

Application details

Name of institution	The University of Sheffield
Name of department	Department of Computer Science
Date of current application	28 th May, 2021
Level of previous award	Silver
Date of previous award	November 2016

Contact details for application

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Question	Words used
Letter of endorsement from the Head of Department	497
Description of the department	526
The self-assessment process	1506
Previous action plan*	
Progress report	1967
Current self-assessment and future priorities	1502
Future action plan*	
Overall word count	5998

*The previous and future action plans should contain no commentary contributing to the overall word limit

Overall word limit: 6000 words

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1. Section 1 – Introduction to the department and the self-assessment process

In Section 1, applicants should evidence how they meet Criterion 1:

- + an organisational structure is in place to carry the action plan forward and continue the self-assessment process.

Table 1 Abbreviations.

AI	Artificial Intelligence
AMRC	Advanced Manufacturing Research Centre
BRAID	Building, Recruiting and Inclusion for Diversity
CERP	The Computing Research Association (US) “Center for Evaluating the Research Pipeline”
CDT	Centre for Doctoral Training
COM	Computer Science (referring to the department)
CPHC	Council of Professors and Heads of Computing
CS	Computer Science (referring to the discipline)
DAM	Department Administration Manager
(D)DEDI	(Deputy) Director of Equality, Diversity and Inclusion
DLT	Director of Learning and Teaching
DLO	Disability Liaison Officer
DRPP	Departmental Review and Promotions Panel
ED&I	Equality, Diversity and Inclusion
(F)EDIC	(Faculty) Equality, Diversity and Inclusion Committee
INSIGNEO	Sheffield Institute for In-Silico Medicine
HoD	Head of Department
L	Lecturer
PA	Personal Assistant
PDRA / RA	Postdoctoral Research Associate
PGR	Postgraduate Research
PGT	Postgraduate Taught
SAT	Self Assessment Team
SITraN	Sheffield Institute for Translational Neuroscience
SL	Senior Lecturer
UG	Undergraduate
SRDS	Staff Review and Development Scheme
SWICS	Sheffield Women in Computer Science
WAM	Workload Allocation Model
WARP	Women Academic Returners Programme
WG	Working group

1.1 Letter of endorsement from the head of department

Recommended word count: 500 words

Please insert (with appropriate letterhead) a signed letter of endorsement from the Head of Department.

If the Head of Department is soon to be succeeded, or has recently taken up the post, applicants should include an additional short statement (additional 200 words) from the incoming Head of Department demonstrating their personal commitment to supporting Athena SWAN activity in the department.

Word-count: 497



The
University
Of
Sheffield.

Department
Of
Computer
Science.

25th May 2021

Dear Athena SWAN Team,

I am delighted to attest my strong support for this application for the renewal of our Athena SWAN Silver award. When I took up the role of Head of Department in October 2015, I had the great fortune to inherit a departmental culture where the consideration of Equality, Diversity and Inclusion (ED&I) had become embedded in departmental activities, thanks to the efforts of my predecessor Professor John Derrick. Since this was recognised with the Athena SWAN Silver award in 2016, I am proud of the fact that we have managed to complete most of the actions that we set out in the action plan. It has been enormously gratifying to witness its impact on our department. For example:

- The proportion of undergraduate women has risen from 14% at our last submission to 20% this year.
- We have doubled the number of female professors (from 2 to 4). Since the last submission, 50% of our promotions to professorships have been to women. Out of our current female professors, all but one of them started their academic careers as RAs or lecturers with us.
- For lectureships, out of a total of 10 female candidates interviewed for lectureships, we have appointed 7 - compared to just 10 out of 100 interviewed male candidates.

The statistics do not tell the whole story though. Within the department, ED&I has moved to the forefront of everybody's consciousness. We have now a thriving Women+@DCS group, whose regular seminars featuring international academic and industrial role-models, have attracted a huge amount of attention from within the department. Our various ED&I online fora feature active discussions on an almost daily basis. In our ongoing discussions with architects to renovate the department and build a new student building, the discussions around ED&I have taken centre stage.

Of course, in terms of achieving true gender equality we still have a long way to go, not only within our department, but also within the discipline of Computer Science as a whole. Thanks to the enhanced data-collection and analysis, we now have a good understanding of what we need to do to further improve our gender balance across our various student and staff cohorts.

I am especially enthusiastic about our comprehensive action plan that underpins this submission. This was developed as part of a two-month departmental consultation. It contains many innovative actions. As well as significantly improving the gender diversity amongst our students and staff at every level, I am also confident that our actions around outreach will bring more girls into Computing in schools throughout the region.

I am strongly committed to supporting our ED&I Committee to implement the action plan, and in doing so to continue our transformation into the Computer Science department of choice for women to study and work in. Indeed, this is something that we "can't afford not to" do.

I hereby confirm that the information presented in the application is an honest, accurate and true representation of the department.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Guy Brown'.

Professor Guy Brown
Head of Department

1.2 Description of the department

Recommended word count: 500 words

Please provide a brief description of the department including any relevant discipline or contextual information. Present the most recent data on the total number and proportion of academic staff, professional and support staff and students by gender.

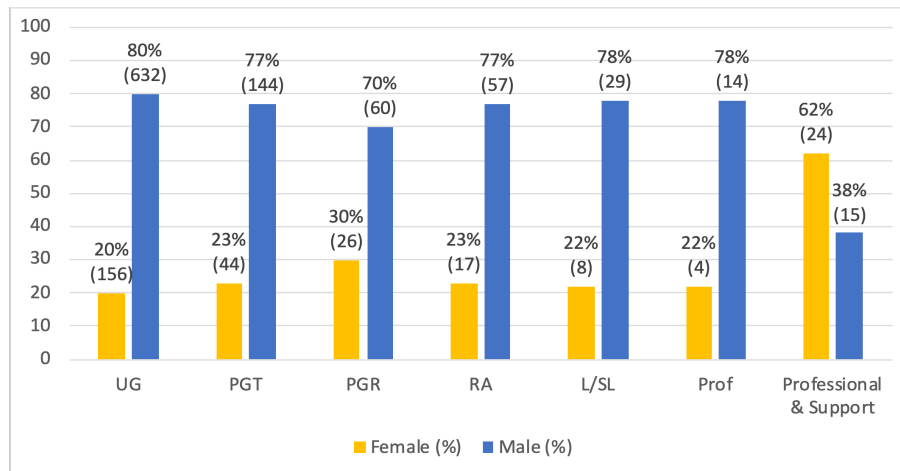
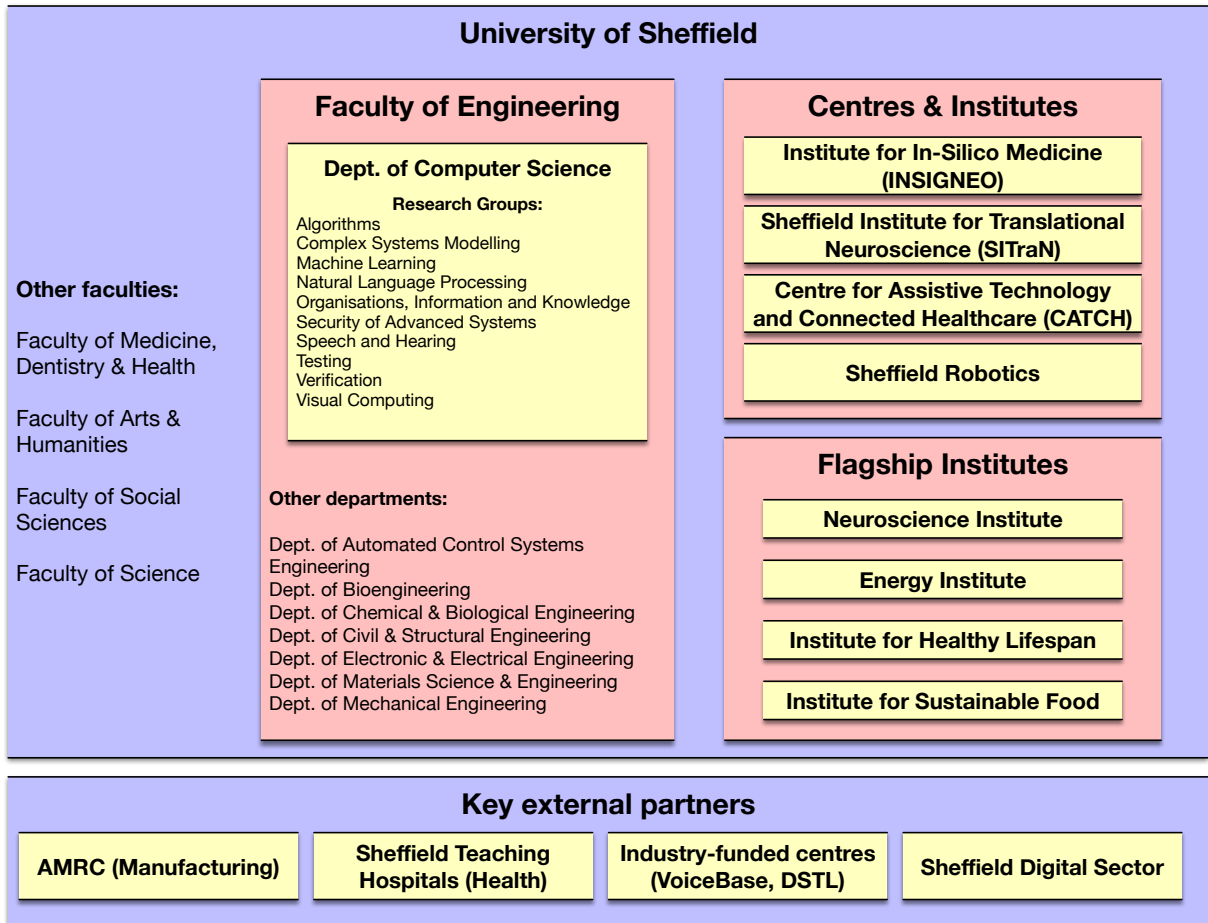


Figure 1 Total Student and Staff Numbers by Gender for year 2019/20 (overall population).

Sheffield University’s Department of Computer Science was founded in 1982 (comprising six male academics, one female administrator and one female programmer). We have grown substantially since then (current staffing levels are shown in Figure 1), and now comprise a total of 115 permanent staff (32%F). **The growth has been particularly pronounced over the last submission period, with the number of permanent staff increasing by more than a third.**

The department sits in the Faculty of Engineering (Figure 2). Most of the teaching takes place in the £81M state-of-the-art Diamond building (Figure 3) – a hugely popular asset amongst staff and students with specialist teaching facilities for CS (robotics, high performance computing and an internet-of-things/electronics lab) that are designed to facilitate interaction amongst students and staff.

The department offers three undergraduate programmes, all available with “year in industry” variants and extensions to an integrated Masters, as well as four postgraduate courses. They are in demand; the **UG courses have received over 1300 applications each year** since the last submission. **Our PG course applications have grown from fewer than 900 at the last submission to over 4900 applications in 20/21.** Both are driven by substantial increases in overseas applications.



Key external partners

AMRC (Manufacturing)

Sheffield Teaching Hospitals (Health)

Industry-funded centres (VoiceBase, DSTL)

Sheffield Digital Sector

Figure 2 Where the department sits within the faculty and broader institution.

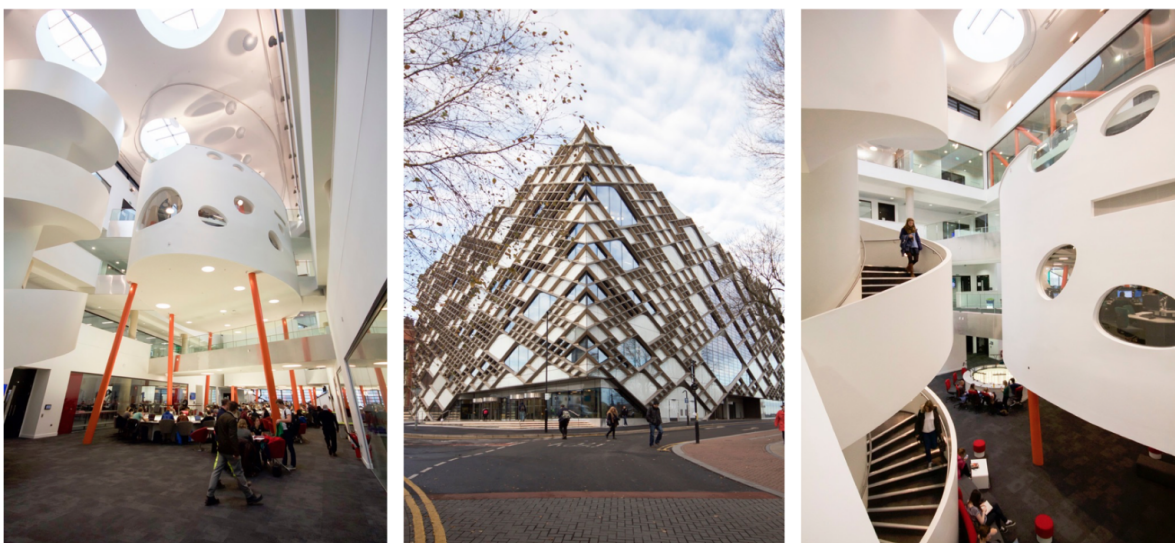


Figure 3 The Diamond.



Figure 4 2019 Staff photo at Regent Court in 2019 (left), the Pam Liversidge building (right).

The scale of the faculty, coupled with the growing prevalence of Computing in general, has enabled the development of **an interdisciplinary research and teaching portfolio**. We are keen to build on this from an ED&I perspective; experiences from other CS departments (particularly in the US) that have made major advances in gender equality often attribute this to interdisciplinary teaching and research programme. Our teaching programme, for example, includes AI programmes that involve modules in the Departments of Psychology and Philosophy. This interdisciplinarity has also embedded the department within the university's cross-disciplinary research institutes and centres (key ones are highlighted in Figure 2). We encourage this by joint appointments with other departments and organisations such as the SITraN (Wang), the AMRC (Law), and Sheffield Teaching Hospitals (Lanfranchi).

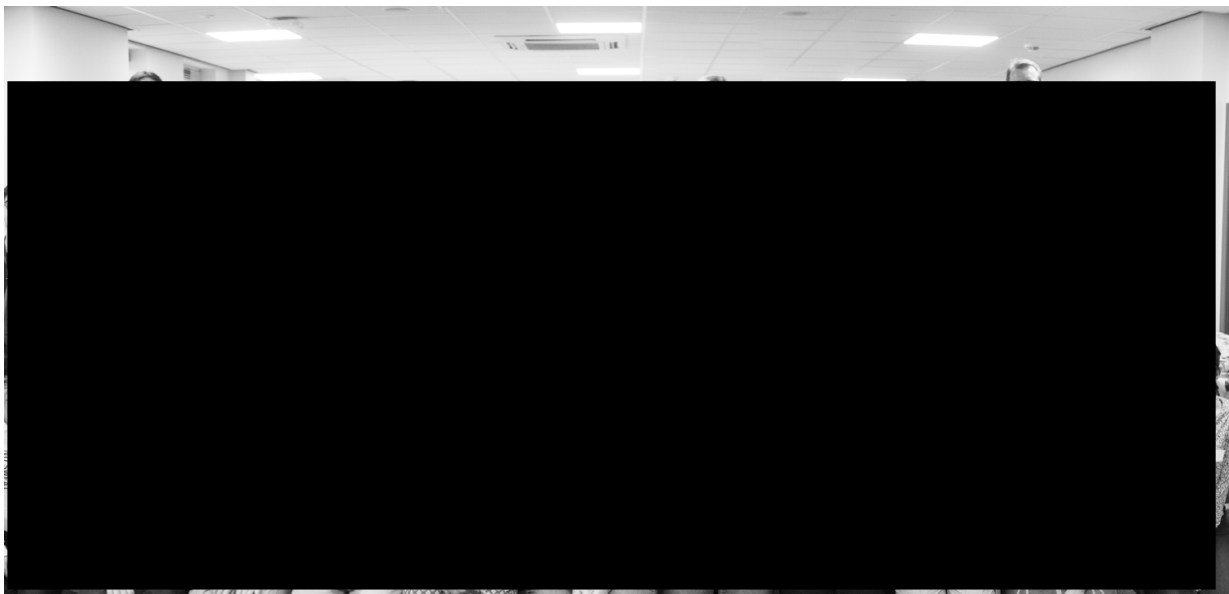


Figure 5 The Sheffield Women in CS Student (SWICS) intro-week session in 2019/20 with the new UG and PGT arrivals.

Most of our staff are located in Regent Court (Figure 4 left). Some groups are physically located on other sites, such as INSIGNEO and the Sheffield Robotics lab in the Pam Liversidge building (Figure 4 right). Due to the rapid growth, we are in the design-stages of an extensive refurbishment of Regent Court (discussed in Section 3).

We are particularly delighted that **the growth in student numbers has brought with it an increase in the proportion of female students, from 14% F UG at our last submission to 20% overall now.** Our Sheffield Women in Computer Society (SWICS - Figure 5) has become a hub for female and non-binary students, with an energetic programme of events and trips. For staff and students, our new Women+@DCS group (detailed in Section 2.2.3) organise a well-attended monthly series of open seminars.

Word count: 526

1.3 The self-assessment process

Recommended word count: 1500 words

Describe the self-assessment process. This should include:

1. a description of the self-assessment team
2. an account of the self-assessment process
3. plans for the future of the self-assessment team

2.3.3 A description of the self-assessment team.

Since our last submission the structure of our ED&I Committee (EDIC) has evolved, to better accommodate the broadening remit of ED&I across the faculty (Figure 6). This culminated in the introduction of three separate working groups that approximately reflect corresponding subgroups at a faculty level:

- Gender
- Cultural Competence
- Accessibility, Wellbeing and Neurodiversity

The working groups are open to all staff members and Ph.D. students, as well as student representatives, and report back to the EDIC.

In order to ensure that intersectionality is considered, the DEDI and DDEDI ensure that key topics are considered across all of the working groups. This has been greatly facilitated by the use of Google Chat rooms for the different groups. The ensuing diversity of perspectives has recently been especially helpful for the design of our staff and student surveys.

The core EDIC, which is also our Athena SWAN SAT, is shown in Figure 7. The majority of staff sit on the EDIC by virtue of their administrative responsibilities in the department, such as the Director of Learning and Teaching and the Directors of Research and UG admissions. The DEDI also sits on the Departmental Executive Committee, ensuring that ED&I considerations are fed into the departmental strategic and day-to-day decision-making. The committee is diverse, as can be seen in Table 2. Since 2015/16, we have added two additional members, to represent accessibility and LGBT+ considerations respectively (as per action A1.4¹).

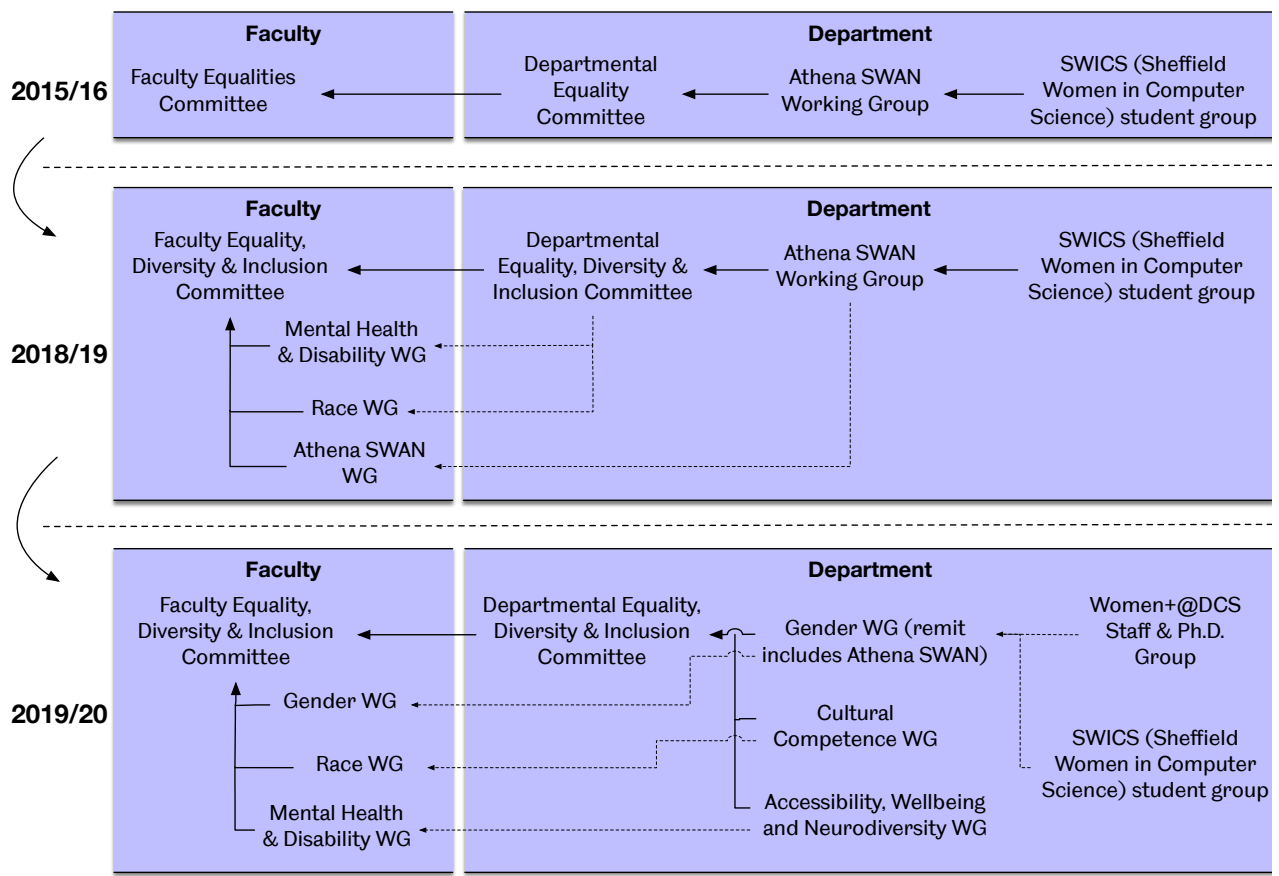


Figure 6 Evolution of Departmental ED&I committees since the previous submission.

¹ Any actions from the 2016 action plan are prefixed with an 'A' to distinguish them from actions in our new action plan.

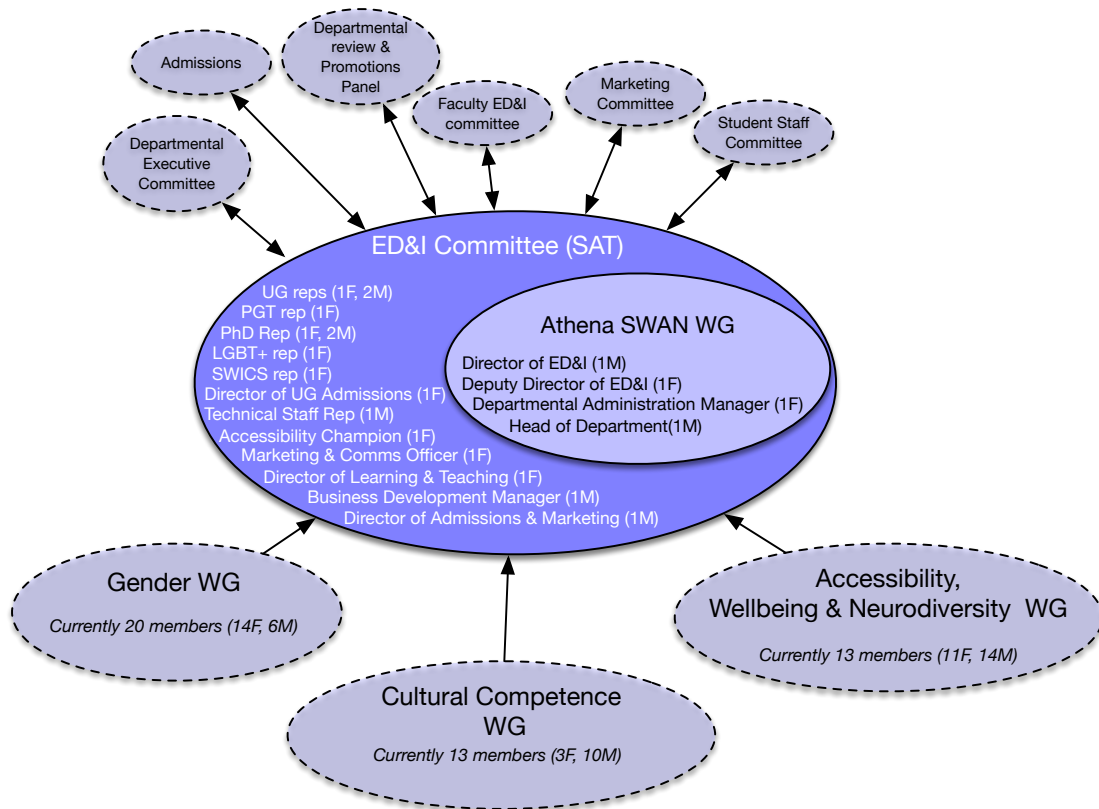


Figure 7 EDIC and Athena SWAN WG membership, along with interactions with Departmental and Faculty Committees.

Having appointed our first Athena SWAN champions in Spring 2011, our work on ED&I has been ongoing for 10 years. Throughout this period members staff have played a leading role in the ED&I activities within the broader Faculty of Engineering and beyond (Figure 8). For example, in 2020 Heidi Christensen (our former DEDI) took over as Faculty Director of ED&I and won the FDM Everywoman in Tech award.



Figure 8 Left - Heidi Christensen receiving her FDM everywoman in tech award. Right – Tweet announcing Fariba Yousefi as general chair of the 2020 WiML Un-workshop.

Table 2 EDIC and Athena SWAN WG members (alphabetical order).

Athena SWAN EDIC working-group

 <p>Mrs Rebecca Brough (F)</p>	DAM		 <p>Professor Guy Brown (M)</p>	HoD, Prof	
 <p>Professor Aline Villavicencio (F)</p>	DDEDI, Prof, Gender subgroup lead, Organiser of Women+@D CS		 <p>Dr. Neil Walkinshaw (M)</p>	DEDI, SL	
EDIC members					
 <p>Mr Temitope Adeosun (M)</p>	PGR Rep, joint Cultural Competence subgroup lead.			UG Rep (1 st year)	
	SWICS President		 <p>Dr. Heidi Christensen (F)</p>	Faculty DEDI, SL	
	UG Rep (3rd yr)		 <p>Prof. Rob Gaizauskas (M)</p>	Deputy Director of Research, Prof	
	LGBT+ Rep, Research Associate		 <p>Dr. Mark Hepple (M)</p>	Director of Admissions & Marketing, Reader	

Athena SWAN Departmental Renewal Application

	Ph.D. student Rep			UG Rep (2nd yr)	
 Mrs. Joanna Lawrence (F)	Secretary to EDIC, PA to HoD		 Dr. Emma Norling (F)	Director of Learning and Teaching	
 Dr. Anil Ozdemir (M)	Research Rep, RA		 Miss Kat Roden (F)	Marketing & Communications Officer	
 Miss Georgia Sapsford (F)	DLO, Accessibility Champion, on secondment to faculty.		 Dr. Chris Stoddart (M)	Senior Systems Administrator for Research	
 Dr. Dawn Walker (F)	Director of UG Admissions, SL		 Dr. Kenneth Wertheim (M)	Research Rep, RA, Race Equality Champion	
 Dr. Stuart Wrigley (M)	Centre manager for the Speech & Hearing CDT			PhD Student Rep	

2.3.4 An Account of the Self Assessment Process

Our quarterly EDIC meetings are scheduled to occur when relevant student, staff and survey data are made available, to review the impact of ED&I actions over the preceding period. The

standing agenda includes: (1) A review of the latest data, (2) feedback from the working-groups, and (3) the opportunity to discuss any cross-cutting concerns, and to make any updates to the action plan if needed. Below we cover the particularly key aspects of our self-assessment process.

Staff and student consultation and feedback:

We run biennial student and staff surveys. These serve to (1) assess the impacts of particular actions, (2) flag up emerging issues or opportunities, and (3) to get a department-centric view on issues that might have been flagged up in institutional surveys. The surveys comprise a mixture of Likert-scale questions mixed with free-text fields for respondents to express their own thoughts.

We follow-up each survey with focus-groups, based on topics that were raised in the surveys. For our 2020 round we hired an external consultant to run three focus groups (for Admin staff, women academics, and a mixed group of academics). This feedback has informed many of the actions in our new action plan.

Table 3 Response rate for last two surveys².

	Response rate	
	2019	2021
Academics	60%	64%
PDRA & RSE	42%	44%
Admin & Technical Staff	57%	74%
PGR	30%	Pending
UG+PGT	13%	Pending

We regularly keep our staff and students up to date on our activities and objectives (e.g. advertising surveys and reporting their outcomes). Reps are briefed at our quarterly EDIC meetings. We have student and staff ED&I websites that include key messages and news-items, and maintain a physical notice-board in the entrance-foyer to the department (Figure 9). For staff we also run a quarterly “ED&I-gest” newsletter (sent as an email). We also maintain an ED&I “updates site” on our departmental HumHub social network.

² Our 2021 survey closed just before submission – we are currently analysing the results.

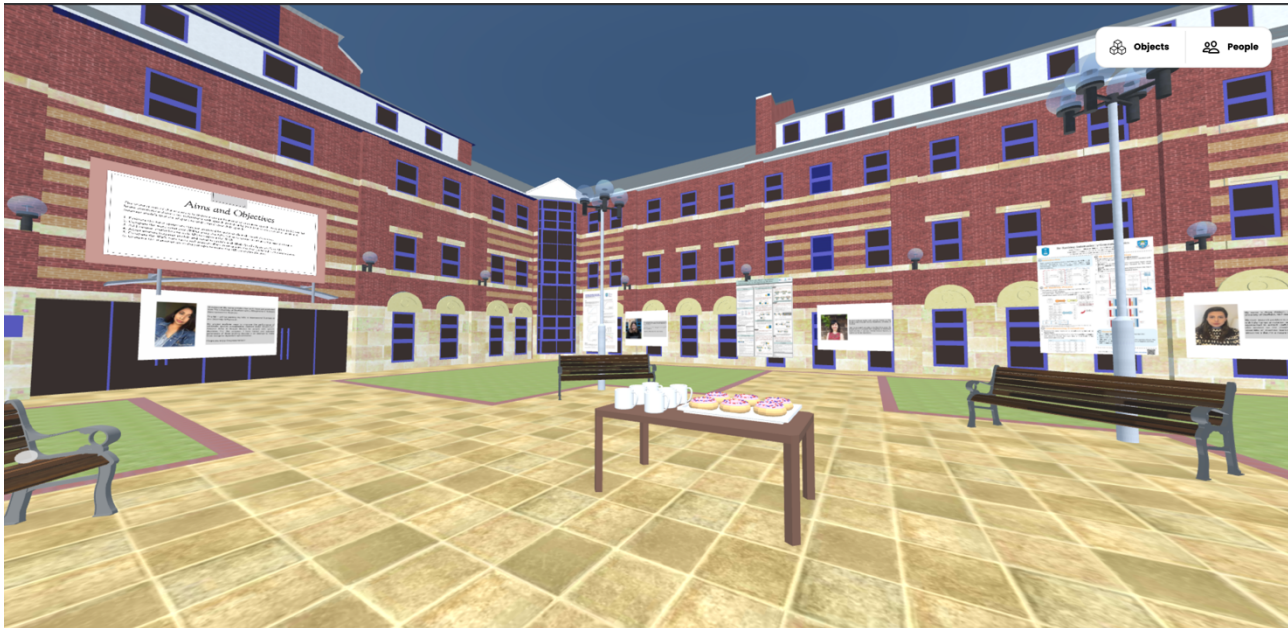


Figure 10 Poster presentation session hosted in our [Virtual Regent Court for 2020 IoC "Digital Women" event](#).

Exchanging good practice with peer departments:

We participate in Faculty Athena SWAN champion meetings (chaired by Walkinshaw for the last two years). Within this group we facilitate “buddying” between departments at similar stages in the Athena SWAN cycle, exchange good practice and news (e.g. changes to the charter, new initiatives, etc.). For this submission we buddied up with Chemical and Biological Engineering.

Since our last award there have been numerous examples of where our good practice has been taken up by other departments within the faculty or wider institution. Our student and staff survey templates have been widely reused, and our data spreadsheet inspired the design of the Athena SWAN workbooks that are now routinely sent out to departments across the university.

We have benefitted from our membership of the Institute of Coding - a £20m Government initiative to improve digital skills education in which Sheffield was a founding member. This included participation in the Widening Participation theme, leading to our participation in various events (c.f. Figure 10). This has also helped us to form an Athena SWAN peer-group with Computing departments at the Open University, Goldsmiths, and Lancaster University.

Departmental support and influence within the department:

Since 2015 the DEDI sits on the monthly Executive committee. This includes a standing ED&I agenda item. As a committee member they have a direct input into all significant strategic and operational decisions, and can add agenda points as needed. They also sit on the annual

Departmental Review and Promotions panel (DRPP), and feed into the annual planning report, which sets out the departmental priorities and strategy for the coming year.

Action management:

To spur activity and discussion of our actions, we maintain a live action plan with the help of an **online task management** tool called Trello (Figure 11). Each working group (Figure 6) maintains its own board of actions, where each action can be elaborated and discussed. There is an additional “global” board, which captures actions that cut across the groups or are intersectional in nature. This enables EDIC members to collaborate on actions, and provides a useful visual guide of the status of actions during meetings.

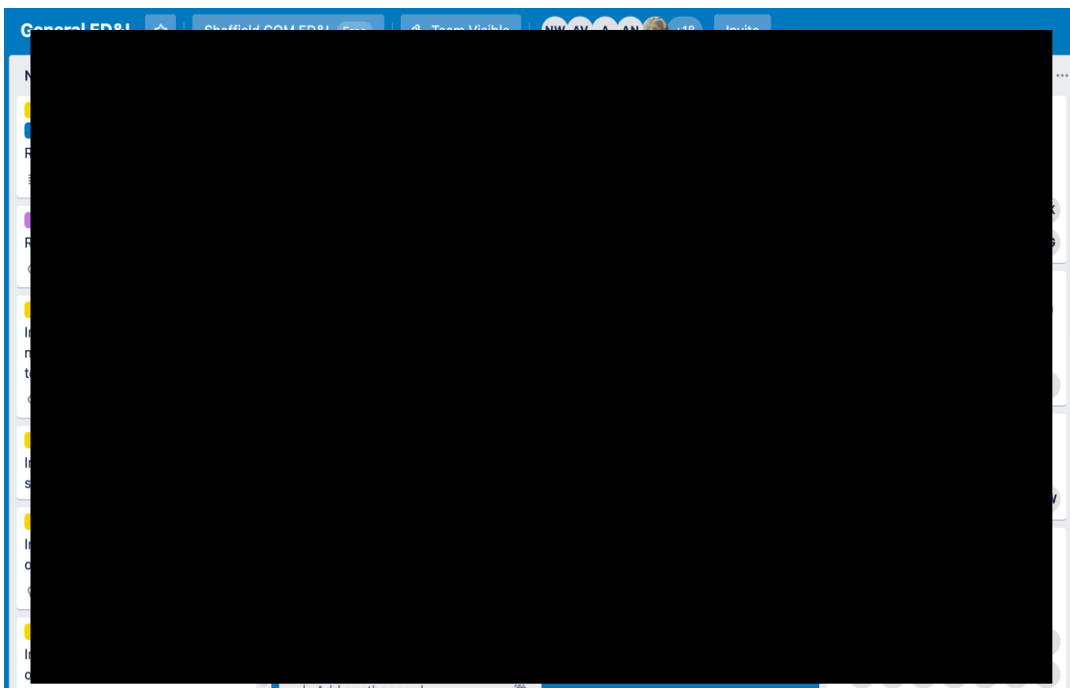


Figure 11 Trello screen shot (from our General ED&I Actions Trello board).

1.3.3 Plans for the Future of the Self Assessment Team

Structurally the EDIC is working well, and we do not envisage any significant changes in composition over the short-to-medium term. Our new action plan involves several changes to procedures that are designed to refine and improve on our current activities. In this section we cover some of new initiatives that we seek to adopt in addition to these.

A more systematic approach to hosting and attending ED&I-related events

There has been a proliferation of high-quality ED&I-related workshops and events nationally and internationally. We have, over the past 10 years, learned a lot from our peers in other CS departments. Several of our staff have become involved in external diversity-themed events, which has led to a feedback effect. So far we have engaged in these events on an ad-hoc

basis. We believe that we need to adopt a more systematic approach to both attending and hosting these events, and gathering best practice and feedback.

- Action 1(a)** Set up a rota within the Gender working group to attend local events such as ShfWit (Sheffield Women in Tech), as well as other events further afield where practical, reporting back to the group.
- Action 1(b)** Appoint an "Events" member to the EDIC, with the remit to encourage the use of departmental meeting and seminar rooms to host diversity-themed events, liaising with Sheffield Digital, CPHC, AdvanceHE and the IoC. Use our custom-made Com+ App to promote events to our students.
- Action 1(c)** Continue to host internationally leading role-models and proponents of diversity in tech at the Women+@DCS seminar events.

“Critical friends” and greater cooperation with other departments

We have been fortunate to benefit from the input from several “critical friends” in other departments – “buddy” departments within the faculty of Engineering such as Chemical and Biological Engineering, as well as colleagues in other Computing Departments within the UK. We have particularly benefitted from a relationship with the Computing department at the Open University, where we have contributed to EDIC meetings and peer-reviewed each others’ Athena SWAN submissions.

- Action 1(d)** Spur the sharing of best-practice with other CS departments by setting up a “critical friend” exchange scheme, where members from other departments are invited to sit in and contribute to EDIC meetings. In return EDIC members from our department sit in and contribute to EDIC meetings at other departments.

Through our participation in a recent CPHC series on improving diversity within CS, we saw the tremendous benefits that can arise from cross-institutional networks in diversity (c.f. the BRAID³ and CERP⁴ networks in the US). We are keen to initiate and support any existing efforts to replicate similarly successful networks here in the UK.

- Action 2** Contribute to or lead the development of networks of departments to foster ED&I in Computer Science.

Embed intersectionality into data collection and analysis:

Since our last submission, the remit of the EDIC has broadened substantially (Figure 6). We have been keenly aware of the question of intersectionality, which we have sought to address by ensuring that members of our different working groups are also aware of the concerns and discussions taking place in other working groups.

³ <https://anitab.org/braid/>

⁴ <https://cra.org/cerp/about/>

This would however be much easier if a richer, more multifaceted data-set were available. For example, although our gender data for staff and students is of a high standard, we can only usefully analyse questions around intersectionality if the data also incorporates other considerations – ethnicity and disability for example.

Action 5 Embed intersectionality into our data collection and analyses.

Word count: 1506

2. Section 2 – Evaluation of progress against the previous action plan

In section 2, applicants should evidence how they meet Criteria 2 and 3:

- + progress has been made on the previous action plan
- + learning has been demonstrated from the evaluation of progress.

2.1 Previous Action plan

Please provide the most recent iteration of the action plan associated with the department's previous award. The actions should be 'RAG' rated (rated 'red', 'amber' or 'green') dependent on progress.

Ensure that colour is not the only method of indicating rating, such as through the use of letters or icons. For example: **R** **A** **G**

2.2 Progress Report

Recommended word count: 2000 words

Consider the panel feedback on the department's previous application. How has the department responded to and acted on the panel feedback provided on the previous application?

Consider the department's previous action plan.

1. what methods were used to evaluate the department's progress on actions?
2. what were the department's main barriers and facilitators with regard to action implementation and the meeting of success measures? What steps were taken to further inform and adjust actions?
3. have new initiatives or actions been introduced to improve outcomes or impacts?
4. what are the main learnings and outcomes from the evaluation of the action plan? How will the department apply this learning to the future action plan?

2.2.1 Methods used to evaluate the department's progress on actions

To assess the impact of progress on actions on staff and students, our primary evaluation approach has been staff and student consultation – through biennial surveys and focus groups (A1.7, A1.8, A2.11, A4.1). The panel-feedback asked us to consider the use of external people to run focus groups. We agree. In 2020 we recruited a consultant to run a series of five highly informative focus groups for all of our staff groups. In the future we will set up an “exchange scheme” for focus group chairs.

Action 7(e) Use relationships with external departments (both within the university and externally - see Action 1(d)) to set up a focus group "chair exchange scheme".

We have been an active contributor within the institution to the development of an effective data-pipeline (A1.3). Now, **comprehensive Excel workbooks (disaggregated by gender) on all Athena SWAN indicators are supplied on a quarterly basis** by the Planning, Projects and Business Intelligence centre.

In our panel feedback we were asked to consider whether the frequency of reporting by the DEDI (formerly “DEC Champion”) to the executive committee was sufficient. We agreed that this should be more regular. Now **the DEDI prepares a monthly report to the executive.**

2.2.2 Main Facilitators and Barriers

Self-Assessment Process

The **provision and basic analysis of core staff and student data** has been regular, accurate, and helpfully presented (thanks in part to actions A1.3 and A1.5). Our new action plan will continue to refine this.

Action 4(a) Set up an improved reporting pipeline for internal (departmental) data, not supplied by the centre, to supply quarterly updates on items within the list compiled for the 2020 submission.

Action 4(b) Set up a dashboard to aggregate all of our data, and to provide on-demand charts and tables, using a platform such as Google Data Studio (taking potential GDPR restrictions into account).

Action 4(c) Meet with Faculty EDI Director and University Gender Equality Committee to develop improved recording for non-binary staff and students.

To ensure continuity of the EDIC (Action 1.2), **we introduced the new position of Deputy DEDI (DDEDI)** in 2018. The current DEDI was appointed to this position in 2018. Continuity has also been eased by the **support of a member of the administrative team** (Actions A1.1 and A1.2), and **a generous allowance in the WAM for the DEDI and DDEDI** (223 and 80 hours respectively).

In our panel feedback we were asked to reflect on low student survey response rates (A1.8, A2.10). Despite extensive efforts to increase participation (even with the offer of free pizza!), the response rates have remained lower than we would like. To address this **we are focusing on improving our communication channels with our students, particularly through our recently developed COM+ App** (see Section 2.2.3).

Action 6(a) Ensure that the pending refurbishment of Regent Court and new-build of the student hub include prominent screens on which to include dedicated ED&I-related news and signposts.

Action 6(b) Embed the use of our departmental Com+ App to engage students in ED&I-related events.

Our staff survey response rates have been improving (Table 3, page 15), thanks to a concerted effort to engage staff in advance. We will however still aim for much higher response rates in the future (especially from our PDRAs), by further efforts to incentivise participation.

Action 7(a) Add a "You said we did" section to our quarterly departmental "EDI-gest" newsletter to highlight impacts of student and staff feedback from surveys and focus groups.

Action 7(d) Appoint a dedicated member of the EDIC (with a corresponding WAM allocation) to organise and advertise participation in surveys and focus groups.

Developing Pipeline Numbers

We have been very active in our outreach. Our staff have established **several Code Clubs** at Sheffield Schools (one went virtual over the lockdown period). The department has supported these endeavours with **donations of technology**, including an interactive Whiteboard, decommissioned robots and lab.

We have proactively supported Code-First:Girls (including the move online in 2020), which has attracted **70-80 students from other disciplines every year**.

We participate in **the annual HeadStart programme**, a 5 day residential summer school for Y12 students who are mentored by our own undergraduate students. Our intake is selected to ensure a 50-50 gender balance.

Our Ambassadors scheme involves a gender-balanced cohort (A2.2) of **our own students who conduct outreach activities with regional schools**. This has led to some fantastic local impacts, as evidenced by this quote:

*"[Anonymised] was a fabulous asset to my department, [...] . **She has left a legacy here with regards to the Coding Club for Girls she set up, we will continue to run the club each week from now on.**"*

David Kavanough, Computer Science Lead at King Edward VII School

Our activities have been boosted by the emergence of robotics as a key departmental research area. The MiRO educational robot (developed by our 2016 spinout Consequential Robotics) has provided a fantastic platform for a huge array of outreach activities (Figure 12), including high-profile events at the Cheltenham Science and Blue Dot Festivals. The MiRO is also the basis for our popular "Diamond Dog" publicity video⁵ (Figure 13).

⁵ <https://www.sheffield.ac.uk/dcs/news/diamond-dog>



Figure 12 Pictures from outreach events run by our Robotics group.



Figure 13 Screen shot from the "Diamond Dog" publicity video.

In recent years, **there has been a concerted effort by the faculty to maintain an oversight of the outreach activity by individual departments and to organise cross-faculty events.** Although this has facilitated participation in pan-faculty events (such as the biennial Festival of the Mind), this system is less reliable for capturing events arranged from within the department. It is clear that we need a more dependable system.

Action 11 Maintain a portfolio of outreach activities, building on existing work, to have a more efficient approach to respond to requests and opportunities for outreach.

We had set an ambitious target of recruiting a 30% female UG cohort. Despite our extensive activities we have however only increased our cohort to ~20% (from ~16% in 2015/16). We believe that one key barrier to achieving this higher target is a lack of Computing teachers. Although this is a national problem, it is particularly acute in the Sheffield region. Out of the 1108 female pupils who sat A-Levels in 2019, only 7 sat the Computing A-level (in comparison to 44 male pupils)⁶. **We aim to significantly improve on this with an ambitious teacher training programme**, following examples set by other Computing departments – notably at Queens University and Swansea University.

Action 9(a) Develop a teacher training and support programme, to train teachers from regional schools that do not teach GCSE or A-Level Computing about the curriculum, using the ISAAC Computer Science platform.

Key Career Transition Points

Our actions on academic staff support (A4.2) have had a positive impact. Since the last submission 50% of our promotions to professorships (2) have been to women. We are delighted that **we have now doubled the number of female professors since the last submission**, and are especially pleased that **three of our four female professors started their academic careers as RAs or lecturers with us**.

When recruiting academic staff we have proactively approached potential female candidates beforehand. Although we are working to attract much higher absolute proportions of applications for academic positions by women (discussed later on), this approach has produced some encouraging results. **Since 2015/16, out of a total of 10 female candidates interviewed for lectureships, we have appointed 7 – this compares to a total 10 appointments out of 100 interviews for male candidates over the same period.**

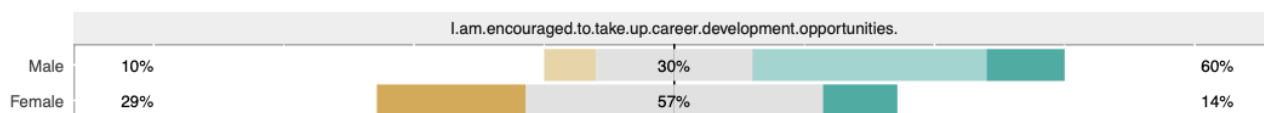


Figure 14 Extract from 2019 PDRA responses to staff survey.

Earlier on in the pipeline however, at the PDRA-to-Lectureship stage, we have struggled to make a similarly positive impact. Our actions to support PDRAs (A3.1 and A3.2) have led to numerous events, but have shown weak attendance rates. Furthermore, our 2019

⁶ <https://www.gov.uk/government/statistics/a-level-and-other-16-to-18-results-2018-to-2019-revised>

questionnaire indicated that there remains a gender divide in terms of how our PDRAs feel supported (Figure 14). This has led to two packages of actions for PDRAs:

- Action 28** Support research-autonomy of PDRAs.

Sub-actions detailed in the plan include supporting grant-writing workshops, offering support for application-writing, supporting ownership as principle investigator where possible, and providing small funds for exploratory pilot projects.
- Action 31 (a)** Ensure that line-managers use SRDS discussions to encourage all PDRAs and academic staff to attend the university's Think Ahead Mentoring programme. [applies to all staff, but particularly to PDRAs].

Flexible Working and Managing Career Breaks

We have worked hard to promote the university’s flexible working policy (A5.1). This has been particularly effective amongst our PST staff, where **there has been a rise from 26% (5) of female staff working part-time in 2015/16 to 58% (14) in 2019/20.**

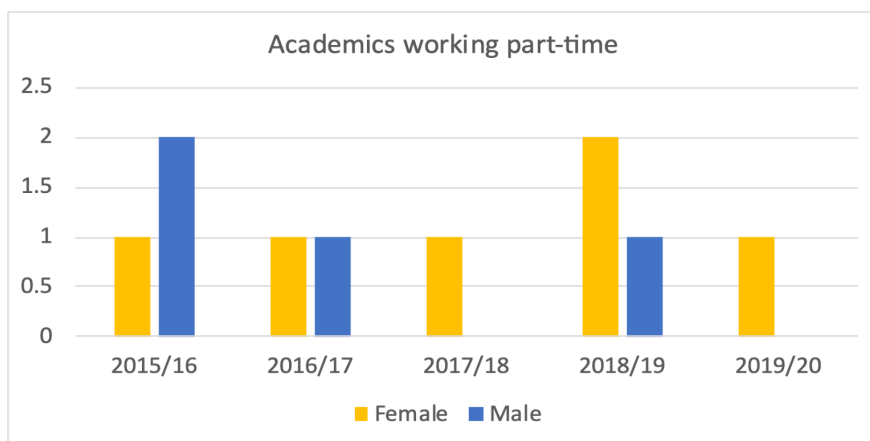


Figure 15 Academic staff on part-time contracts.

Amongst our academic staff, however, there has remained a far greater apprehension about part-time work, as shown in Figure 15. The numbers have only risen from one to two part-time female academics over the course of the last submission. Given the larger number of male staff, it is especially surprising that there were no part-time male academics in 2017/18 or 2019/20.

Figure 16 provides an explanation for this. Our 2019 staff survey exposed a strong feeling amongst academics, and particularly female academics, that working part-time would have a negative effect on their career. Our ongoing work and new actions to address this are described in Section 2.2.3.

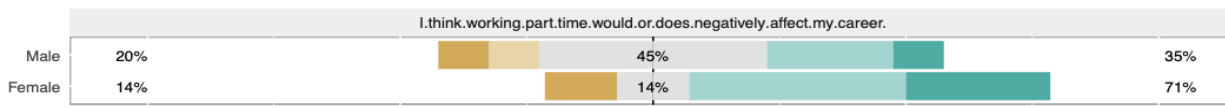


Figure 16 2019 Staff survey - opinion by academics on question "I think working part time would or does negatively affect my career".

Culture and Communication

One key task in our last action plan (A.6.1) was to embed the Workload Allocation Model (WAM), and to support a better understanding of it. **The WAM is now fully transparent – all members of staff can see each other’s WAM entries.** Our 2019 survey responses indicate that staff are starting to appreciate this (Figure 17). Since then we have included comprehensive guidance document in the staff handbook. Further measures are detailed in Section 3.

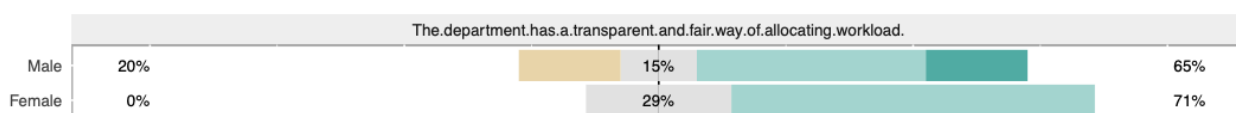


Figure 17 2019 staff survey answers from academic staff on the WAM.

Our efforts to reduce negative behaviours amongst staff and students have involved making inclusive behaviour a core part of our induction presentations for staff and students. This included a novel, mandatory Unconscious Bias training session for students (Action A2.15) and staff (A4.4). This has fed into a friendly and inclusive environment, as illustrated by the responses from our 2019 staff survey (Figure 18).

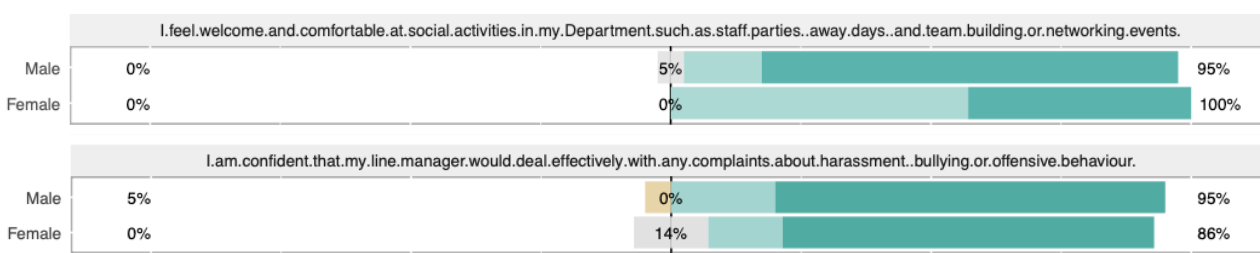


Figure 18 Responses from 2019 staff survey on bullying and harassment.

2.2.3 New initiatives

Encouraging part-time work amongst academic staff

To address the apprehension towards part-time working amongst academic staff, the EDIC developed the “COM Part-time and Flexible Working” white paper. This proposed several policies to attenuate these concerns. Examples included:

- + Dividing up large admin and teaching roles to facilitate scaling-down admin and teaching workloads.
- + Ensuring that part-time considerations are explicitly accounted for in appraisal and promotion discussions.
- + Raising awareness of *fixed-term* part-time contracts (useful for staff who want to try it out without a long-term commitment).

To make this accessible, we have also released an accompanying FAQ document for staff. These appear to be having an effect. For the year 2021/22 we are due to have 6 academics on part-time contracts (4M, 2F), up from 2 (both F) in 2020/21, and a maximum of 3 on any year since our last submission.

Action 34 Ensure that guidelines to support and encourage part-time working are publicised, refined, and used.

Addressing Email-induced workload stress

Our survey and focus group feedback have repeatedly indicated that email use within the department has led to stress. On that, the EDIC prepared the “COM Email Code Of Conduct” (A.6.3). One key instruction was for staff to, where possible, move their discussions away from email onto Google Chat (part of the University communications infrastructure).

This precipitated a widespread adoption of Google Chat (40% of respondents to a recent staff poll use it on a near-daily basis). The chat-room to support staff moving their teaching on-line in the pandemic included 42 participants, with 41 threads, the longest of which comprised 80 messages. Valuable communications that could otherwise have led to a significant email overhead.

Action 35 Continue to eliminate inappropriate email usage, reduce email volume.

Sub-actions include collection of email metadata to record volume of emails sent within department on a monthly basis, and ensuring that the email code of conduct is published and reviewed regularly.

Women+@DCS

In July 2020 we set up our Women+@DCS group⁷ to support gender diversity in Computing. As of May 2021, we have hosted 19 seminars, including renowned female academics in CS, female industrial speakers from companies such as Google and Adobe, and speakers on intersectional subjects, such as Siena Castellon (founder of Neurodiversity Celebration

⁷ <https://sites.google.com/sheffield.ac.uk/womendcs/about>

Week). Events have tended to attract 40-50 participants, are open to all, and are openly available online afterwards (Figure 19).

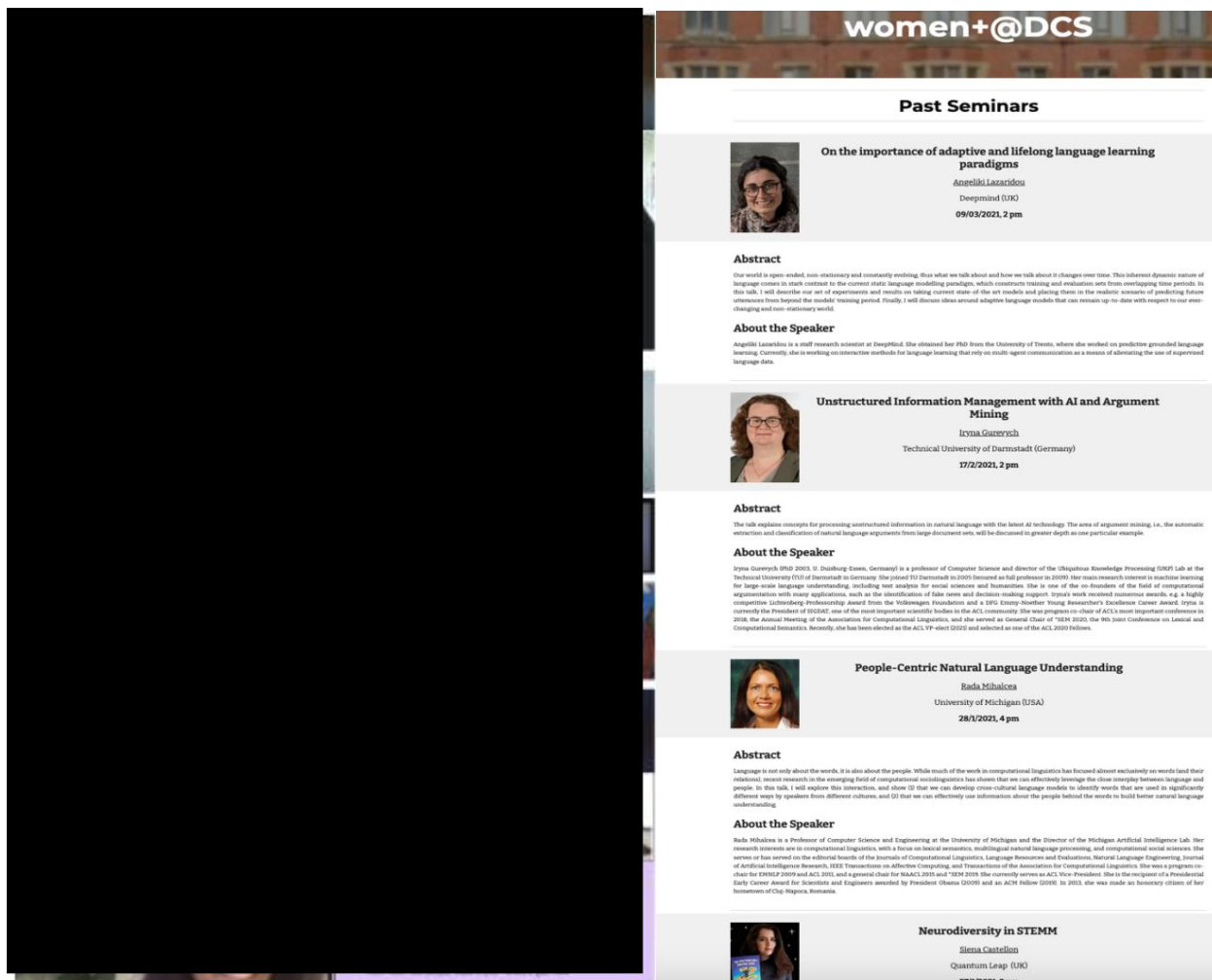


Figure 19 Women+@DCS website, and screen-shots from recent events.

The COM+ App

We have had an enduring problem of signposting students to events such as our surveys (see Section 2.2.2). To reduce our dependence on emails to advertise these events, we secured HEIF funding to develop our COM+ app (Figure 20). We are in the process of rolling this out within the department, and also to other interested departments within the faculty.

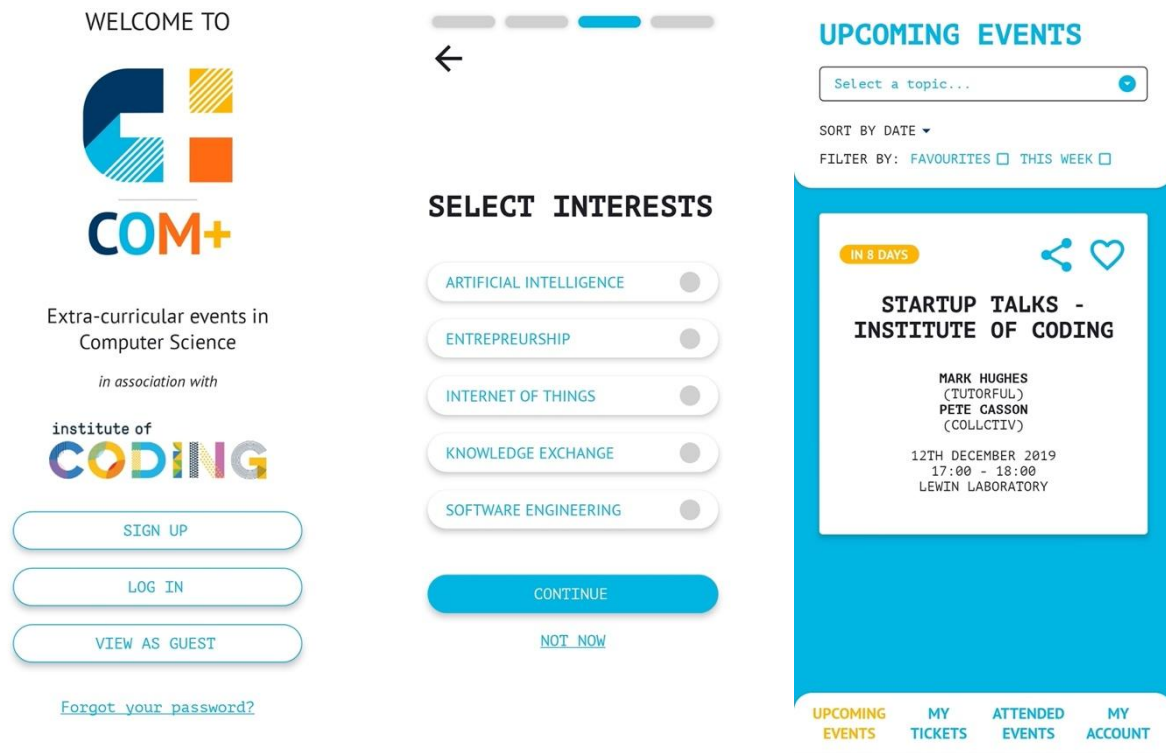


Figure 20 Screen shots from the COM+ App.

2.2.4 Lessons learnt

Our outreach needs to be strategic.

Despite having engaged in a huge amount of popular outreach activities, they have not led to the increase in the proportion of female students that we had hoped for. To make a difference we need to use our outreach resources more strategically – e.g. to train up regional teachers.

Involving target groups in the design / running of an event leads to much greater participation.

Many events that were intended for particular groups (e.g. PDRA grant-writing workshops) failed to attract a “critical mass” of participants. The events that *were* successful and attracted lots of attendees, such as our BCS Lovelace abstract-writing events (Figure 21) or our Women+@DCS seminars, all shared one characteristic: They were co-designed and run by members of the target audience.



Figure 21 2019 BCS Lovelace abstract writing workshop.

Word count: 1967

3. Section 3 – Future priorities and action plan

In section 3, applicants should evidence how they meet Criteria 4 and 5:

- + key priorities have been appropriately identified, to direct future action
- + a specific, measurable, achievable, relevant and time-bound (SMART) action plan has been provided, which addresses priorities.

3.1 Current self-assessment and future priorities

Recommended word count: 1500 words

Consider the department's self-assessment (previous and current), data analyses and previous action plan with respect to the areas covered by the standard Athena SWAN application form. These include:

- + student enrolment, progression and support
 - + key career transition points
 - + career development
 - + flexible working and managing career breaks
 - + organisation and culture.
1. have the department's gender equality issues changed, and if so, how?
 2. what are the department's key priorities for future action?

Our overarching goal is to move ourselves into a position where we can apply for an Athena SWAN Gold award. We believe that, thanks to the previous action plan, the foundations are in place to enable this. There are however still several obstacles to overcome. To achieve this we have identified a bold set of activities which, we hope, will lead to substantive impact over the coming five years, including several potential "beacon activities" for our next submission.

To produce our action plan, we ran a two-month consultation from November – December 2020. We prompted staff to reflect on the previous action plan, as well as the results of our

2019 and 2020 staff and student consultation exercises, and to contribute their thoughts and ideas. This led to an 11 page Google Doc with contributions and 91 comments from 26 members of the department.

Have the department's gender equality issues changed, and if so how?

The gender equality issues have not fundamentally changed since our last submission, but our understanding of these challenges has evolved significantly. We are now larger than we were, with a greater capacity for outreach activity, and with staff and student societies to support our ED&I activities.

What are our key priorities?

Representation:

1. Improve the gender balance of our student population, so that at least 30% of our UG students and 40% of our PGT students and Ph.D. students are women.
2. Improve the gender balance of our academic and PDRA staff, so that at least 40% of academic staff appointments in the period to the next submission are women.

Engagement:

3. Ensure that students and staff feel enfranchised and able to feed into our ED&I agenda, with a >70% response rate on our student and staff surveys.

Culture:

4. Address the underlying problems that lead to a reluctance amongst academics and PDRAs to move to part-time working.
5. Encourage a better work-life balance by ensuring fair use of the WAM and reducing the email burden.

Our self assessment process

We have already provided an overview of several new actions in Section 1.3.3 and in Section 2.2.

Given our increased scale and the widespread goodwill amongst staff, we have a lot to gain by encouraging even more direct staff engagement (especially from new staff). Given the current workload pressures, many will only be able to engage if their time and efforts are explicitly recognised in the WAM.

Action 8 Ensure that action plan activities are accounted for in the WAM (or in some other way for students or non-WAM staff categories).

See sub-actions in the action plan for specific activities.

As a research-active department, we are keen to create a much closer link between our ED&I objectives and our day-to-day research. On a straightforward level this will involve directly supporting the drafting of ED&I-related sections that are increasingly being required by funding agencies. However, we also see a lot of potential for our applied research, especially in Natural Language Processing (which can be used to detect bias or abuse on Twitter, for example) to foster a more inclusive discipline.

Action 3(a)	Develop an intranet page that sets out our ED&I priorities, and shows how we can support research activities.
Action 3(b)	Ensure that peer reviews of grant proposals incorporate opportunities for linking up with our ED&I activities (informed by web pages in (a)).

Student enrolment, progression and support

UG Students

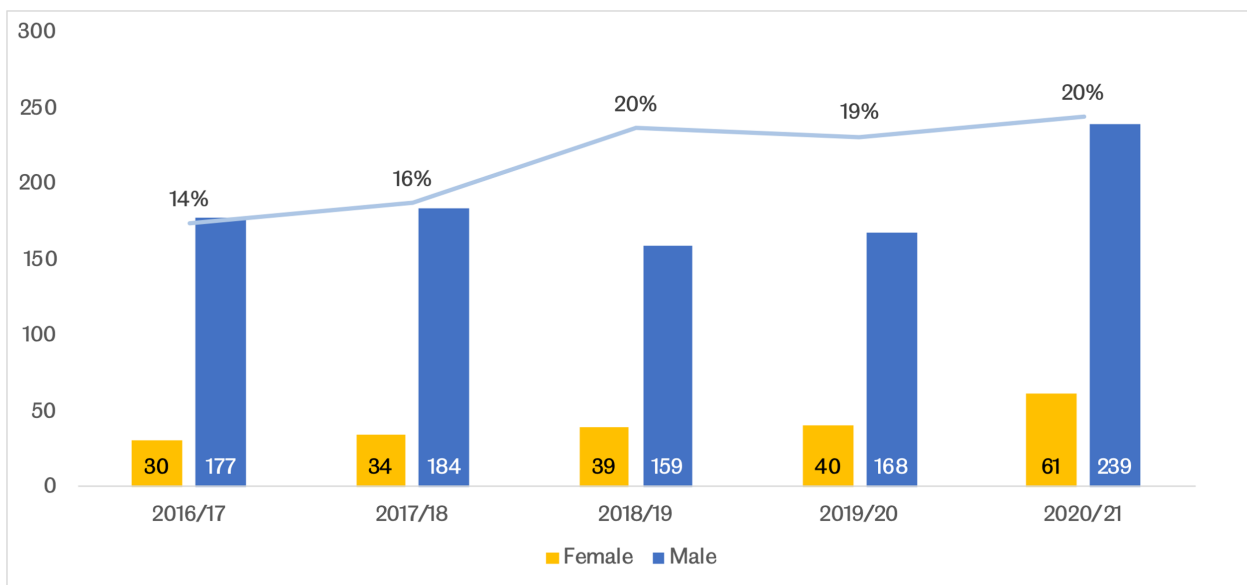


Figure 22 UG registrations.

Despite our successful efforts at developing an extensive range of outreach activities (Section 2.2.2), our proportion of female UG registrations has levelled off at around 20%, instead of climbing to our stated target figure of 30% (Figure 22). We remain hopeful that we can reach and surpass the 30% target, with encouraging numbers on some of our courses, such as Software Engineering (33%F), and AI (an intake of 25%F).

We have identified several possible reasons for the limited feed-through from our current outreach activity to course registrations. One important factor is a lack of provision of Computing in regional schools at A-level and GCSE (particularly acute in South Yorkshire), coupled with two potential misperceptions – (1) that the Computing A-level is a pre-requisite

for our UG course, and (2) the more general negative stereotype that Computing is all about solitary, narrowly technical activity.

To address the first issue (lack of computing activity in schools), we have developed the following comprehensive set of actions.

Action 9 Develop an outreach strategy that encourage uptake of computing at primary and secondary levels across the region, and foster links with schools.

Sub-actions detailed in the plan include developing a teacher-training programme, “host your computer teacher” days, and encouraging support for code-clubs amongst staff.

Action 10 Ensure that our outreach activities are well resourced and monitored, and that staff involvement is recognised and incentivised.

Sub-actions include securing alumni donations, fostering links to charities, linking our ambassador’s scheme to outreach, supporting our SWICS society to participate in outreach, and recognising and incentivising activities for staff via the WAM and promotions criteria.

We address the misperceptions and stereotypes about our course and Computing in general as follows:

Action 13 Encourage applications from students who do not have a Computing background. Make sure that those who apply are equipped with the skills (and confidence) to succeed once they arrive.

Sub-actions include developing an intensive “leveller” programme for students without prior Computing experience, running drop-in programming support surgeries, properly signposting students to available support, and reviewing our first-year materials annually.

Action 18 Ensure that our teaching and assessment does not disadvantage students with less prior experience in computing [*this also applies to our PGT students*].

Action 14 Enhance our reviewing processes for degree marketing materials to counter negative stereotypes.

Aside from the traditional activity of checking a balanced gender representation on websites, this activity will more proactively counter the solitary, “techno-centric” stereotype of computing.

Aside from increasing the proportion of female UG students who register for our courses, it is equally important to ensure that students are well supported once they arrive. To support incoming students who may feel that they “don’t belong” and may lack prior computing experience, we have put together a set of actions, drawing on the experiences of our current students to better understand the issues.

Action 15	Encourage and support our female and non-binary students to apply for our four annual “Epi-Genesys scholarships” (and other relevant scholarships within the institution) – which are targeted at students from Widening Participation backgrounds.
Action 17	Foster a sense of belonging amongst our female UG students, by continuing to develop opportunities for summer research internships, and supporting participation in national undergraduate research events (such as the BCS Lovelace Colloquium). [This applies to PGT courses as well]
Action 18	Ensure that teaching and assessment does not disadvantage students who have little or no prior experience in Computing. [This applies to PGT courses as well]
Action 19	Ensure that all members of staff and all students receive training on implicit bias. [This applies to PGT courses as well] <i>Staff receive training through the central system. For students, we will continue to refine and roll-out an implicit bias training session – having been the first department in the university to introduce such a course.</i>
Action 20	Develop mentoring and coaching skills for female students. [This applies to PGT students as well] <i>Sub-actions detailed in the action plan include linking in to the university-wide mentor-training courses, recruiting mentors from our industrial advisory board and our partnership with IBM, recruiting senior student mentors, and setting up a recruitment process for mentees.</i>

PGT Students

Having increased by 10% up to 32%F in 2018/19, our PGT numbers have since dropped to 24%F (Figure 23), approximately where they were at the time of our previous submission. This appears to be largely due to demographic shifts in international PGT recruitment markets.

We believe that we could do more to attract female home students. Aside from improved marketing to attract women who are already in Computer Science UG degrees, we will also seek to replicate the successes of other Computing departments (several in the US, but also at the University of Kent) by encouraging cross-over into Computing from other disciplines:

Action 16	Investigate the development of a “Year In Computing” course for UG students from other disciplines (modelled on the University of Kent offering), which would enable these students to “cross over” into a Masters degree.
Action 21(a)	Develop and submit proposal for an intensive (potentially online-only) "bridging course" - a set of lectures that graduates from non-computing subjects can use to obtain a foundational knowledge of Computing. May draw on some of the materials developed for Action 13 (b).

Action 21(d) Identify departments that have been successful at recruiting women to UG courses, and arrange to display course advertisements (York Chemistry have developed a relationship of this nature with Sheffield Hallam Chemistry).

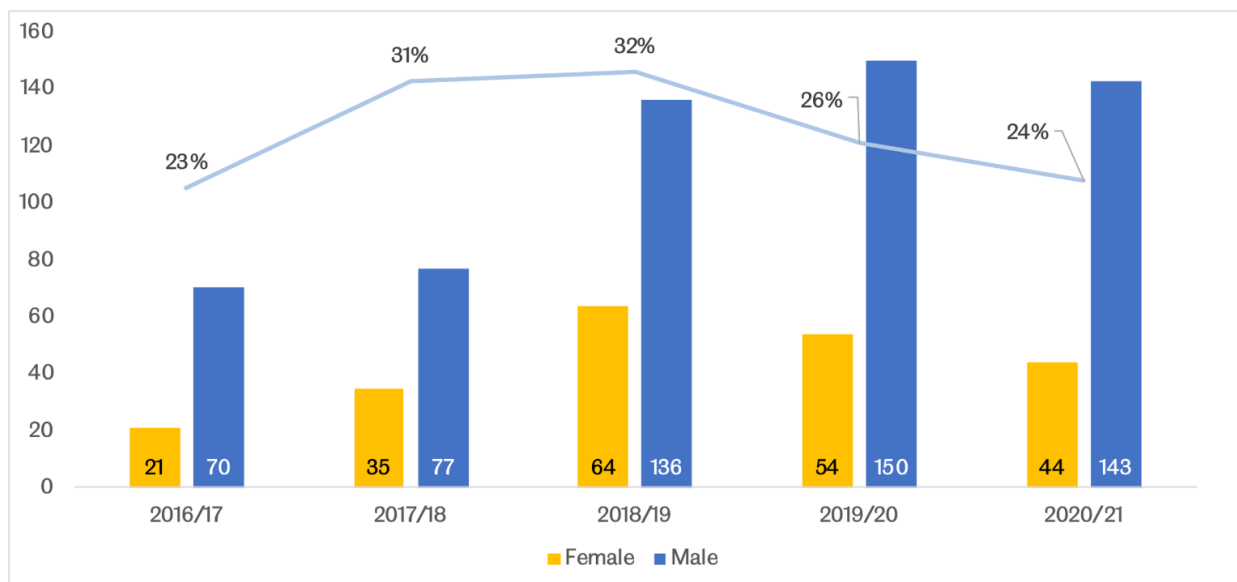


Figure 23 PGT registrations.

As with UG students, it is important to ensure that PGT students feel a sense of belonging once they arrive. It is therefore important to note that actions 17-20 discussed previously also apply to PGT students.

PGR Students

Whilst our PGR numbers (Figure 24) have grown slightly, in part due to our Centre for Doctoral Training (CDT) in Speech and Language Technologies, the proportion of female students has fluctuated significantly, and has unfortunately declined sharply over the last year. This has been largely due to changes in the home-countries of international students, particularly due to a sharp decline in EU numbers.

To turn this trend around, we have developed Action 22 with ten sub-actions (we highlight only three here).

Action 22(a) Actively promote participation at Women+@DCS seminars and meet-ups to potential PGR candidates (e.g. Masters and BSc. students in their final year, in relevant subjects across the university, members of the local Digital Tech community – see Action 22(c))

Action 22(b) Enhance the visibility of supervisors to potential Ph.D. candidates, showcasing unconventional routes into Computer Science Ph.Ds.

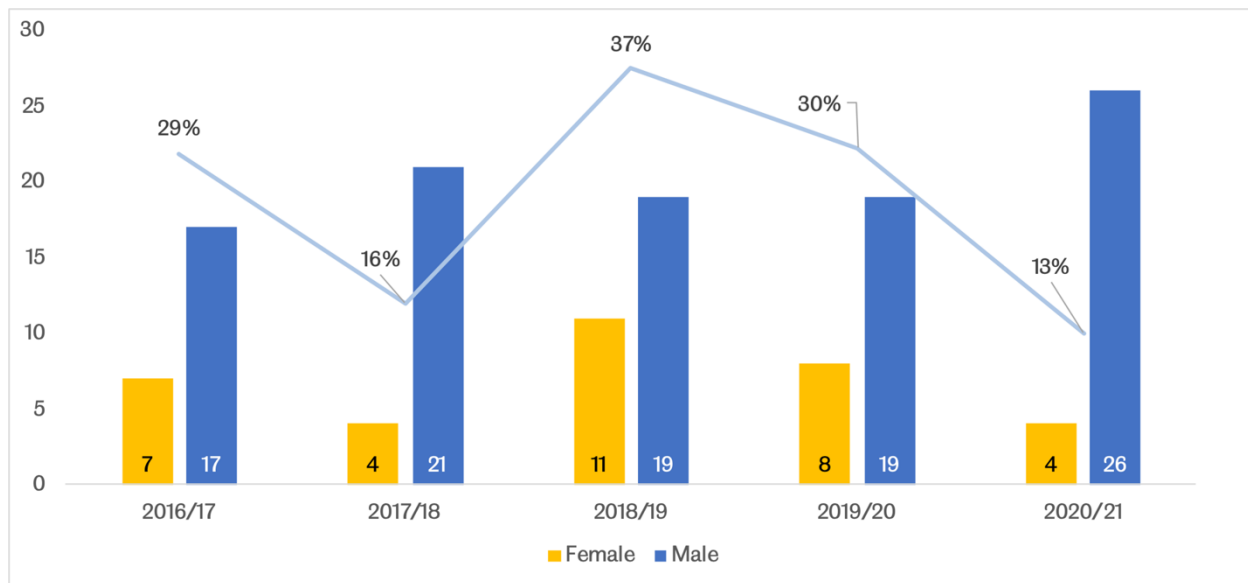


Figure 24 PGR registrations.

Sheffield has an active tech-sector, with a large and diverse population who are educated to a BSc. or MSc. level in numerate subjects. We believe that this presents a potential market for part-time Ph.D. students, potentially in partnership with local employers.

Action 22(c) Raise awareness of the potential to study Ph.Ds within the Sheffield Digital community, particularly within the Sheffield Women in Tech community.

Key career transition points

We have already discussed the measures that we have put in place to bolster the research autonomy of PDRAs (Actions 28 and 31(c) – described in Section 2.2.2).

For academic staff, the proportion of female staff has remained at around 21-22%, despite considerable efforts around search committees and positive action. **We are delighted to have doubled the number of female professors in our department from 2 (14% of professors) in 2015/16 to 4 (22% of professors) in 2019/20. Three were promoted to these positions.**

To improve our proportions of women at L/SL level, we have the following actions:

Action 23 Increase the proportion of female applicants for academic staff posts, and ensure that this feeds through to interview stage.

Sub-actions detailed in the action plan include more targeted advertising of posts to women via relevant email lists, a review of our “work with us” pages, ensuring that at least 50% of all candidates who are approached from within the department are women, and the involvement of Women+@DCS in departmental visits.

Action 24 Introduce Unconscious Bias Observers to recruitment and promotions processes for all research and academic positions. Ensure that all staff involved in recruitment and promotions panels have had an Unconscious Bias refresher course in the preceding year.

Action 25 Increase visibility of local role models (especially to appeal to PDRAs who might be interested in applying for a lectureship).

Sub-actions include a “bring your child to work” day, as well as ensuring that local staff are invited to present at the Women+@DCS seminar series.

For all staff categories the need to improve a lack of mentoring opportunities was identified in the 2019 staff survey.

Action 31 Improve awareness of mentoring opportunities.

Sub-actions include signposting staff towards the various institutional mentoring programmes (ThinkAhead for PDRAs and academics, GROW for PST staff, and fostering mentoring links with our industrial partners at IBM).

Flexible working and managing career breaks

We have already discussed our ongoing actions to increase the uptake of part-time working amongst academic staff (Section 2.2.3).

In terms of family leave, we have had two members of research staff take maternity leave since our last submission (both returned and stayed for over 18 months after the maternity leave ended). Amongst academic staff, three male members of staff have taken paternal leave, and one member has taken shared-parental leave.

We will continue to ensure that staff are aware of the leave options for new parents, and that academic mothers are supported when applying for the University’s Women Academic Returners’ Programme (WARP), which provides funds of up to £10,000 to support research during or after return.

Action 32 Ensure awareness of leave options for new parents.

Action 33 Ensure that female academics and research staff are fully supported on and after their maternity leave, and supported in applying for WARP payments.

Organisation and Culture

We have already discussed our efforts to reduce the email burden on staff (Section 2.2.2).

Two activities that are bound to have a significant impact on the culture within our department are the development of a new “student-hub” building for Computing students, and the extensive refurbishment of our department at Regent court.

The student-hub (Figure 25) will address a long-standing problem (most recently raised by students in the 2019 survey) of a lack of dedicated student areas in our current building. It also provides the opportunity to develop an outstanding area within which to deliver our extensive outreach activities (Action 9), and host ED&I-centric events (Actions 1(b and c)).



Figure 25 Conceptual render of the new Student Hubs building.

Action 12 Develop a building that is dedicated to our students - both current and prospective, providing a stand-out venue for outreach events and the day-to-day life of our students, enabling us to showcase cutting-edge Computer Science research, and to foster a strong sense of belonging to the department and the discipline.

Sub-actions include ensuring suitability for outreach, support for interdisciplinary work, and ensuring that building can be reconfigured to accommodate summer courses.

ED&I is a key concern for both the design of the student hub and the Regent Court refurbishment (Figure 26). We have, for example, actively sought out best-practice to ensure that we are welcoming to neurodiverse students and staff, and accessible to staff and students with disabilities. To be inclusive to all genders is a further key design consideration.

Action 36 Ensure that ED&I sits at the heart of the refurbishment plans for our Regent Court building and the new student hub.

Sub-actions detailed in the action plan include ensuring that a key space retains the “Ada Lovelace Room” [the main seminar room in our current setup], ensuring ample social space to enable mixing between staff and students, ensuring the provision of baby-change and breast-feeding / expressing areas [not collocated with disabled toilets], and the provision of gender neutral toilets.

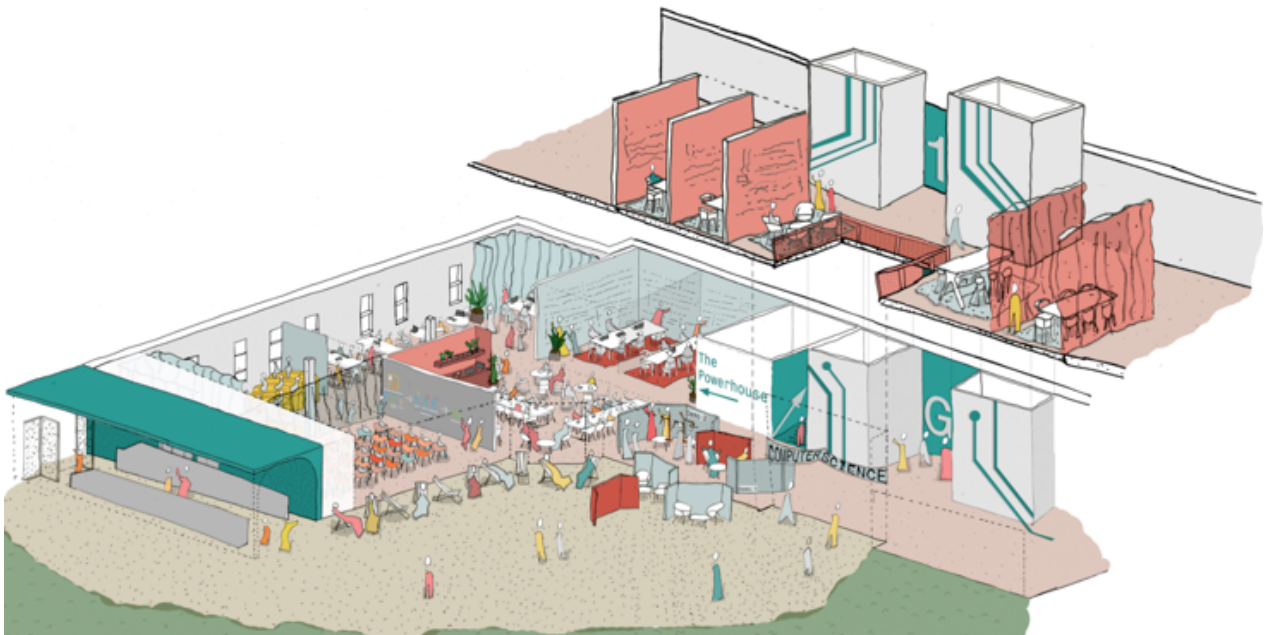


Figure 26 Design detail for Regent Court refurbishment.

The refurbishment also presents us with an ideal opportunity to begin our initiative to ensure that the department better accommodates the needs of our menopausal staff. Aside from ensuring that the physical workspace is suitable for menopausal staff, we will also ensure widespread awareness of the university’s new Menopause in the Workplace toolkit⁸, and customise it to our department where necessary.

Action 37 Ensure that the department is a menopause-friendly workplace and that menopausal staff are explicitly considered in the Regent Court refurbishment.

⁸ <https://www.sheffield.ac.uk/hr/wellbeing/menopauseatwork>

Word count: 1502

3.2 Future Action plan

Please provide (in table format) an action plan covering the four-year award period.

Contact us

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