas:

1) Current STEM employment data in Utah and nationwide,
2) Possible explanations for the persistent gender gap in STEM, and
3) A discussion of ongoing efforts in Utah to increase female participation and success in STEM fields.

Employment Data

The Bureau of Labor Statistics projects that, between 2010 and 2020, total employment in science and engineering will increase at a higher rate than all other occupations: 18.7% vs. 14.3%.[3] While Utah currently boasts a 3.7% unemployment rate (6th-lowest in the U.S.), STEM occupations account for only 4.56% of Utah's workforce, slightly below the 4.58% national average.[4] Recently, Utah has improved its national ranking for individuals in science and engineering occupations as a percentage of all occupations: from 19th in 2013 to 13th in 2014.[5] Yet, Utah women are not necessarily part of this growth, as they lag behind men in STEM participation. A 2011 study by the Georgetown University Center on Education and the Workforce highlights the persisting lack of gender diversity across the nation within STEM education and the STEM occupations that are acknowledged as being among the most influential and high-paying sectors.[6]

Nationally, a 2015 report by the U.S. Bureau of Labor Statistics illustrates that women remain marginalized within STEM, both in management (from 0% for natural sciences, 7.6% for engineering, to 26.7% for information technology) and professional occupations (15.4% for engineering and 25.6% for computers and math).[7] This situation is likely even worse in Utah, as shown by a 2015 report from the Institute for Women's Policy Research that estimates that women comprise only 23.5% of all STEM-sector workers in Utah, as compared to 28.8% for women nationwide. That amounts to only 5.2% of Utah women employed in STEM occupations, compared to 13.2% of men. Utah is ranked 51st out of 50 states and D.C. in this category.[8]

Possible Explanations for the Gender Gap

The U.S. Department of Commerce recognizes STEM education as the clear pathway to STEM sector jobs,[9] yet educational statistics demonstrate an inadequate supply of talent in the STEM jobs pipeline among workers both in Utah and nationwide. In 2012–2013, 16.6% of bachelor's degrees conferred by Utah's post-secondary institutions were in STEM disciplines, a sliver above the national average of 16.5%.[10] Overall, STEM career progression is frequently referred to as a "leaky pipeline" because of a diminishing interest in science and math as students move through the educational system.[11] However, the decline is particularly true of female students, as gender stereotypes and a scarcity of female STEM role models continue to affect decisions made by girls and women in regards to their education and future career.[12]

*Utah women hold only 23.5% of STEM sector jobs vs. 28.8% for women nationally. Utah is **ranked 51 in the nation**.*

In the U.S., only 12% of women with bachelor's degrees choose STEM majors, compared to 28% of men.[13] A recent survey of high school students showed that males expressed much higher interest in pursuing careers in STEM. The Utah graduating class of 2017 showed the highest gap compared to previous years between male and female aspirations to enter STEM careers, at almost 30% overall (42.8% male vs. 13.3% female).[14] In 2012, women in Utah received only 20% of the total number of degrees

Authors: Susan R. Madsen (Orin R. Woodbury Professor of Leadership & Ethics, Utah Valley University, madsensu@uvu.edu), Elizabeth Goryunova (Adjunct Professor, University of Utah), and Robbyn T. Scribner (Research Fellow, Utah Valley University).
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or certificates awarded in seven STEM fields across the public colleges and universities in the state. The fields that had the lowest percentage of female graduates were engineering tech (11% female), engineering (12%), and computer/information sciences (13%). The STEM fields with the highest percentage of female graduates were math and statistics (36%), biological/biomedical (38%), and science technicians (39%).[15] In addition, the graduation rate in certain STEM fields is increasing rapidly among young men in Utah, while only modestly increasing among young women. For example, between 2010 and 2015, the number of computing degrees and certificates earned by men in Utah more than tripled, from 1,027 to 3,413. In contrast, the number of degrees women earned increased at a much slower rate, from 321 to 431, during the same time period.[16]

Finally, even when women graduate and begin to work in STEM fields, they tend to divert from STEM sectors at a higher rate than men do, and for different reasons. For instance, in the U.S., 22% of women (vs. 7% of men) decide to leave STEM-related positions for family-related reasons, and only 15% (vs. 31% of men) leave based on pay or promotional opportunities, which can often be greater outside of STEM occupations as a career progresses.[17] Consequently, focused measures are needed, at both national and state levels, to attract, retain, and support the integration and success of students, particularly females, in STEM education and employment.

Utah is taking positive steps and investing heavily in raising support and awareness for STEM education as a gateway to high-paying job opportunities.

Efforts to Increase Participation

In order to ensure the sufficient local supply of qualified employees to fill future STEM jobs, Utah stakeholders are focusing increased efforts in promoting STEM fields (and specifically women in STEM) at all levels, including K–12, higher education, and professional employment. To that end, in 2013 the Utah legislature appropriated $10M for the creation of a STEM Action Center[18] to promote science, technology, engineering, and math through best practices in K–12 education. The Center's goal is to ensure a "competitive workforce and economic success in the global marketplace."[19] Additionally, in 2015 the Utah legislature approved $4.5M for an engineering initiative,[20] as well as a one-time appropriation of $280,000 for each of two schools in support of the Southern Utah STEM Initiative at Southern Utah University and for Dixie State University, as both target underserved and disadvantaged rural communities.[21] These state-appropriated funds could be utilized (directly or indirectly) to develop initiatives steering female students towards STEM education, as well as supporting women in STEM occupations. For instance Dixie State University was selected to host one of only 22 "Tech-Savvy" conference pilot programs nationwide; the conference features a day-long STEM event for girls.[22]

Overall, Utah is taking positive steps and investing heavily in raising support and awareness for STEM education as a gateway to high-paying job opportunities, and many of these efforts are aimed specifically at overcoming STEM–gender challenges. For instance, Utah is one of 19 states to participate in the National Alliance for Partnerships in Equity (NAPE) STEM Equity Pipeline Project, which is a collaborative effort between higher education institutions and Utah school districts to increase female participation in STEM. This is a research-based program with specific quantitative goals that allows stakeholders to measure increased involvement among Utah girls.[23] In addition, the STEM Action Center now offers a dedicated STEM-girls webpage that features links to women-led scientific and engineering projects nationwide. The Center also hosts "girls only" events, which can allow girls to explore and learn in a comfortable environment.[24] Likewise, many institutions in the Utah System of Higher Education organize K–12 girls-only STEM summer camps to encourage higher participation in STEM fields. See, for example, SheTech (Utah Valley University), eSMART camp (Dixie State University), Girls Go Digital (various locations), and Hi-Gear (University of Utah).[25]

In addition to university outreach programs aimed at K–12 students, the major universities and colleges in the state offer numerous programs and organizations for post-secondary female students in STEM. These groups provide mentoring, networking, competitions, community outreach, training, and other support. For example, the Society for Women Engineers, a national organization, has active chapters at both Weber State University and Utah State University. Southern Utah University has a newly formed chapter of the national organization the Association of Computer Machinery—Women. Other groups include Women in Engineering and Technology at Brigham Young University and the ACCESS Program for Women in Science and Mathematics at the University of Utah, among many others. Interested female students at any post-secondary institution in Utah should consult STEM departments in order to locate and participate in these programs.

Finally, at the professional level, various statewide associations for women, including the American Association of University Women—Utah, Utah Women in Higher Education Network, and the Women Tech Council, offer visibility (such as the Annual Women Tech Awards), networking, and mentoring on various issues of personal

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and professional growth both for career professionals in the STEM sector, as well as women in technology occupations in other industry sectors. In addition to supporting women individually, these organizations can also advocate for improved corporate culture among STEM companies and in career paths. Industries and their various pipelines will have to continue to make significant changes to better recruit, develop, and retain women in STEM fields, as women currently hold such a small percentage of these jobs. For more details about these organizations, please refer to the Utah Women & Leadership Project's extensive list of Utah Women's Networks and Groups which includes many associations and chapters for women in STEM. In addition, see the Utah Women and Education Initiative's Program and Support Search for listings of STEM programs and offerings through Utah school districts, schools, colleges, networks, associations, and beyond.

Conclusion

Mirroring national trends, the growing number of employment opportunities in Utah's STEM sector requires both more STEM talent overall and more equitable gender representation within the sector. Accordingly, Utah needs to continue its significant investments into programs that encourage and mentor Utah girls and young women to pursue STEM education and careers, and industries must continue to improve corporate climate to attract and retain top women in STEM fields. Successful efforts to increase female participation in STEM fields will strengthen the positive impact of women in organizations and the state as a whole.

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[23] See http://www.napequity.org/stem/stem-equity-project/ for more information on this national project.
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