

Acknowledgements

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References

- Blickenstaff, J, "Women and science careers: leaky pipeline or gender filter", *Journal of Gender and engineering and mathematics education*, August 2005, 41(3):329-350, 2205.
- Bell, A.; Spencer, S.; Iserman, E.; Logel, C., "Stereotype Threat and Women's Performance in Engineering", *Journal of Engineering Education*, October. pp. 307-312, 2003.
- Duderstadt, J. (2008). *Engineering for a Changing World. A Roadmap to the Future of Engineering Practice, Research, and Education. The Millennium Project. The University of Michigan.* [Online] Available: http://milproj.dc.umich.edu/publications/EngFlex_report/download/EngFlex%20Report.pdf (June 17, 2016).
- Du Toit, R., & Roodt, J., *Engineers in a developing country: The profession and education of engineering professionals in South Africa*, 2009.
- Engineering and economic growth: a global view : A report by Cebr for the Royal Academy of Engineering, September 2016
- Fleming, L.; Kimarie, E. and Griffin, A., "Persistence in Engineering Education: Experiences of First Year Students at a Historically Black University", *In Proceedings of the American Society for Engineering Education Annual Conference*, Portland, OR, June 12–15, 2005.
- Fouad, N. and Singh, R., *Stemming the tide: Why Women Leave Engineering*. National Science Foundation & University of Wisconsin, Milwaukee, 2011.
- Hausmann, Ricardo, Laura D. Tyson, Yasmina Bekhouche, and Saadia Zahidi. "The global gender gap index 2012." *In World Economic Forum*. 2013.
- Jackson, P. (2010). *Engineering UK: to investigate why UK has lowest number of female engineers in Europe*. Engineering UK. [Online] Available: <http://www.engineeringuk.com> (May 13, 2016)
- Livingstone, D. (2004). No room at the top: Under representation and under-employment of highly qualified women and minorities. [Online] Available: <http://www.walnetwork.ca/inequity/nycms230804.html> (July 2, 2016)
- Madara, D.S. and Cherotich, S., "Challenges Faced by Female-Students in Engineering-Education," *Journal of Education and Practice*, 7(25), pp.8-22, 2016.
- Nerad, M., and Miller, D. Increasing student retention in graduate and professional programs. In J. Haworth, (Ed.), *Assessing graduate and professional education: Current realities, future prospects*. New Directions for Institutional Research, 92. San Francisco, CA: Jossey Bass, 61-76, 1996.
- Seymour, E. (2002) "Tracking the Processes of Change in US Undergraduate Education in Science, puzzle", *Active Learning in Higher Education*, 6(1), 46–59, 2005.
- Starovoytova, D. and Cherotich, S., "Female Underrepresentation in Undergraduate Education: Case study in School of Engineering", *Research on Humanities and Social Sciences*, ISSN 2224-5766 (Paper), ISSN 2225-0484 (Online), Vol.6, No.14, 2016.
- Yurtseven, H., "How does the image of engineering affect student recruitment and retention A perspective from the USA", *Global Journal of Engineering Education* 6 (1): 17–23, 2002.
- Zepke, N. and Leach, L. (2005). "Integration and adaptation: Approaches to the student retention and achievement", *Education*, 17(4):369-386, 2005.

Biography

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