Abstract

'HerStory' aimed to create a unique and innovative online resource for women and girls with accessible information highlighting progression routes into, through and beyond engineering higher education (HE). A broad range of role models, including those following non-traditional routes, outlined how they made sense of available options and arrived at choices to suit them. Engineering HE lecturers provided perspectives on what to expect and employers outlined what they look for in engineering graduates. Now the project is complete, the lead partner will continue to update and promote the resource and support other HE institutions to use 'HerStory' and develop similar approaches to widening participation.

Keywords: online resource, gender, engineering, higher education, non-traditional

Background

The Women in SET (Science, Engineering and Technology) team based at Sheffield Hallam University has a strong track record of working closely with employers, higher education institutions (HEIs), colleges and schools to encourage recruitment, retention and progression of women in SET careers and courses. Team members are experienced in supporting women and girls who are making career and subject choices and identified the need for a new resource to illustrate the issues affecting individual choices and to gather 'stories' which would show different routes and experiences. The team is acutely aware of the myths and stereotypes surrounding engineering, as well as the lack of information and positive role models, particularly for first-generation higher education (HE) students and those from disadvantaged communities. 'HerStory' seeks to dispel those myths and show that women are welcome and successful in the engineering sector.

Rationale

Building on recommendations made in Unleashing Aspiration: the Final Report of the Panel on Fair Access to the Professions (Panel on Fair Access to the Professions, 2009), this project set out to create an accessible online resource for women and girls highlighting progression routes into, through and beyond engineering HE. Despite limited growth in the proportion of female engineering apprentices (5-10% - see IET, 2010), females account for a 'static' 12% of those entering engineering HE. Furthermore, 40% of all engineering students come from families with managerial and professional backgrounds, while only 16% have 'semi-routine or routine' occupational backgrounds (Engineering UK, 2010). Resources exists to help young people research engineering careers, but many have a broad remit and there was nothing prior to the development of 'HerStory' where the views of students, lecturers and employers were accessible in one place. A recent review of the value of role models (Morton, 2011) highlighted in its recommendations the need to "challenge stereotypes as a basic requirement - diverse examples will meet the needs of a wider audience". Through working with girls to interview role models, this project aimed to provide a resource that really 'speaks' to our target audience, is innovative and will contribute to widening participation in engineering.
The approach

The project team aimed to highlight the benefits of engineering careers to a wider audience of women and girls by providing an online information resource. We created a bespoke section of our existing website to house the new online resource www.wiset.org.uk/herstory. The team approached their networks of local employers, HEIs and engineering colleagues at Sheffield Hallam Universities and partner HEIs to identify role models who could illustrate how they navigated their way through the sector 'labyrinth'. A list of potential role models was developed and the Women in SET team began to populate the different sections of the website to highlight different career stages and areas of engineering. Some of the role models were interviewed by school girls to ensure that the language used was appropriate to the target audience. Sheffield Hallam University has a clear focus on widening participation and has consistently exceeded HEFCE targets, with 17% of students coming from low entry categories, (e.g. first generation into HE or defined as being from lower socio-economic groups) - 7% above the benchmark participation level for those groups (HESA, 2009). Through working closely with engineering lecturers at Sheffield Hallam University, the Women in SET team has also helped in the identification of potential barriers to participation and has supported the embedding of good practice. We anticipate that other HEIs will be able to signpost their existing and potential female engineering students to access this resource themselves; however, the Women in SET team would be happy to talk to any other universities who might wish to create a similar resource themselves. We have produced a short document to assist teachers in using the resource in their classrooms, which we intend to refine and add to the website.

The online resource is being promoted to schools, colleges and universities both regionally through local networks and nationally through a range of methods, including the provision of information for teachers at the Association of Science Education Conference in January 2012. The Women in SET team also launched the resource at the regional Big Bang Fair in July 2011 and will continue to promote and populate it beyond the life of the project. Feedback from users so far has been positive and, in the last month of this project, the HerStory pages have become the second most visited area on our Women in SET website with some 800+ unique visits to date. We will continue to monitor the take-up and effectiveness of the new resource and make adaptations and changes as required.

Evaluation

The resource has only been completed within recent weeks so a full evaluation has yet not been appropriate. Feedback has been sought from all partners and contributors throughout the project and during the construction of the resource, but only now that it is complete can we assess its full impact. Soundings will be taken from teachers at the Association of Science Education Conference in January 2012 and at outreach activities during National Science and Engineering week and other such events in the early part of 2012. It will be important to seek views from school pupils, teachers, lecturers, careers professionals and employers and we will ensure that this is undertaken during the first few months of 2012. We will ensure that the HerStory website is highlighted in all of our Women in SET outreach activities with schools and colleges and will add a specific question to our evaluation form about how it has been perceived by pupils and teachers alike. Results of our findings will be disseminated through our newsletter and the website itself and we will act on recommendations to ensure that the site is responsive to user comments.

The Women in SET team identified that a resource such as HerStory could be instrumental in supporting women and girls in their career choices. We have found that female students and women in engineering have been very positive about being seen as role models on the site and are willing to send in their information and be filmed. Employers have welcomed the opportunity to highlight their own sector and promote their commitment to employing women in engineering. Lecturers have been positive in their responses to requests for information and have appreciated the fact that they are contributing to a comprehensive resource. It has also been helpful to give school girls the opportunity to ask questions of a wide range of role models. If we were starting the project from scratch at this point then we might choose to set the resource up a little differently, but
we feel that we can continue to develop and populate HerStory easily and incorporate additional elements and perspectives.

**Further development**
This new resource forms part of the Women in SET website which will continue to grow and develop as part of the Women in SET team’s main aims. HerStory will therefore be updated and maintained on a regular basis and its use will be incorporated into our own outreach activities and publications. We will consider developing a user guide to assist teachers, lecturers and careers professionals to use the site appropriately and to showcase the different sections. As responses to our requests to feature a wider range of sectors/employers have been positive, we will also continue to use the site to engage with employers. The team intends to develop a resource to support teachers, careers professionals and those supporting women and girls with career choices to use HerStory effectively and appropriately.

**References**


**Further reading/bibliography**
*STEM Equality and Diversity Toolkit* developed by the STEM Subject Choice and Careers Project, Centre for Science Education, Sheffield Hallam University [http://www.stem-e-and-d-toolkit.co.uk/](http://www.stem-e-and-d-toolkit.co.uk/)
See below for sample screenshots.
Welcome to the Equality and Diversity toolkit

This is an interactive toolkit to help you promote Science, Technology, Engineering and Mathematics (STEM) careers to people with a range of backgrounds and needs.

The toolkit is aimed at anyone who is in a position to influence or advise young people aged 11-16. This includes: teachers, careers co-ordinators, work related learning co-ordinators, Connexions/careers advisors and anyone involved in developing resources related to STEM subjects.

You can use the toolkit as a:

- Prompt - to remind you of things you can take into account when considering activities relating to STEM careers.
- Resources - to give you ideas about where to look for particular information regarding equality and diversity specific to STEM and some more general points.

5 TOP DELIGHTS!

- **Case Studies** in the Resources and Tools section give quick answers to common questions

- Use the STEM Subject Choice and Careers Project 'Good Practice' document to get useful practical hints on how to make materials more inclusive
Gender - Background

“I was about ten years old when I first discovered an interest in science, particularly physics. In those days, around 1976, science was not compulsory and we only discussed ‘nature’ in primary school. I decided to study engineering because the applied aspects of physics particularly appealed to me.”

Carol Vorderman

Women make up about 50% of the working age population but constitute only 20% of the engineering workforce which includes operatives/assembly and clerical/admin staff. The figure for women in construction trades has remained steady at about 1% for many years.

Some areas of science attract females in greater numbers. For example, 51.9% of biological sciences undergraduates were female in 2006/2007. Compare this figure with 28.4% of science professionals who were women, 14.6% for ICT professionals and 5.4% for engineering professionals in 2007.

There have been many initiatives in the past and it is sometimes argued that these have not had the desired impact because girls are just not interested. However, projects and research show that positive results can be achieved with the right interventions and particularly a whole school approach.

Gender is probably the area of equality and diversity that has been researched most and, consequently, there is a host of information available for practitioners to draw on.

It is important that gender stereotypes are actively challenged by everyone. An important element of this is addressing the general lack of knowledge among young people about certain job roles, including those in STEM.

The STEM Careers Awareness project found that gender differences were most pronounced when pupils were asked to select from a given list of future possible careers. Boys were more likely to select jobs in security and construction whereas girls favoured design, arts and crafts and the performing arts. Girls also tended to view STEM less favourably than boys, who rated the subjects as easier and more enjoyable, though no subjects were perceived as intrinsically for boys or for girls. There is also some evidence that gender preference for STEM subjects becomes more pronounced between Years 7 and 9.