

Women in Engineering at the Open University – motivations and aspirations.

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Abstract

This paper provides an introduction to and rationale for research which is to be undertaken at the Open University on the motivation and career aspirations of mature, female engineering undergraduate students. The work will commence from April 2017 for a period of 18 months.

Introduction

The Open University (OU), based in Milton Keynes with six national and regional centres across England, Scotland, Wales and Northern Ireland, is one of the largest universities in the UK with over 170,000 registered students. This total includes approximately 4500 students currently studying towards an undergraduate Bachelor of Engineering (BEng (Hons)), Bachelor of Engineering Top-up (BEng (Hons)), Master of Engineering (MEng), or Engineering Foundation Degree (Eng FD).

The OU has an open access policy and, with very few exceptions, there are no formal academic entry requirements. Some students on the engineering programme join with no previous educational qualifications (PEQs), though often with extensive practical vocational experience, whilst others may bring transferred credit from HNC or HND qualifications. The majority of our engineering students are in full-time engineering related employment.

The number of women registering on the Open University's undergraduate engineering qualifications has remained fairly constant since the introduction of loans for part-time distance learning students in 2012. There has been a small growth in overall engineering student numbers since 2012, however women only account for 10.5% of the undergraduate engineering student population, with an intake of approximately 100 female students annually. 75% of these women are aged between 25 and 39 years, with only 2% aged under 21.

There is some anecdotal evidence from conversations with women students at engineering residential schools and at a 2016 National Women in Engineering Day conference held at the OU that they choose engineering qualifications as a result of working in an engineering environment, but that they do not necessarily have a job role which could be described as engineering at the start of their studies. We know that 76% of these students are in full-time employment with another 10% in part-time work.

A recent Institution of Engineering and Technology (IET) survey showed that only 9% of the engineering workforce is female [1] and EngineeringUK state that only 4.9% of registered engineers and technicians are female in their *State of Engineering* report [2]. There have been many initiatives over the past 30 years to increase the number of girls entering higher education institutions (HEIs) to study engineering, but no work exists, as far as we are aware, on understanding the motivations of mature women to study engineering.

Intended research and methodology

We have been awarded a small research grant to investigate the motivations of women studying engineering qualifications at the OU as a first step in helping to increase the number of women on such qualifications. We also seek to understand their career aspirations which could inform curriculum strategy.

By gaining an understanding of Open University female engineering students' motivations and experiences we can recommend strategies for increasing the registrations of women students on engineering qualifications and provide better advice and guidance at the pre-registration stage. We also aim to gain an insight into any aspects of the current curriculum offer which may be discriminating against female students or whether we have made inappropriate assumptions about their prior learning and experience. A longitudinal study of women returning to Science, Engineering and Technology (SET) after a career break identified several gendered factors as barriers to employability [3] as well as strategies for overcoming those barriers. We aim to build on this work and provide strategies to help our female students gain employment in engineering on graduation.

The research, due to start in April 2017, will consist of three phases, detailed below.

- Phase 1 – literature review of existing strategies and interventions from UK HEIs encouraging women into engineering.
- Phase 2 - focus groups and interviews with current OU women engineering students. We plan to have 6 focus groups enabling students to choose a time to suit them and up to 10 individual in-depth interviews.
- Phase 3 – online survey (informed by focus group and in-depth interview outputs) for all actively studying women engineering students. Our aim is to understand the demographic of our female students alongside their motivation and career aspirations.

Dissemination and further work

On completion of the research the findings will be disseminated internally and externally via engineering education conferences and journals.

References

1. The Institution of Engineering and Technology, "Skills & Demand in Industry", p. 32, 2016
2. EngineeringUK, "Engineering UK 2017: State of Engineering", p. 203, Feb. 2017
3. C. Herman, "Returning to STEM: gendered factors affecting employability for mature women students" *Journal of Education and Work*, 28(6) pp. 571–591, 2015