Flying Skills!
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Abstract

Flying Skills! (FS) cuts across disability, age, gender, race to target a diverse, ‘hard to reach’ audience of unemployed, economically disadvantaged, inactive people aged 45 years and over, with an interest in engineering and technology. Collaborating organisations include local authorities, industry, professional institutions, UK government departments and agencies and academic networks. FS is designed to create a transferable, best practice model capable of producing adaptable, diverse and aspiring communities that will participate in engineering and manufacturing careers. Based upon published research, previous projects and resulting in an Advanced Diploma in Professional Development, FS provides access to higher education (HE) and progression onto engineering and other STEM subject courses. FS consists of engineering, technology and computer skills, personal development planning, counselling, industrial role models, monitoring and evaluation.

Keywords: disadvantaged, unemployed, STEM, collaborating, engineering, access, diversity, widening participation

Background

Flying Skills! (FS) is a socially inclusive project aimed at a mixed target group of people aged 45 years and over. FS addresses themes of potential multiple disadvantage, including gender, race, disability and low socio-economic status. The target group has traditionally been, and often still is, disadvantaged in higher education (HE) engineering courses and other STEM subjects, often due to discrimination, lack of awareness of their own academic potential and other factors such as low personal esteem and lack of general experience of participating in HE. This is evidenced by poor representation: learners aged 45+ years typically represent approximately 8% of total intake at registration and disabled learners 4% (Quality Assurance Agency for Higher Education in England & Wales, 2009). This figure of 4% reflects an average across the HE sector, with medicine showing a figure of 2.7%, engineering 4.6% and creative arts with 7.7% (Department for Innovation, Universities and Skills, 2009). Other studies show similar statistics for ethnicity and class (7% Asian students and 8% African-Caribbean), whilst 2.5% derive from lower supervisory/technical occupational backgrounds (The University Central Admissions Service (UCAS) 2002). FS is needed because “one in three people between 50 and state pension age, 2.8 million in all, do not work” (Hirsch, 2000). Additionally, there is a shortage of skilled and capable employees in the emerging UK engineering and manufacturing sectors.

Rationale

The University of Bolton is renowned for actively engaging disadvantaged groups and FS further assists in that endeavour. FS is also, in part, a response to the objectives shared with The Royal Academy of Engineering and identified in its Strategic Plan 2005-2010.

The University of Bolton and many other agencies involved with the UK HE sector, such as the Higher Education Academy (HEA) (www.heacademy.ac.uk), the Higher Education Funding Council for England (HEFCE) (www.hefce.ac.uk), the Quality Assurance Agency (QAA) (www.qaa.ac.uk),
the UK Cabinet Office and the Equality Challenge Unit (ECU) (www.ecu.ac.uk), recognise that students are aware that they can sometimes experience significant disadvantage in HE due to issues concerning race, religious belief, disability, age, sexual orientation and gender and the backgrounds of groups with low socio-economic status. As part of its broader strategic aims and wider commitment to its communities and stakeholders, FS provides an opportunity for the University of Bolton to encourage greater participation in HE by disadvantaged people and to develop, promote and deliver a positive educational experience to them.

Participation in HE from these groups can be low, particularly in engineering/technology-based areas that may be perceived as ‘hard’ and ‘traditional’ in content and outlook and having barriers such as minimum standards of mathematics and/or sciences. The premise of FS is that it seeks to build upon previous experience of staff at the university in order to address some of these concerns. FS builds upon experience gained from working with these under-represented groups in national, regional and local projects previously funded by the European Social Fund (ESF) and the Department for Business Skills and Innovation in collaboration with organisations such as the Shaw Trust (www.shaw-trust.org.uk) and Remploy (www.remploy.co.uk). FS provides a low-risk entry into HE programmes at the university, and potentially to HE in general, that enables those who may have an interest in engineering/technology-based careers to begin to develop meaningful experiences in HE. Overall purposes/aims of FS are:

- Identifying, engaging, encouraging and stimulating under-represented people to participate and/or re-engage with engineering courses, employment and the engineering profession
- Engaging employers to participate in FS and influence academic curricula and professional institutions (PIs)
- Creating, preparing and equipping a diverse, adaptable and aspirational community with appropriate capabilities for future participation in UK engineering and manufacturing education and employment
- Delivering a project focused towards participation in engineering and stimulating change at curricular, departmental and institutional levels that can be applied and replicated both internally and externally in STEM areas.

FS goals/objectives are:

- Using the Flying Skills! title to promote the project
- Recruiting up to 15 people to join FS and access HE, acquire computing and engineering/technological capabilities, develop personal development plans (PDPs), benefit from industrial role models and receive appropriate counselling
- Delivering a cost-effective project that equips participants with computing, engineering/technological and other relevant capabilities
- Developing a transferable model which, when disseminated, will greatly assist government, employers, PIs, HE and support agencies to facilitate the future participation of the target group in engineering education, employment, the profession and other STEM areas from a sustainable perspective.

The approach

FS consists of a small number of students (approximately 15) undertaking a number of modules in engineering, technology and computer skills, producing PDPs, receiving counselling and guidance where appropriate and meeting with industrial role models. Monitoring and evaluation of FS will be carried out through university procedures and specific project management. Promotion and dissemination of FS is intended to be undertaken collaboratively. The students who successfully complete FS will be awarded an Advanced Diploma in Professional Development.

The approach to learning for groups such as FS students is one of student-centred learning, consisting of elements such as enquiry-based learning, reflective learning, learning how to learn and some didactic teaching. The intended outcomes of the approach taken with the FS
methodology are that students will recognise that they may need to learn how to learn, identify areas of knowledge and skills in which they need to develop and make plans for how they are going to proceed through the programme and onwards into an engineering/technology-based career and continue to develop themselves as adult learners, recognising the value of becoming lifelong learners and developing the capacity to consider applications for employment in branches of engineering and technology from which they will no longer be deterred by a sense of lack of knowledge or experience.

**Assessment**

Our intention is to assess students by portfolio, continuous assessment and the submission of an electronic personal development plan (e-pdp). We have recently gone through a faculty assessment with a view to reducing the number of assessments relating to the standard examination process and the modules we have identified as part of students’ CPD will only comprise the new assessment processes.

**Evaluation**

The process involved initially contacting companies, Job Centres, golf clubs, sports clubs and colleges to attract as wide and diverse an audience at various stages of their working life as possible. Unfortunately we came across some unforeseen difficulties with regard to age and funding. Some relevant support agencies, and in some cases locally established authorities/institutions, did not appear to want to enter into active discussion and engagement in terms of participation and recruitment issues when considering age, course fees and students who would be appropriate to FS. Job Centres, for example, were particularly sensitive to any mention of age in promotional material that they might display as it became available. Strangely, they were also not in a position to consider displaying the actual cost of educational provision and development that FS would involve for an individual. Both of these factors, and other issues such as geographical dispersion (in terms of regional inconsistency and logistical practicalities), inhibited the promotion of the project. We are now seeking an alternative approach to the problem and have on-going dialogue to resolve such issues.

Due to the difficulties described earlier, we have yet to complete the first cycle of the course at this stage. There appears to be some external problem when dealing with age and cost, especially with regard to training and education. After speaking to our Royal Academy of Engineering advisor we are now trying a new approach to progress students, as the initial proposal did not work as well as originally intended. This new approach entails hosting workshops at designated venues that the intended target cohort is likely to frequent during their personal search for career opportunities, such as Job Centres and other employment support agencies.

**Discussion, summary**

Given more time, we would try to meet individuals at various companies and centres on a one-to-one basis to go through our process with them. The method of using flyers and letters did not appear to be very fruitful for this activity. Indeed, students that we met on a one-to-one basis understood better what was needed from them to successfully undertake and complete the project. However, even with other approaches, the financial constraints appear to be the main concern.

**Further development**

Further development will be possible once students have successfully completed the project. Teaching, learning and assessment (TLA) practices that are shown to be successful with the target student cohort will be reviewed, with the intention of being incorporated where appropriate into the new CPD and courses that are currently being considered for review and re-validation this year. TLA practices that are not as successful as originally intended will be analysed for potential improvement or other forms of action as deemed necessary. It is anticipated that this course of
action will help to alleviate the problems of students with a similar profile to the target group and benefit them in the future.

The project is not yet at full completion but some of the outcomes have involved presentations with industry, attendance at and contribution to HE hubs, internal staff meetings, proposals for publication at the university’s annual Teaching and Learning Conference. Posters and flyers have also been sent to all FE colleges, Job Centres, leisure centres, local authorities, engineering employers and other similar federations in the North West region. It is intended that a publication will be written about the project and this will be promoted via the appropriate university website.

References

Department for Innovation, Universities and Skills (2009), Disabled Students and HE, DIUSE Report No: 0906, London, DIUS.


Further reading/bibliography

Useful websites

Higher Education Academy (HEA) http://www.heacademy.ac.uk
Higher Education Funding Council for England (HEFCE) http://www.hefce.ac.uk/
Quality Assurance Agency (QAA) http://www.qaa.ac.uk
The UK Cabinet Office and the Equality Challenge Unit (ECU) http://www.ecu.ac.uk/

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