

**Application for Minerva award: careers of Female Faculty  
Department of Computing, Engineering and Technology  
Faculty of Applied Science  
University of Sunderland**

The aim of our initiative was to support our teaching-focused staff in their aspiration to become research-active. As a research-informed but teaching-led institution we have only a small number of academic staff whose primary focus is research and a large number of staff whose role is primarily student-facing teaching.

As a department, we value and recognise the impact research has on the design of the undergraduate curriculum in computing and in generating a high-quality student experience. Through regular staff meetings with team leaders we have identified that a number of academic staff members would like to make the transition to become research active. Staff suggested that involvement in research would give them greater career satisfaction. In the short term, we hope that this initiative will help to increase the number of staff we may submit to the next national Research Excellence Framework. In the longer-term, we anticipate that this investment will help to open opportunities for future promotion, for the staff involved, through the University merit-based promotion scheme.

This application is based upon the measures we have taken in order to support staff in this aspiration and, in particular, the steps we have taken to support female members of staff.

Our initiative supported teaching-focused staff to become research-active through the targeted use of Quality-Related (QR) funding from HEFCE (Higher Education Funding Council for England) in two ways:

- (i) Funding part-time doctoral study
- (ii) Funding small-scale research projects in new areas of informatics

These initiatives were open to all staff, however, for those interested female members of staff the additional support of a female research mentor was also provided. We have five senior, female, academics occupying either management or Professorial/Reader roles within our department and we believed that the women in these positions could be used as effective role models in what might otherwise be regarded as a male dominated field.

These initiatives are described below. The impact on female staff is summarised in a separate document and a testimonial from a female member of staff is also provided.

**Funding of part-time PhD study**

We identified that eight members of academic staff (4 in computing and 4 in engineering) wanted to make the transition from their teaching-focused roles to become research active. The staff members in question are highly experienced teachers with significant track records industry but with little or no research

experience. Their preferred route into research, therefore, was through PhD study under the guidance of an experienced researcher.

As a small department we needed to make judicious use of QR funding to support both our early stage researchers as well as established, research-active, staff. We therefore identified that we could fund two part-time PhD students and opened a two-stage competition for PhD funding.

We recognised that the successful completion of part-time PhD is challenging, with the competing demands of teaching and administrative work. Therefore, in addition to the financial support in respect of tuition fees we also used funds to provide 150 hours of workload remission for PhD research. This was in addition to the standard research and scholarly activity allowance that is allocated to every staff member.

At the first round, staff were invited to submit an expression of interest in PhD study and on the basis of the most promising stage one applications a subset of staff were invited to submit more developed PhD proposals for review by the department's research management group. Eight applications were reviewed (one female applicant and seven male applicants) and these were reduced to a short list of four (one female and three males).

In the second round, the four short-listed applicants were asked to develop a full PhD proposal. They were each asked to work with an appropriate academic mentor in the development of their proposals. The outcome of round two was the offer of two funded part-time PhD places: one in engineering and one in computing. The successful applicant in computing was the only female member of staff to apply (Elizabeth Gandy). Elizabeth received her funding in 2014 and she is now in the second year of her PhD. The impact this funding has had on her professional practice is described in a separate document and in a testimonial provided by Elizabeth.

### **Targeted use of QR funds for research projects in new areas of Informatics Research**

We established an internal funding process to provide support for individual staff members to bid for funding for small-scale research projects in new areas of activity or to attend conferences or purchase equipment that was necessary to the development of their research. Funding applications could be made on a monthly basis and these would be reviewed by the departmental research management group and allocated on the basis of merit. We were particularly keen to support those individuals who wanted to make the transition from their teaching-facing role to a research active role and individuals wishing to open up new areas of informatics research. Among the target group for this funding (teaching-facing staff) four small-scale research projects were awarded to a female academic: Elizabeth Gandy; one was awarded to a male member of staff.

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**Impact of initiatives**

The impact of our initiatives has been to open a new and vibrant area of informatics research: informatics for sport (cycling and equestrian). It has also served to foster collaborative links between our department and other departments within our faculty, in particular Sports Science.

For the female member of staff concerned the impact of our initiative has been in the development of a publication profile; spin-off projects linking her burgeoning research activity with her teaching in software engineering and the establishment of a network of national collaborators.

**Publication Record**

The funding and mentoring support has facilitated the development of two full journal papers and three conference papers. We anticipate that with work currently in progress Elizabeth will be submitted in the next Research Excellence Framework.

*Journal Papers*

Gandy E.A., Bondi A., Pigott, T.M.C., Smith G. (in press) Investigation of the use of inertial sensing equipment for the measurement of hip flexion and pelvic rotation as a risk factor for lower back injury in horse riders. *Sports Technology*.

Gandy E.A., Bondi A., Hogg, R, Pigott, T. (2014) A preliminary investigation of the use of inertial sensing technology for the measurement of hip rotation asymmetry in horse riders, *Sports Technology*. doi: 10.1080/19346182.2014.905949

*Conference Papers*

Gandy E.A. (2013) 'Remote Rider' How can technology help us provide therapy to riders in the 21st Century? *Northern Supra Region Conference*, Carlisle 21 October. Riding for the Disabled Association

Broom L. Gandy E.A. (2014) A Preliminary Classification of Postural Asymmetry During Sitting Trot on a Riding Simulator, *Horses Inside Out Conference*, February 2014. Horses Inside Out.

Gandy, E.A., Howe, J., & Clawson, K.M. (2016) Student engagement in applied research via co-production of digital technologies to facilitate automated biomechanical assessment of sports participants, *University of Sunderland Festival of Learning and Teaching: Co-production and Engaging students*, Sunderland 28 April. University of Sunderland.

**Research Informed Teaching Project Award**

During a recent round of competitive (University Level) internal funding Elizabeth Gandy was awarded £5,000 to implement a project to feed the results

of her research into her teaching practice. The award funded the purchase of Perception Neuron Motion Capture Systems and the development of teaching materials to provide students on the Computer Science and Games Software Development undergraduate degree programmes with practical experience of using 3D motion capture technology and associated software development.

This spin-off project has led to the development of innovative teaching materials that have enriched our undergraduate courses, which have in turn inspired students with an interest in furthering their own education through research degrees.

### **Development of a collaborative network**

The research funding provided to Elizabeth Gandy has enabled her to attend conferences and develop a collaborative network. This success is evidenced by her role on the organizing committee of the Saddle Research Trust Conference (29/11/14) and Workshop (30/11/14-01/12/14). Elizabeth organised the poster track for this conference. The results of her work were also included in presentations by colleagues; notably Anne Bondi (Prof Doc student) and Timothy Pigott (Physiotherapist and PhD external advisor).

As a result of organizing and attending this event, Elizabeth established a collaborative project with Dr Sue Dyson & Line Greve from Animal Health Trust to develop a software tool to automate analysis of responses for a questionnaire study by the Animal Health Trust to analyse rider asymmetry/back pain data for 1200 participants. This research is currently ongoing, awaiting their interpretation of results prior to publication.

Elizabeth has also engaged in collaborative work with the Saddle Research Trust and other equestrian industry representatives on the "Fit Weight Project". The project involves the research and development of an application that will support the education of riders by calculating appropriate weight that can be carried by an individual horse.

Broader groups of staff from our department are involved in this project and are leading the specification, design and development of the application. The involvement of the department in this project has arisen as a direct consequence of the research Elizabeth has been able to generate through her supported research activities.