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Certificated AMTs: What Will Encourage More Women to Become Aviation Maintenance Technicians?

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CERTIFICATED AMT'S

WHAT WILL ENCOURAGE MORE WOMEN TO BECOME AVIATION MAINTENANCE TECHNICIANS?

Gail Rouscher, PhD, A&P

WOMEN IN THE AVIATION MAINTENANCE INDUSTRY

- The real numbers of women in the industry began climbing in the early 70s
- Gender stereotypes we're being challenged
- Socially accepted careers were challenged
- Mary Ann Eiff, maintenance instructor for American Trans Air at the time, stated "I was a licensed A&P for 6 years before I ever met another female aircraft mechanic" (Benoff, 2002, p. 67).

"WOMEN IN SCIENCE: WHY SO FEW?" (ROSSI, 1965)

- Estimated *ACTIVE* Mechanic Certificates (December 31, 2018)
- 292,002 – Total
- 7, 133 (2.44%) Women Mechanic Certificates

- Estimated *ACTIVE* Mechanic Certificates (2008)
- 326,276 – Total
- 6,740 (2.06%) Women Mechanic Certificates

RECENT YEARS BY THE NUMBERS:

- 2004 through 2015
  - Percentages increased yearly
  - Reached a high of 2.45% in 2015
  - 1.87% in 2004
- 2016
  - Decreased to 2.33%
- 2017
  - 2.39%
- 2018
  - 2.44%

IS IT AS BAD AS IT APPEARS?

- Overall decrease in active certificates from a high in 2015:
  - 342,528
- Total Overall in 2018:
  - 292,002
- Decrease of 14.75%

- Overall decrease in active certificates held by women from a high in 2015:
  - 8,419
- Total women in 2018:
  - 7,133
- Decrease of 15.27%

ENGINEERING STUDIES

- Under-Representation of Women in Science: From Educational, Feminist and Scientific Views *(Sarseke*, G., 2018, p. 96).
  - *This article concluded that the under-representation of women in STEM has a link with both biological and social-constructivism theory. The possible factors for the dearth of women in the sciences, which have been discussed in the work, embrace both the influence of socio-cultural factors, and the influence of genetics.*
  - *This work has highlighted that the subject "gender and science" has been looked at for at least three decades, and the results obtained have not changed significantly. There was a positive shift in the number of female students in the professions in mathematics and biology; however, the fields of engineering technologies, and physics remained unchanged.*

CLIMATE PERCEPTIONS AND IDENTITY INTERFERENCE AMONG UNDER-GRADUATE WOMEN IN STEM : THE PROTECTIVE ROLE OF GENDER IDENTITY

- Study results point to those students who were further along in their school program felt there was less woman-scientist identity interference experienced than those in earlier stages of their academic careers.
- Students at a more advanced stage in their studies were more confident about their science performance and reported greater psychological well being.
- It appears as women progress in their major they feel their identities are more compatible with their chosen field.

- (Settles, et al, 2016)

A MALE DOMINATED PROFESSION

SCIENCE

- The Culture of science was evolved largely by able bodied heterosexual white men, and people who do not fit this mold may encounter discrimination ranging from the subtle to the overt: "Outsiders" may not be able to integrate easily with - or may simply dislike - the dominant culture (Ambrose, et al. 1997, as cited in Mills, et al., 2010)

TO MEET INDUSTRY DEMAND FOR ENGINEERS

- "Increase the number of females in the engineering classrooms" (Mills, et al., 2010, p. 3).

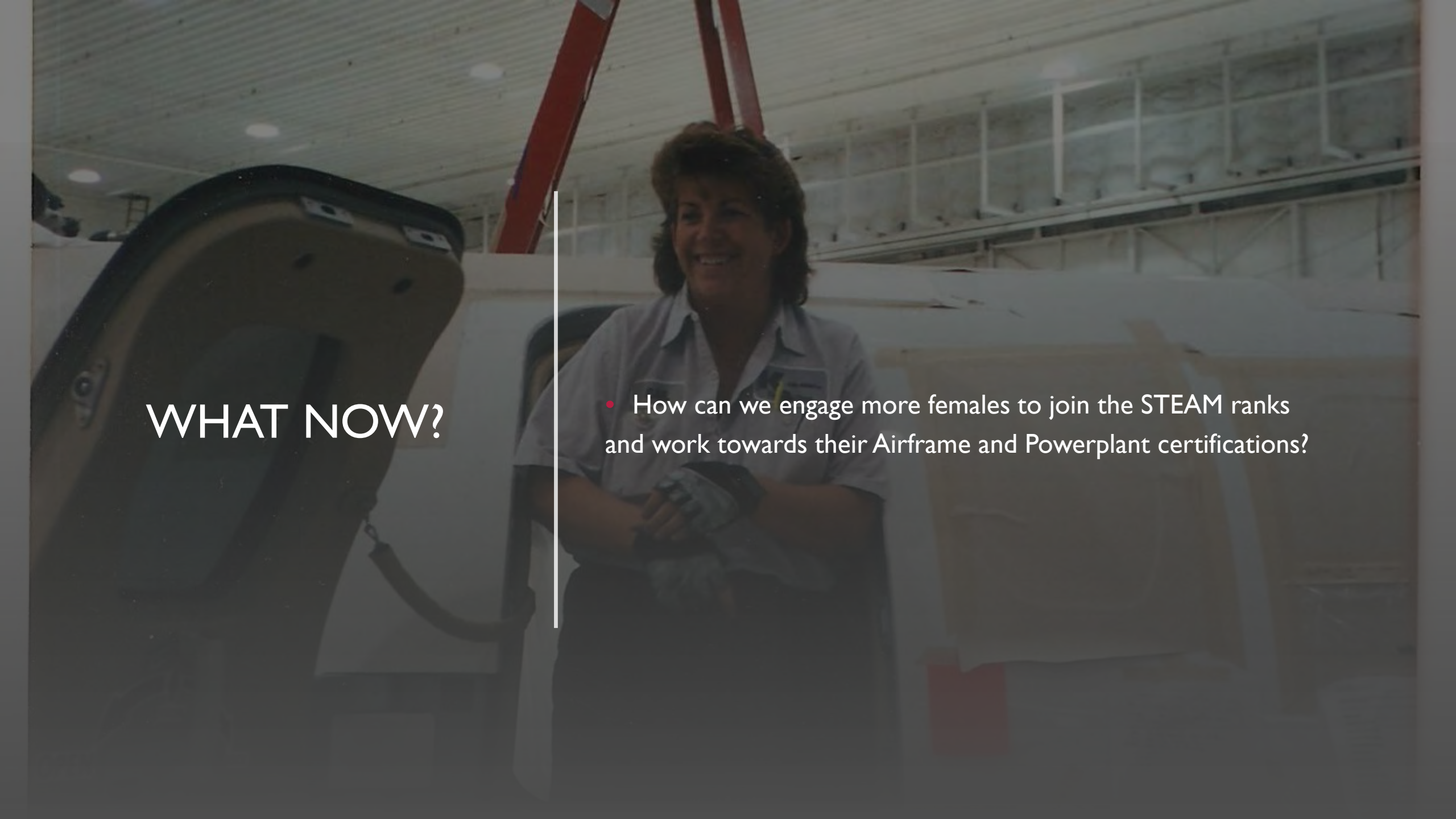
STEM DEGREES BY THE NUMBERS

NATIONAL SCIENCE FOUNDATION 2015

- "Within the fields of science, technology, engineering, and mathematics (STEM), excluding the social sciences, women only comprised 39% of the bachelor's degrees conferred nationally in 2012" (as cited in Settles, et al, 2016, p. 488).

PERCENTAGE OF DEGREES EARNED BY WOMEN IN POST-SECONDARY INSTITUTIONS IN THE U.S. (2015-2016)

	Bachelor's	Master's
Biological and Biomedical Sciences	59.9%	57.3%
Mathematics and statistics	42.5%	41.7%
Physical Sciences	38.8%	37.8%
Engineering and Engineering Tech	19.7%	25.2%
Computer information and support	18.7%	30.8%



WHAT NOW?

- How can we engage more females to join the STEAM ranks and work towards their Airframe and Powerplant certifications?

MENTORS SEEM TO BE THE KEY

Who are the best mentors for women in the field of aviation maintenance?

- Peer mentors?
- Faculty mentors?
- Male mentors?
- Female mentors?
- Industry mentors?

WHAT IS YOUR DEFINITION OF A MENTOR?

- *A mentor is someone who provides guidance, assistance, and encouragement on professional and academic issues. A mentor is more than an academic advisor and is someone you turn to for guidance and assistance beyond selecting classes or meeting academic requirements* (Hernandez, et al, 2017, p. 7).

- *In the realm of science and engineering, we might say that a good mentor seeks to help a student optimize an educational experience, to assist the student's socialization into a disciplinary culture, and to help the student find suitable employment. These obligations can extend well beyond formal schooling and continue into or through the student's career* (nap.edu, 1997, p. 1-2).

FEMALE PEER MENTORS

- In a 2017 study by Dennehy and Dasgupta, that focused on peer mentoring between advanced students and first year students, indicated that 100% of women with female mentors remained in engineering majors, as compared to 82% with male mentors and 89% with no mentor.
- In this same study, for women with female versus male mentors the only significant mediator that emerged was social belonging. The findings indicated the perception of an increased intent to pursue engineering careers post degree.

BENEFITS OF INFORMAL MENTORING PROGRAMS FOR FEMALE UNDERGRADUATE STUDENTS

- A research study by Hernandez, et al., (2017), looked at multiple strategies to support female students' persistence in scientific careers including mentoring support.
- According to Hernandez, et al., "Theory and evidence indicate that female undergraduates with a female faculty mentor report receiving higher levels of mentoring support compared to female undergraduates with a male faculty mentor" (p. 3).

STEM SUCCESS EXPECTANCIES IN ACHIEVEMENT AMONG WOMEN IN STEM MAJORS

- Robnett and Thoman (2017) posit that universities may benefit by establishing a peer mentoring program that will allow a connection between self-doubting achievers and confident high-achievers in the STEM fields with the thought that shared academic achievement will leverage complementary success expectancies of the self-doubting achievers (p. 98).

- Interventions that foster social belongingness may contributed to STEM identity among women who doubt their abilities to succeed.
- Social support and social integration equates to a more positive academic outcomes for those who are underrepresented in STEM fields (Estrada, et al., 2011; Hernandez, et al, 2017; Hughes & Chen, 2011; Robnett & Thomas, 2017; Stout, et al., 2011)

ENGAGING GIRLS IN STEM, BY SONYA HAYES (2018)

- Female role models and mentors
- The Association for Middle Level Education (AMLE) has asserted that middle school girls thrive and find success when they have an advocate or mentor to support them.
- Female students gain valuable experience by visiting their role models and mentors in the workplace.
- Effective engagement of female students in stem activities occurs through out-of-school-time activities.
- It is important to provide and create a safe place that is gender specific for girls to experience stem activities

THE SCIENCE HAS IT!

- Mentorship
  - Support
  - She looks like me
  - She likes the things I like
  - She is successful

ORGANIZATIONS THAT PROVIDE MENTORS

- Association for Women in Aviation Maintenance

AWAM
Association for Women in Aviation Maintenance

- Women in Aviation International
- Air Race Classic
- Facebook!
- LinkedIn!