



CONSULTATION TO SUPPORT THE UNIVERSITY OF EDINBURGH'S GENDER EQUALITY SCHEME

Dr Jane Mulderrig, Centre for Research in Education Inclusion and Diversity, The
Moray House School of Education, University of Edinburgh



Centre for Research in
Education Inclusion
and Diversity

BACKGROUND	1
THE GENDER EQUALITY SCHEME: University of Edinburgh	1
EXISTING EVIDENCE: Students at the University Of Edinburgh	2
<i>Key Trends by College</i>	3
<i>Career Progression in Science</i>	
<i>Male Attainment and Educational Progression</i>	4
THE CONSULTATION	4
Aims	4
Methods	5
<i>Research Design</i>	5
<i>Ethics</i>	5
<i>Respondents</i>	6
FINDINGS	6
Choosing Science	7
<i>Reasons for Choosing a Science Degree</i>	7
<i>Plans to do Postgraduate Study</i>	7
<i>Summary</i>	8
The Gender Balance in Science	8
<i>Skills Base</i>	8
<i>Social Conditioning</i>	8
<i>Peer Support</i>	9
<i>Role of Schools</i>	9
<i>Role Models</i>	9
<i>Biological Sciences</i>	9
<i>Strategies to Encourage Female Scientists</i>	9
Male Attainment and Educational Progression	10
<i>Attitudes to learning and studying</i>	10
<i>Maturity Levels</i>	11
<i>‘Boys are lazy and girls can’t do the maths?’</i>	11
Careers in Science	11
<i>Postgraduate Study</i>	12
<i>Academic Careers</i>	12
<i>Strategies</i>	13
Gender Equality at the University	14

Key Issues	14
Case Study	15
<i>Key Facts</i>	<i>15</i>
<i>Priority Areas for Action</i>	<i>15</i>
SUMMARY AND DISCUSSION	16
APPENDIX	18

Consultation to Support the University of Edinburgh's Gender Equality Scheme

This report presents the findings from a study commissioned by the University of Edinburgh as part of the research underpinning of its Gender Equality Scheme, identifying key areas for action and improvement.

BACKGROUND

In 1975 the Sex Discrimination Act set a new precedent in UK law, for the first time making it illegal to discriminate on the grounds of sex. During the thirty years since its introduction the Equal Opportunities Commission has acted to promote equality among men and women. Considerable progress has been made in key areas like maternity leave, as well as greater equality in pay and retirement ages. However, there is still considerable scope for further improvement in these and other areas. In particular, the legislative arrangements have traditionally placed the onus on individuals taking action to challenge discrimination.

The Equality Act 2006 amends the 1975 Sex Discrimination Act by creating a statutory duty on all public authorities to prevent discrimination and to promote equality of opportunity in the pursuit of all their activities. Specifically, the Act requires public bodies, when carrying out their activities, to have due regard to the need to:

- Eliminate unlawful discrimination and harassment; and
- Promote equality of opportunity between men and women.

The idea of a 'positive equality duty' was first introduced by the Race Relations (Amendment) Act 2000, and further developed in the Disability Discrimination Act 2005 and most recently the Equality Act 2006. It reflects a new approach in equality legislation which places more responsibility on service providers to think strategically about equal opportunities, rather than leaving it to individuals to challenge poor practice. Following the development of statutory duties on race and disability, the Gender Equality Duty came into force on 6th April 2007. The Sex Discrimination (Public Authorities) (Statutory Duties) (Scotland) Order 2007 also outlines a set of 'specific duties' to be met by the listed public authorities. The aim of these specific duties is to map out the necessary steps towards delivering the general duty. The first phase is concerned with information gathering and target setting, and should culminate in the publication of a Gender Equality Scheme by the end of June 2007. The second phase, due by the end of September 2007, involves publishing an Equal Pay policy statement. Both of these key documents should be subject to a progress review every three years.

THE GENDER EQUALITY SCHEME: University of Edinburgh

An Equality scheme is a programme of tasks, timetables and the distribution of responsibilities set out by an employer in order to reach specified (gender) equality goals. The Equal Opportunities Commission has issued sector-specific guidance to

assist public authorities in developing their equality schemes. In its guidance for Post-16 Education Providers in Scotland, the EOC identifies a number of key elements the equality scheme must include:

- Specification of gender equality objectives and their evidence base
- Strategy for monitoring change in employment and service delivery
- Prior consultation with staff, unions and service users
- Strategy for impact assessment
- Three year action plan for meeting objectives

Equality Duties represent a more proactive policy model, where the emphasis is on shaping institutional environments that actively promote greater equality among employees and service users. In order to respond to differential need within specific institutional settings, individual institutions must therefore determine their own priorities for action based on a significant amount of research and consultation.

The University of Edinburgh was one of a number of bodies that piloted the GED through preliminary analysis of data gathered from its own institution. As a result of this process the University identified three key areas for action:

- Occupational segregation in staffing (especially clerical and servitorial)
- Male student attainment in science and engineering
- Female academic career progression in science and engineering

A range of actions was proposed to investigate these areas, including further quantitative and qualitative research. The Equal Opportunities Committee has recommended a more staged and targeted approach to the GED than that used with race and ethnicity. In keeping with this recommendation, this preliminary consultation was commissioned to focus on issues relating to the second and third priority areas.

EXISTING EVIDENCE: Students at the University Of Edinburgh

In its pilot study for the Gender Equality Duty, the University drew on the most recent census data as well as findings from the report of its Equal Opportunities Technical Advisory Group (EOTAG). The group was set up in 1999 to gather equal opportunities monitoring data for staff and students. In relation to the priority areas explored in this consultation, the following figures are of particular relevance.

Based on the University of Edinburgh Planning Division figures, current undergraduate student numbers by gender and college are as follows:

	Humanities Social Science	& Medicine Vet Medicine	& Science Engineering	& University Total
Female	9,131	1,960	2,714	13,805
Male	5,360	1,045	4,410	10,815
All Students	14,491	3,005	7,124	24,620

	Humanities & Social Science	Medicine & Vet Medicine	& Science Engineering	& Gender Total
Female	66.1%	62.2%	14.2%	100.0%
Male	49.6%	52.8%	9.7%	100.0%
All Students	58.9%	57.5%	12.2%	100.0%

[Rounded student headcount, 'snapshot' figures taken on 31/1/07. Available at: <http://www.planning.ed.ac.uk/STUDMI/2006-07/Profile20070131/gc/gc.htm>]

As these figures indicate, in keeping with average yearly trends over the last decade, the University of Edinburgh has a higher female than male student population.

Key Trends by College

Of the three academic colleges, numbers of female students have traditionally been highest in the college of Humanities and Social Science (HSS) (averaging around 62.5% over the last ten years), followed by Medicine and Veterinary Medicine (MVM). On the other hand, in the college of Science and Engineering (SCE) the gender ratio has traditionally been inclined towards male students, averaging around 60% of the college's undergraduate population during the last decade. In the case of Medicine the proportion of female students has risen over the last 10 years from 52.8% to 62.2%. During the same period, the much higher proportion of females studying Veterinary Medicine has increased from 72.1% to 79.8%. This college has thus seen the largest increase in female undergraduate entrants, although the trend has involved the greatest yearly fluctuation in population ratios.

In relation to postgraduate study the trends are slightly different. There has been a similar increase in the proportion of female (postgraduate) students as a whole. However, the ratio in favour of women (53.4% vs. 46.6%) operates only at the level of taught postgraduate study. When it comes to postgraduate research degrees, there are more men than women (45.7% vs. 54.3%). The trends by college for taught programmes are similar to those in undergraduate programmes, although with some differences. The balance in favour of women students in HSS is less marked at postgraduate level, but rather more marked at this level for Veterinary Medicine. In Science and Engineering, fewer women enter as undergraduates and the proportion drops even more at postgraduate level.

Among students pursuing postgraduate research degrees (a potential indicator of interest in pursuing an academic career), the gender balance shifts markedly towards men. Although dominated by women at undergraduate level, the fluctuating trend over the last decade has shown a male-dominated population of research students in HSS. In Science and Engineering the male dominated trend continues at research degree level, while the female-dominated trend continues, but to a lesser extent, at research degree level in Veterinary Medicine. The exception to this weighting towards male research students is in Medicine.

Career Progression in Science

In its pilot study for the GED the University focussed in particular on these male-dominated trends in Science and Engineering. It observed that although female science students on average perform better than their male counterparts, fewer women go on to further study and even fewer still pursue an academic career. This finding was based on SCE undergraduate entrants' data for 1995/6, the class of degrees awarded in 1999, and additional data gathered for subsequent years on men and women in postdoctoral and lecturer posts.

Male Attainment and Educational Progression

The fifth EOTAG report offers further evidence in relation to comparative attainment levels and drop out rates for male and female students in Science and Engineering. The trend over the three years prior to the report indicates that on average 21% of male entrants to SCE honours degrees drop out or transfer before completing the course (the figure was 13% for women). Moreover, fewer men (59%) than women (70%) obtained first or second class degrees.

A wide range of factors could be instrumental in shaping these trends. This study was commissioned in order to involve the students themselves in the University's efforts to investigate them.

THE CONSULTATION

Aims

The University's Human Resources department commissioned the Centre for Education, Inclusion and Diversity to carry out this study. Its aim is to provide qualitative insights into the possible causes behind the gender differences found in student attainment and academic career progression in Science and Engineering. Findings from this study will inform the University of Edinburgh's Gender Equality Scheme, which will identify the priorities for action in making the university a more inclusive and gender-blind educational and working environment.

The emphasis in the consultation procedure was on depth rather than breadth. The key questions it sought to explore concern general experiences of students studying Science and Engineering at Edinburgh, both at undergraduate and postgraduate level.

It is hoped this consultation will serve as a pilot study, providing the basis for future larger-scale consultations across the university, as part of its ongoing work in developing and monitoring a Gender Equality Scheme.

In particular, the consultation sought to investigate the following questions:

- Do gender-related factors play a role in determining what students choose to study at university?
- What can the university do to attract more female students to science?

- Is postgraduate study in science equally attractive to male and female students?
- What factors, including learning styles, might contribute to the gender difference in attainment levels and drop out rates?
- How inclusive is Science and Engineering of the needs of both male and female students? Are there areas for improvement?
- Do students feel their gender has at any point been an obstacle to success in studying science at the university?
- Is an academic career in science equally attractive to men and women? Are there any gender-related causes for concern?
- What do students feel should be the university's priority action areas for achieving greater gender equality?

In order to investigate these issues a number of focus groups were conducted with undergraduate and postgraduate male and female students in Science and Engineering.

Methods

Research Design

The recruitment of participants was organised by the University's Equality and Diversity Office in consultation with Registry and the relevant Teaching Organisation within the college of Science and Engineering. All undergraduate and postgraduate students in Science and Engineering were sent an e-mail containing an invitation from CREID to participate in the study. The e-mail explained the policy background to the study, and highlighted the issues it sought to investigate. Interested respondents contacted CREID directly and four focus groups were arranged based on students' availability. Two undergraduate and two postgraduate focus groups were held. The students were also divided into single sex groups in order to facilitate more open and gender-specific discussion.

The focus groups were held at the Moray House School of Education and conducted using a facilitator and a scribe. Each session was structured using a topic guide tailored to the make-up of each group in order to probe issues germane to each. Before commencing each focus group, students were asked to provide written answers to a number of preliminary questions concerning their subject of study and reasons for choosing it, as well as their future academic and career plans. All discussion topics and questions used in this consultation are appended to this report.

The participants were also encouraged to raise any additional issues they felt had not been covered during the proceedings. As a consequence, two students expressed a wish to relay further details of a particular case study. One female student agreed to the inclusion of her case in this report and e-mailed notes outlining her experiences. Her case study is included anonymously at the end of this report. Another student asked for a contact in the University authorities in order to submit a report of a separate case study. She was referred to the Equality and Diversity manager for further assistance.

Ethics

In accordance with ethical requirements, it was made clear to all participants at the outset that their views would be incorporated into a report but would remain strictly anonymous. It was also explained to participants that the purpose of the study was to elicit their views and experiences in order to help the university develop its own Gender Equality Scheme in accordance with current legislation. A database was compiled of those students who attended the focus groups and those who did not attend but expressed an interest in the scheme.

Respondents

Twenty eight students participated in the study. There were more responses from male students than female, both among those expressing an initial interest and those who participated. However, this ratio may reflect the gender balance in the student population of SCE rather than any differential level of interest.

Ten female students participated - four postgraduate and six undergraduate. The numbers of male participants were equally divided between postgraduate and undergraduate. The female undergraduate students are each taking different degrees, three of which are in the female-dominated area of Biological Sciences. The three others are studying more typically male-dominated subjects: Mathematics, Chemical Physics, and Computer Science. The female postgraduate group contained one MSc student (Artificial Intelligence) and three doctoral students in Informatics, Evolutionary Biology and Neuroinformatics. Thus, among the four female postgraduate students participating in this study, three are studying traditionally male-dominated IT-related subjects.

All but one of the male undergraduate participants is studying a traditionally male-dominated subject area in SCE. Five students are studying Mathematics, not one of whom plans to do postgraduate study. The remaining students are studying Maths with Physics, Computer Science, Astrophysics, and Biotechnology. The male postgraduate group was comprised of students on taught programmes and five doctoral students. The subject areas represented were in IT (Computer Science, Informatics, E-science); Biological Sciences (PhD in Fungal Cell Biology; Evolutionary Biology and Genetics); two PhDs in Electrical Engineering; one PhD in Physics; and one PhD in Geosciences.

FINDINGS

The study used a focus group schedule, although the participants were encouraged to contribute freely their opinions and experiences. This section discusses the findings of the study, which are set out thematically, highlighting any patterns correlating with gender and stage of study.

Choosing Science

The students provided written answers to questions concerning their reasons for choosing to study science at university, and (in the case of undergraduate students) whether they are planning to do postgraduate study in science.

Reasons for Choosing a Science Degree

In each group the students cited a variety of reasons for choosing to study science at university. As might be expected, the most common reason was intrinsic interest in the subject. This was the reason expressed most often by undergraduate female students. Other reasons cited were that the students had found they were good at science while at school, and that it would improve their career prospects. As might be expected, career was a consideration expressed more frequently by postgraduate students, both male and female. One interesting pattern to emerge from these preliminary questions is that male undergraduate students (and in particular those studying maths) were the most likely of all participants to cite facility with the subject as being the main reason for studying it at university. This result accords with the comments made (in particular by undergraduate students) in relation to male and female attitudes to learning and studying. Several students observed that men tend to prefer subjects that require more understanding than effort, whereas women tend to be more willing to study subjects that require a lot of reading and learning of new information.

Plans to do Postgraduate Study

Undergraduate students were also asked if they intended to pursue postgraduate study. Among both male and female respondents, none of the six students studying Maths expressed a clear intention to do further study (two were unsure). These students were also the most likely to state that they had chosen to study their subject because they were good at it. Two female students taking Computer Science and Chemical Physics also expressed no interest in doing postgraduate study. All three of these are traditionally male-dominated subjects. The remaining students who expressed some interest in postgraduate education were taking more applied science subjects.

The results from these preliminary questions suggest that at undergraduate level those students who are definitely interested in pursuing postgraduate study are also the most likely to be planning a career in science. In general, these students are more likely to be studying applied science subjects. This would appear to be confirmed when we examine the results for postgraduate students. These students were asked their reasons for choosing to pursue postgraduate studies. Among the reasons listed were: job dissatisfaction plus interest in their subject (among PhD students), purely interest in the subject, career development (of which almost half - 2 male and 2 female respondents - specified an academic career). While almost all postgraduates cited interest in the subject as a motivating factor, the male respondents were more likely to mention career development as reason for doing postgraduate study.

While the written responses to these questions were quite varied, some very tendential gender-based patterns emerged. Overall, in the early stages of study, ability at the subject seems a stronger motivating factor among male students, especially in the theoretical sciences. Male respondents are also more likely to cite future career considerations as reasons for studying science, although the perceived ‘usefulness’ of science is clearly an attraction to both male and female students. Probing this issue further, all respondents were asked if they intended to use science in their future career. Here some gender differences emerge according to stage of study.

All postgraduate students expressed some interest in a career in science. Unsurprisingly, all doctoral students are planning a career in science, although not all of them intend to pursue an academic career – in particular, two of the female doctoral students said that they began a doctorate with this intention but were now far less sure about this route. Their experiences will be elaborated below. Four of the nine male postgraduates said they were considering an academic career. Among the undergraduates the 6 respondents said they would definitely or possibly consider a career in science; 3 would not and 1 is unsure. The female undergraduates are evenly divided into the ‘yes’ and ‘no’ camps in this respect, with students studying applied (Biological) science more interested in a scientific career.

Summary

- Male students (especially in Maths) more likely to choose science at university because they’re good at it; female students because they’re interested in it.
- Men more likely to cite career considerations in choosing science.
- Career considerations and interest in the subject are the main reasons for choosing postgraduate study. Returners to education often cite job dissatisfaction.

The Gender Balance in Science

Students were asked to give their insights into the possible reasons for the gender imbalance in science. The responses were broadly similar across the four groups. Most students agreed that a combination of factors accounted for the differences, and that any strategies to redress the gender imbalance would need to be long term and include interventions targeted at universities, schools and parents.

Skills Base

Several students commented that girls are perceived to be weaker in the skills-base science draws on, in particular maths. Many students commented that schools should be more proactive in building girls’ confidence in science. It was suggested that stereotyped notions that girls are not good at maths may discourage all but the most talented or determined girls from choosing science.

Social Conditioning

One issue raised in all of the groups was the influence of social conditioning, from an early age, instilling gendered assumptions about expected behaviours. This is manifested in differences in objects and patterns of play in early childhood. These are

partly an expression of natural gender differences in children's interests, but may also be reinforced by parental and wider societal assumptions. Interestingly, several female undergraduates studying typically male-dominated subjects (Computer Science; Chemical Physics) commented that their scientific interests were actively encouraged in childhood. These comments suggest a role for early intervention strategies to foster greater confidence and stimulate scientific interests among girls. The role of both schools and parents was seen to be crucial in this respect.

Peer Support

Similarly, social conditioning was felt to play a role in determining perceptions about what are 'natural' subjects for girls to study. In particular, the male undergraduates commented that boys may choose science subjects simply because this is seen as the most natural choice for them. With more boys taking science subjects and opting for science degrees, it was suggested that girls may be put off by the lack of female peer support in science. One possible compensatory strategy may be a mentoring system at university for female science students.

Role of Schools

Most students agreed that gendered patterns in science are shaped from a very early age, and that schools play a very important part in this. For example, one student observed that the boys' school he attended had much better facilities for science and sports than its counterpart girls' school. He further commented that although the girls' results in science were better than their male peers, fewer went onto study science.

One female postgraduate student recalled attending while still at school an engineering science fare run by Bristol College. She felt this was a valuable opportunity for girls to get a 'hands on' understanding of the applications of science.

Role Models

All students commented that a lack of female role models in science may discourage female students. A similar problem was reported to be the case in several students' home countries, including China, India, U.S., Poland and Germany. The importance of role models was stressed by many of the students, in particular the female participants. Most of the female students said that their scientific interests were actively encouraged from an early age at home, and all of the postgraduate women said they had had a science role model (though not necessarily female) at home. Many male students also commented on the importance of parental encouragement.

Biological Sciences

Students were probed further in relation to the gender differences within the sciences as a whole, with more women in the Biological Sciences. Here again a range of possible factors was discussed. Firstly, students agreed that this branch of science tends to be more related to people or animals (medical sciences) or to nature (earth and plant sciences), and these more applied, less abstract subjects tend to appeal to women. Most students agreed that these are seen as more 'maths-free' areas of science that appeal to women because they place greater emphasis on learning and

problem-solving. Conversely, other areas like maths, physics, computing and engineering appeal more to men because they rely less on learning and reading, and are more focussed on logic, efficiency and short-cuts. Both female and male respondents raised these issues. It was also observed by female undergraduates that Biological Sciences can lead to a wider range of career paths and may therefore appeal to women because they are less willing to narrow their career choices.

Strategies to Encourage Female Scientists

Participants were asked to suggest strategies the university might adopt to attract more women to science:

- Collaborative work with schools (both secondary and primary), targeted at girls. Suggestions included: ‘touch and play’ interactive science workshops; ‘master classes for maths’.
- More visible campaigning to attract women to science (e.g. brochures containing more images of women doing science).
- Capacity building in the university sector. One student cited a strategy in the US to encourage more female university science *teachers*, in order to increase the number of academic role models directly in contact with students.
- Introduce mentoring system at universities – at all levels of academic progression (thus for female students and staff).
- Offer training workshops/seminars for women in science (for example, talks from female academics).
- Awareness-raising for staff to counteract male-dominated culture.

Interestingly, in comparison with the other respondents, female undergraduate participants identified the need for proactive interventions to encourage girls at a much earlier age.

Male Attainment and Educational Progression

As discussed above, the evidence indicates that male science students tend to perform less well than women, and a higher proportion drops out or transfers elsewhere before course completion. Participants were asked for their insights into possible causes and potential remedial strategies.

Attitudes to learning and studying

Almost all students pointed to differences in learning styles as the most likely underlying cause of lower attainment levels among male students. Many felt this pattern was set early on at school, where boys tend to be less inclined to study than girls. Several male undergraduate students commented on the strength of peer pressure, embedded at school, discouraging boys from working hard. While this dissipates at university, it can have an early knock-on effect on attitudes to studying in the first few years at university. Early exam failures may discourage male students from carrying on with studying once it has become optional.

Science subjects may also be perceived by students to be more time and labour intensive (with more contact hours and exams than subjects in some other disciplines). The level of effort and application this requires may be less burdensome to female than male students. It was suggested that this may be because women tend to be more willing to study hard, and also because a large number of male science undergraduates experienced success at school without having to make much effort. Students felt science requires better time-management than other disciplines. One student suggested that it is less risky for men not to perform well, since an unqualified man has a better chance of finding work than an unqualified woman. Several female students commented that women studying science are probably already more motivated and determined to succeed than the average student in order to have overcome the obstacles to women entering science in the first place.

Whatever their explanatory reasoning, most students agreed that men are less inclined than women to work hard, and that this alone is probably the main reason for lower attainment levels and higher drop-out rates. Remedial strategies by the university might include awareness-raising workshops in the first year, in which these gender-based statistical patterns are explicitly discussed. In this way study-skills sections of the undergraduate curriculum can be represented to students as a means by which they can play a direct part in overturning these gendered patterns.

Maturity Levels

A further factor raised in relation to poor attainment and drop-out rates is the maturation process. In particular, undergraduates entering from the Scottish school system are a year younger than their non-compatriots. The university experience could be more traumatic for these younger students. Moreover, one student commented that it is too easy to 'disappear' for long periods while in the university system. Interventions – whether pastoral or academic – come too late for some students. These comments suggest that improvements to the university's pastoral support systems, including earlier and more frequent intervention mechanisms, could help address attainment and progression problems among male students. The Director of Studies could play an important role in this respect.

'Boys are lazy and girls can't do the maths'?

An interesting pattern emerges from the students' responses thus far in relation to two broad themes of inquiry: why fewer women study science and why women undergraduates perform better in assessments. Participants discussed both 'social' and 'individual' issues as possible causal factors behind gender differences in science. The social issues concern the way families, institutions and society as a whole tend to socialise young people into gendered roles that do not actively encourage women to enter science. On the other hand, two main types of 'individual' factors can be identified: motivational and biological (or intellectual). Thus, it was suggested men are less inclined to study hard than women, and that women tend to be less attracted to more logical, maths-based areas of study. It is interesting to note that no students suggested different levels of ability play a role in lower levels of male attainment. This contrasts with the suggestion that women's lower ability in maths and logical reasoning is an explanatory factor in women's under-representation in science. The implication here is that for women more ability is required to redress the imbalance;

for men more motivation is needed. While this is clearly an oversimplification, it illustrates the deeply embedded nature of certain gendered assumptions, not only among men but even among women who are relatively unique in having broken into a traditionally male-dominated domain.

Careers in Science

Despite higher attainment levels among female science students, the evidence indicates that fewer women go on to further study and even fewer still pursue an academic career. Participants were asked to comment on this issue.

Postgraduate Study

The respondents raised a number of issues that could act as a barrier to female postgraduate scientists. The issues raised are also relevant also to subsequent stages of an academic career. At postgraduate level, where the gender peer group reduces still further, the lack of female role models is of particular concern – especially given that women at this stage of study may be considering an academic career, and thus where female academics could provide the necessary support and insights. The respondents also felt that the system of funding and supporting research students in particular, was ill-equipped to deal with women wishing to interrupt their studies for maternity leave. Both the NECRC and the EPSRC funding councils were quoted as failing to offer funding for maternity leave, and the university itself was criticised for offering no support in this respect. Lines of communication were said to be very poor in offering students advice both within the university and with the relevant funding council. Respondents of both sexes reported either their own or colleagues' negative experiences in this respect, with Edinburgh University (and in one case Oxford) failing to offer supportive environments for students beginning families.

Academic Careers

While more postgraduate than undergraduate students expressed an interest in pursuing an academic career, even those students had mixed opinions about it. Some responses were gender-specific while others raised more general issues in relation to academic careers. The first salaried stage in the career ladder for most academic scientists is one or more postdoctoral appointments. Similar concerns at this stage of an academic career were raised in relation to receiving support or advice for women, in particular those wishing to take time out to start a family. The respondents' impression was that no formal procedure was in place for maternity leave during a post-doctorate. One or two male postgraduates also expressed concern about the lack of provision for paternity leave. Many people go through a series of postdoctoral positions before finally finding a permanent post. The uncertainty and financial insecurity of this situation, at a time of life when many people are starting a family, was considered to be off-putting by several of the female and male students.

More generally, many respondents of both genders said that the poor salary, financial insecurity of temporary job contracts, and the transient lifestyle often required made a career in academia unattractive. Two of the female research students who had previously worked in the private sector felt inclined to return because of the better pay and conditions, including adequate provision for maternity leave. In relation to the

pay gap between men and women, respondents suggested that this was largely because male employees are more likely to negotiate larger salaries, whereas women are more likely to accept the salary offered. Several female respondents felt that the system of negotiating one's prospective salary is threatening and likely to disadvantage women. A suggested strategy to resolve this problem was to make use of a neutral third party mediator to negotiate salary. The preponderance of male staff in senior academic posts was also seen to be partly a result of a strategy whereby male staff members – who may be more willing to move than women - threaten to leave their posts in order to negotiate a more attractive employment package.

Many respondents commented that the competitive 'publish or perish' system in academia was off-putting, and encourages an aggressive approach among candidates and colleagues that suits men rather than women. More specifically, this RAE-driven system is seen to penalise women. The system places so much emphasis on building up a publication record early on, that early career maternity (or paternity) breaks jeopardise an individual's career chances. For this reason there are fewer women in more senior academic posts, and consequently fewer women in place to act as role models for junior academics. Most respondents agreed that the same state of affairs no longer exists in the private sector. Some male respondents felt strongly that paternity leave should be offered, and that actively promoting this shared responsibility to staff members may help achieve a more balanced gender profile in academia.

Some participants felt that the hiring system in academia is not adequately transparent, with an 'old boys' culture still operating to some degree. It was suggested that the decision between two equally well-qualified and experienced candidates will often come down to which one is felt most likely to make an affable and easy colleague. In a male-dominated department it was suggested that this might favour male candidates. Some felt that current selection criteria place too little emphasis on teaching and pastoral skills – areas in which women may offer greater strengths. While not all participants agreed on these issues, most felt that greater efforts should be made to encourage female candidates to apply for posts and that women (both staff members and postgraduates) should be included on selection panels.

Poor salary was cited by all respondents as a disincentive to pursue an academic career, although this view was expressed most strongly by male undergraduates. On the other hand, one of the female science students observed that private sector companies like investment banks, recognising their under-representation, are currently targeting female science students with highly lucrative salary packages. This was seen to add to the difficulties of attracting women to academic careers in science.

Strategies

Participants were asked to suggest strategies the university could adopt to address these issues:

- Include women (especially early career staff members) on selection panels.
- Introduce third party mediation for salary negotiations.
- Tighten systems for monitoring recruitment procedures.
- Provide a peer mentoring system for female postgraduate and early career academics.

- Ensure clear procedures are in place for postgraduate and postdoctoral women requiring maternity leave, in cooperation with funding councils.
- Actively promote paternity leave for students and staff.
- Disallow RAE-based discrimination against early career applicants in relation to maternity leave.
- Communicate to HEFC the range of problems and potential discrimination that the RAE system gives rise to.
- Introduce a wider range of selection criteria for academic posts, including more emphasis on teaching and pastoral skills.
- Advertise more widely support mechanisms in place for female students and staff.

Gender Equality at the University

Participants were asked to comment on the university's provision of services in general for men and women, staff and students. Their responses largely reiterated the points outlined above. In particular, students reiterated the need for clear policies in relation to maternity leave, and strategies to support female academics balance family life with career advancement. Many respondents felt the university could do more to actively promote an academic career to women. Some felt that the private sector currently offers models of best practice in supporting gender equality in the workplace.

Some female undergraduate respondents felt that the majority of gender inequalities that existed in relation to women in science were the result of natural and inevitable factors, and which the university could do nothing to change. They felt no need for additional tailored support beyond that which they currently received as part of the university's general services for its students. However, they also commented that men and women are not equal, and that this observation would be the best starting place for a gender equality scheme, in order to acknowledge the skills and attributes that women offer which are currently not adequately recognised.

Additionally, one female postgraduate student in Biological Sciences has a pastoral supervisor. This is a member of staff who has no connection with, or vested interest in, the student's research. Other postgraduates stated that they did not receive this type of support but would welcome it. This is perhaps especially useful in natural science research degrees, where the supervisor often has a professional vested interest in the student's research project. A similar provision for postdoctoral researchers may also be welcomed.

Key Issues

Finally, the students were asked to summarise what they felt should be the university's priority areas for its Gender Equality Scheme. This elicited the following points:

- Better publicity of the university's gender equality policies
- Put in place standardised, adequately publicised procedures for maternity leave

- Adequate financial, pastoral and career support for women with/starting families
- Promote paternity leave
- Address gender discrimination in recruitment and appointment procedures
- Ensure better female representation on staff teams and activities
- Offer outreach schemes to primary and secondary schools to promote science to girls and parents

Case Study

One female postgraduate participant in the study provided details of her particular case for inclusion in this report. The issue it addresses is maternity leave. The student's experiences include misinformation, incorrect advice, changes to policy and regulations that apply to her without being informed, and discriminatory language and harassment from staff and students. As a result, she has begun to seek legal advice for her case and has been receiving counselling for stress.

Key Facts

The student is registered for a PhD in the Faculty of Science and Engineering and is supported by a funding council. In Spring 2005 she approached the university wishing to apply for maternity leave. No clear procedures or regulations for this were communicated to her. She was advised at this point that such an application for an 'interruption of study' could be problematic and that she should instead apply initially for a 6 month extension only. She therefore took 12 months' maternity leave of which only the first six months were authorised. As part of the required procedure to apply for an extension she submitted a revised timetable for the completion of her thesis. In this she stipulated a submission deadline of August 2006. She had understood that this would be the new agreed deadline. However, she was subsequently informed that only the agreed 6 month extension to her original deadline would be recognised. She told to reapply for a new extension when this became necessary. Prior to this date she became ill and was unable to study for one month. She was granted one month's extension for this illness, but then told that no more extensions would be granted. Effectively this meant that her maternity cover would no longer be granted in full as she had originally been led to believe. She was also told that she may incur a penalty charge for 'reinstatement' at a later date. It is unclear whether this new arrangement arose as a result of misunderstanding or a change of policy within the university authorities. Throughout the process the student has been made to feel that she is the cause of problems for the university and has felt the victim of discriminatory language and attitudes from staff and students. The student remains uncertain if she will be able to complete her studies.

Priority Areas for Action

The student's case highlights a number of problems the university could address in order to improve its provision for students and/or staff wishing to take maternity leave:

- Improved levels of communication within the university. Clear procedures should be in place to advise students who apply for maternity leave. All staff should be made aware of existing policy on granting extensions and intercalations.
- Where university policy changes (for example in response to external pressures to improve PhD submission rates), *existing* students should be clearly informed of how this affects them.
- The university should take measures to combat discriminatory language and practice in relation to individuals wishing to balance professional and family responsibilities.
- Clear records should be kept in regard to a student's individual case, documenting all communications and agreements made by all parties.
- Where university policies allow students to extend their studies under specified circumstances, such discretions should not be accompanied by penalty charges.
- The university should address the poor levels of communication between funding councils, the university, and individual students.

SUMMARY AND DISCUSSION

Using in-depth qualitative methods this study has gathered the views of 28 students in the school of Science and Engineering. Four focus groups were held with male and female students pursuing both undergraduate and postgraduate programmes of study. The information was gathered over the course of four focus groups conducted earlier this month. The main topic guide used was designed to probe in greater detail two of the university's key priority action areas for its Gender Equality Scheme. These are: lower attainment levels and higher drop-out rates among male undergraduates, and poor retention of women in academic careers in science. Other issues discussed include the population bias in favour of men in Science and Engineering (although more women studying the biological sciences), and the gender issues relating to more advanced levels of university education. This report outlines the findings from these focus groups, as well as from the individual case study provided by one of the participants.

This consultation has shown that the following issues are felt by students to be the most important in relation to its Gender Equality Scheme. Concerning the gender imbalance in science participants agreed that a wide range of factors can be identified. Nevertheless, most felt that the university could play a role in addressing this complex issue. In particular, most felt it was important to stimulate interest and foster confidence in science among girls from a young age. Universities could collaborate with schools to offer a range of workshops and similar activities from primary school upwards.

The female student population declines still further in the later stages of study. Most felt that the lack of female role models to offer direct or tacit encouragement to continue in science was a major factor in this respect. A peer mentoring system, as well as more science-based workshops and events tailored to women were among the strategies suggested to address this issue. As a longer-term approach, many students

emphasised the need for female capacity building in the university in order to provide more female role models as teachers and researchers at every level of seniority.

Figures show that male students tend to perform less well in assessments, and have a higher drop-out rate at university. Most students felt that this problem can be traced back to patterns set at school, where boys tend to be more disinclined to study hard. While there may be no immediate remedies for this state of affairs, the university could do more to prepare science students for the time-management and other study skills required by high-contact, high-assessment format of science degree programmes.

At the individual level, an area of area of concern expressed by all the participants, irrespective of age, gender or level of study, was the question of maternity and/or paternity leave. This issue was raised in each group and discussed at some length despite the fact that only one of the participants reported first hand experience of starting a family while a student at the university. Specifically, participants felt there was a need for very clear procedures, awareness-raising among all staff, and improved lines of communication between staff, students and all institutions concerned (including funding councils). Several male students also felt that paternity leave should be better promoted.

Many students agreed that academic careers are made less attractive because of the highly competitive atmosphere alongside poor salary and insecure lifestyle. In particular, most postgraduate and several undergraduate students were aware of the pressures and potential discrimination arising from the publication-driven recruitment and retention system. For some this was a disincentive to pursue an academic career. In particular, the RAE driven culture placing great emphasis on prolific publications early in one's career was discriminatory to women who may need to maternity breaks.

The case study included in this report demonstrates the need for a clear policy and set of procedures in relation to maternity leave for students. It also illustrates how tensions can arise when this issue comes into conflict with pressures on departments to improve their PhD submission rates. One important factor in addressing such tensions is good communication. Indeed, the theme of transparency and communication emerges more generally from the findings of this consultation. Whatever policies and strategies the university adopts in developing its Gender Equality Scheme, it is clear from this study that their efficacy will depend to a large degree on how well these are communicated to its entire cohort of clients, staff and external stakeholders.

APPENDIX

[A] Written Questions Issued to Postgraduates

Before we begin, it would help us if you could answer the following questions. Your answers will be anonymous.

1. Why did you choose to study science at university?
2. What is your postgraduate programme of study?
3. What did you study as an undergraduate?
4. Why did you choose to do postgraduate study?
5. Do you plan to use science in your future career?

[B] Written Questions Issued to Undergraduates

Before we begin, it would help us if you could answer the following questions. Your answers will be anonymous.

- 1) Why did you choose to study science at university?
- 2) Do you plan to do postgraduate study in science or another area? (please specify which area and your reasons for this choice)
- 3) Do you intend to pursue a career in science?

[C] Gender Equality Scheme: Focus Group Topic Guide

Introduction

Since the Equality Act last year all public institutions must demonstrate that they are promoting equality for women and men and that they are eliminating sexual discrimination and harassment. In response, the University of Edinburgh is developing a Gender Equality Scheme. Therefore today we'd like to ask about your views and experiences studying science at the university.

Gender Balance in Science

- More men than women chose to study sciences at university. Can you comment on this? Is there anything that could be done to recruit more women?
- The exception is Biological Sciences – can you comment on this?

Performance

- As you may be aware, female science students tend to perform better in assessments. Men are also more likely to drop out from the course. Could

you comment on why this might be? Is there anything the university could do to offer more tailored support for male students in this respect?

Careers in Science

- How many of you would consider an academic career in science? If not, why not?
- As you read in the invitation e-mail, women earn on average 17% less than men in the UK, can you comment on why this might be?
- As you may be aware the gender profile among academic staff in the sciences tends to be male-dominated. There are also fewer women in senior posts. Can you comment on this?
- What could the university do to make scientific academic careers more open/attractive to women?

Gender Equality at the University

- In general how well do you feel the university provides support and services for its male and female students? Are there areas for improvement?
- (*Based on above response*) What strategies do you think the university could use to address these issues?
- Previous studies have highlighted a number of important factors in relation to gender equality. Could you rank them in order of importance? Do you think there are any missing?
 - Pay differences
 - Flexible working hours
 - Opportunities for career progression (is there a 'glass ceiling'?)
 - Female role models in senior positions
 -

Finally...

- The university's Gender Equality Scheme will be a staged process, continuing over the next two years. During the remaining period what do you feel should be its priority areas for action?
- If there was one thing the University could do to promote gender equality both as an employer and as an education provider, what would this be?