



advancing gender
equality in science,
engineering and technology

Get into GEAR: Gender Equality Action Research Final Report

Get into GEAR: Gender Equality Action Research

Background

The UKRC is the Government's lead organisation for the provision of advice, services and policy consultation regarding the under-representation of women in science, engineering, technology and the built environment (SET). The UKRC works with employers, professional bodies, education institutions, women's organisations' and networks, policy institutes, sector skills councils, the government and many others to promote gender equality in SET. In addition the UKRC offers tailored services and support for women at all career stages.

The project was funded by the West Yorkshire Life Long Learning Network (WYLLN) which aims to "improve the coherence, clarity and certainty of progression opportunities for all vocational learners into and through higher education. Vocational and work-based learners do not always enjoy the same opportunities as students taking more 'traditional' academic routes into and through higher education" ⁱ

Aim of Project

To develop practice through action research in order to, enhance engagement, retention and progression of women as non-traditional learners in sectors where they are under represented i.e. this could include engineering, manufacturing, construction and the built environment, digital industries, ICT and print.

The Driving Force

Women are significantly under represented in Science, Engineering and Technology. As demonstrated by the following statistics:

- In 2008, nearly 13 million women were working in the UK, of these 5.3% were working in SET whereas almost one third of the 15.4 million men in employment were working in SETⁱⁱ
- Of almost 5.5 million people in SET occupations (including skilled trades) in the UK in 2008, only 12.3 were women.ⁱⁱⁱ
- 70% of apprentices at advanced level were male and they received twice as much training time per week as females^{iv}
- In 2007-08 women made up 33.4% of all higher education students in SET disciplines^v
- Only 1.3% of Construction Apprentices and 2.5% Engineering Apprentices were women in 2006/7.^{vi}
- By 2020, only 20% of the workforce will be white, able-bodied men, under the age of 45.^{vii}

The importance to organisations of effective equality and diversity policy and practice is under lined in a substantial body of legislation that now exists on discrimination. The Equality Act 2010 became law in April 2010 and is expected to come into force in the autumn of 2010 strengthening the previous legislation.

The Gender Equality Duty places a duty on all public sector organisations to actively promote equality of opportunity between men and women and to eliminate unlawful discrimination and harassment on the grounds of gender.

In the Common Inspection framework for FE and Skills 2009 equality and diversity is a limiting grade. 'Limiting grades relate to equality and diversity as these are considered to be essential in assuring the quality and development of young people and adults. Limiting grades are considered before the overall effectiveness is made under OFSTED inspection and thus evidence of addressing inequality and under representation is needed in order to attain higher grades in inspection'^{viii}

Overview of the Get into GEAR project

The Model:

The project was based around four distinct events with research activity taking place between each event:

First GEAR:	Event to establish the project; engage participants; gender equality training and beginning the process of identifying pieces of Action Research
Second GEAR	Bring participants together to share their progress so far in their research and identify the next steps forward
Third GEAR	The final group session brought participants together again to share progress, Agree on presentation of their research and plan for the dissemination event
Top GEAR	Regional Dissemination Event

Whilst the four sessions marked the points when the practitioners came together between sessions staff from the UKRC met with participants both face to face, over the phone and by email to discuss issues arising and provide advice and guidance where necessary.

Details of each of the sessions can be found in the Appendix 1.

The Successes: The project succeeded in its overall aim to develop practice through action research. Four organisations maintained engagement with the project throughout i.e Bradford College, University of Huddersfield, Leeds College of Building and the University of Bradford.

The research projects:

Leeds College of Building: Explored why women make up only 2% of work-based learners at the college when they make up 7% of the whole college. It particularly focused on women's experience with employers. The research revealed that female students on work based learning courses at the college on the whole leave secondary education with better and more qualifications and also have a higher age profile. Evidence was found to suggest that some female applicants are being discriminated against and have to apply for more vacancies than their male counterparts.¹

University of Bradford: This piece of research explored the effect the availability of funding can have on access to HE Engineering opportunities for women. The researcher works on a project funded by Higher Education Funding Council for England (HEFCE) to provide the means for both FE and HE providers to address the need for re-skilling and up-skilling of individuals and businesses to mitigate against the effects of recession. The researcher interviewed two women about the effect of the funding they had received had on them. See the following extract from the Report: ²

'Discovering that practicalities such as time, confidence and money have a pronounced effect on an individual's ability and likelihood of taking up a place at University was not new knowledge. However, the knowledge that targeted funding applied as a rapid response to redundancy can bridge these problems is. Going forward, this knowledge can be applied as funding becomes available to enable multiple outcomes from funding streams. Whilst time prevented further cycles of this action research being carried out it does provide a template for future research or action planning. For example: As a consequence of researching the effect of the funding on the two Engineering Foundation Year students I now have evidence to inform practice as and when future funding streams become available and to look at how 'generic' funding can be targeted on particular areas i.e. the HE STEM agenda.'

The interviews are available on You Tube. <http://www.youtube.com/watch?v=Qkq1a9oqkKA>.

¹ Appendix 2

² Appendix 3

Bradford College: There were two pieces of action research at Bradford College. As another action research programme was running we were able to incorporate one of the participants from that programme who was also researching an issue related to Gender in Technology.

Research 1: The Curriculum, Equality & Diversity Officer at Bradford College looked at developing strategies to achieve a gender balance within IT by addressing stereotypes. This tied in well with her role to ensure inclusion and fairness for all students within all areas of teaching and learning.³

The research groups were female ESOL learners many of whom had a background in science and engineering and a cohort of students all studying on a computer gaming module of the certificate in computing. Whilst the research was carried out with a very small cohort of students it has provided some useful insights into how practice can be changed or developed. The challenging Gender Stereotyping workshop has been piloted and can now be used with other SET groups in the College to raise awareness of the effects of stereotyping.

Research 2:⁴ Little formal research has been done on the use and effectiveness of role models from industry, within the curriculum, although there has been much discussion on the topic.

In the computing department at Bradford College there are 22 female students and about 200 male students. The second piece was carried out alongside a group of lecturers and looked at the impact of female role models on students in the computing department. Three sessions were planned each introducing a female role model from industry to talk to students about their jobs and experiences in the IT industry. The impact on practice has been very encouraging with one tutor saying:

“In class I referred back a lot to what the speakers had said to reiterate why certain things are important. The students who had attended agreed with me, they nodded their heads and said ‘yeh he’s right’. Their positive attitude filtered down to the students who weren’t there.”

As a result of this project, the computing department has set up a steering group to look at how activities such as this can be introduced as part of the curriculum. It has been suggested that a half day session each week will be introduced to the timetable and will focus on career planning and development. These sessions will not be an optional activity.

³ Appendix 4

⁴ Appendix 5

University of Huddersfield

The research at the University of Huddersfield, Oldham Campus in the field of construction and architectural technology in a teaching capacity examined and explored the impact of positive female role models within construction in an educational setting. The researcher gathered the perceptions, attitudes, thoughts and opinions of a cohort group of full time year 1 Foundation Degree Construction students after a series of presentations from women in the construction industry. Her research uncovered a range of mixed messages about women in construction from the students particularly in relation to women doing those occupations often classed as 'Craft' skills which has the potential for further exploration. In addition it highlighted the value of bringing in female role models from the industry to share their experience both from the perspective of career development and challenging stereotypes. It has now been decided that bringing role models into the classroom will be introduced as a regular activity within courses at the college.

The challenges:

Engagement:

Engaging and keeping the engagement of participants from the beginning of the programme was a challenge. We had drop out for a number of reasons many of which appeared to be around having the time to make the space for action research. From a large number of participants at the first session the numbers settled down to representatives from the four completing institutions. Three out of the five completers had been to all the GET into GEAR sessions with continued efforts to bring in the other participants. One participant who produced some research was only able to attend the final session. We were successful in re-engaging a participant who had been enthusiastic at the first session but due to changes in her job had disengaged from the programme.

Concept of Action Research

Ensuring the participants understood the concept of Action Research was challenging i.e. looking at a particular piece of practice and carrying out a systematic investigation, analysing the practice and identifying elements for change and then trying out these changes and

analysing the results in a cyclical process. The five pieces of action research and were all quite different. Whilst some had clear links to direct practice and change others highlighted what potential changes might take place in their institution. Those however who did not identify changes in their own practice had however changed their knowledge base which contributed to a growing awareness of gender issues.

Ways Forward

Key Points for Action Research Projects

1. Action research offers an exciting and valid model for addressing gender equality in teaching and learning and can be used to uncover areas of which the practitioner may have previously been unaware.
2. Using action research combined with Gender Equality Training as a CPD is a useful model. It needs to be set up to ensure that unconscious gender bias is challenged rather than reinforced. Therefore in running a programme like this it is important to ensure facilitators and the process allow hidden bias to emerge and be challenged in a productive way.
3. In this model we have used Action Research in combination with Gender Equality Training. It is very important that participants have engaged with the Gender Equality Training at the beginning of the process to help them focus on their own practice and identify an area they can realistically address.
4. One of the key elements of action research is that the participant researches an area of their practice that is relevant and meaningful to them. This area should be something that they can have some influence over. If the project itself has a key theme i.e. gender equality support will be needed to identify the relevance to their practice.
5. Systems and support need to be set up to maintain the momentum and commitment to completing the research. Meetings at set points are useful for this. Email contact alone is not always useful. Phone calls and face to face bring a more personal touch and can motivate those who may be flagging.

6. Support from the institution to make time for the research to happen is very important. Although action research is potentially classroom based and very much linked to what one does in practice it does involve additional time outside the classroom.
7. Engaging in action research particularly focused on gender in science, engineering and technology can mark the beginning of a journey in raising awareness of gender issues where they can quite often be hidden.
8. This model could be developed to provide 'real' evidence for particular areas of lecturer training covering both the Equality and Diversity Units and the Action Research Units of, for example, the Diploma in Teaching in Life Long Learning

ⁱ www.wylln.ac.uk

ⁱⁱ Secondary Analysis by UKRC (2009), "The working age population by gender, economic activity and occupation in the UK, 2008", Data source: Office for National Statistics, Social and Vital Statistics Division and Northern Ireland Statistics and Research Agency. Central Survey Unit, Labour force Survey January – December 2008, Colchester, Essex: UK Data Archive (distributor)

ⁱⁱⁱ See i

^{iv} The Labour Research Department's Workplace Report 2006

^v Secondary Analysis by the UKRC (2009) of HESA (2009), "Students in Higher Education Institutions 2007/8" Cheltenham, HESA.

^{vi} TUC Trades Union Congress, "Still More (Better Paid) Jobs for the Boys" 2008

^{vii} Department of Work and Pensions

^{viii} Common Inspection framework for Further Education and Skills 2009



Appendix 1a

Get into GEAR Gender Equality Action Research

First GEAR Programme Thursday 12th November

Time: 9.30 am to 4 pm

Venue: UK Resource Centre
Listerhills Park of Science and Commerce
40-42 Campus Road
Bradford
BD7 1HR

Aim: To launch **GET into Gear** project and inspire participants to engage with the project and undertake action research which will contribute to creating an environment which engages, retain and progresses women in the areas where they are under represented.

- Objectives:**
- To build group cohesion to be sustained throughout the Programme
 - To encourage thinking about what an inclusive and conducive learning environment is and the potential barriers to this in order to help identify potential research projects
 - To introduce action research and identify potential areas to be researched and the process involved.
 - Participants to produce an Action Plan to identify next steps in the process

The Programme:

9.30	Arrival and Registration
9.45	Welcome and Introductions
10.00	Overview of Get into GEAR
10.15	Group Activities: Barriers Conducive learning environment
12.15	Lunch
12:45	Action Research
13.00	Personal Experience of Action Research
13:30	Identifying Areas for Action Research
14:45	Next Stages: Action Planning and Resources
15:30	Any Questions
16.0	Finish



Appendix 1b

Get into GEAR Gender Equality Action Research

Second GEAR
11th March, 2010
Venue: UKRC for Women in SET


This is the second event of the **Get into GEAR: Gender Equality Action Research** programme.

It will provide an opportunity to:

- Share progress on your research.
If you are new to group or have not yet made much progress don't worry there will be opportunity for you to get back into gear.
- Meet individually with Get into GEAR team
- Identify any support needs
- Work with your peers on progressing manageable research projects
- Get input on various action research techniques
- Register on the 'Get into GEAR' face book page
- Come away with a clear Plan of Action.

Programme:

12.00 – 1-30pm	Lunch will be available from 12 onwards Providing an opportunity to network and talk one to one with Get into GEAR team
1.30	Welcome and Introductions
1.35	Reviewing progress
1.45	Selection of Mini Sessions: <ul style="list-style-type: none">- Getting Started- Working with Focus Groups- Developing Questionnaires- Getting Feedback on proposals- Reviewing progress- Report Writing
3.30	Identify and agree next steps
4.00	Finish



Appendix 1c

Get into GEAR

Third GEAR
10th June, 2010

Venue: UKRC for Women in SET

This is the third event of the **Get into GEAR: Gender Equality Action Research** programme.

It will provide an opportunity to:

- Share and critique each others work.
- Meet individually with Get into GEAR team
- Consider final reports and completion date
- Dissemination Event

Programme:

12.30 – 1-30pm	Lunch will be available from 12.30 onwards Providing an opportunity to network and talk one to one with Get into GEAR team
1.30pm	Welcome and Introductions
1.35	Sharing Action Research
2.30	The Report
2.45	Break
3.00	Evaluation
3.30	The Dissemination Event 12 th July, 2010
4.0	Finish

Appendix 2: Leeds College of Building

INTRODUCTION

My Action Research question “**What can Leeds College of Building do to increase the number of female students on work based learning apprenticeship schemes?**”

. Construction is an industry that will never go away – buildings will always need restoring and maintaining and there will always be a demand for new buildings. Construction is Britain’s largest industry responsible for 8% of the UK’s output. In the Yorkshire and Humber region approximately 200,000 people are employed in the construction industry. Leeds College of Building offers a wide range of construction courses for craft students and those wishing to progress from further into higher education. Leeds College of Building has very robust policies and procedures and will not tolerate discrimination in any shape or form. It positively embraces Equality & Diversity and welcomes applications from all under represented sections of society. There are currently **6816** students at Leeds College of Building, **10%** of these are on a work based learning apprenticeship scheme and come to College on a day or block release mode of attendance. Out of the **6816** students only **490** are female which equates to **7%**, if we look at the numbers and the percentages of female students on a work based learning apprenticeship scheme the number of female students is down to **11** which equates to only **2%** of the total number of work based learning apprentices. **All** of the female work based learning apprentices are within the Mechanical and Electrical Services faculty.

I am employed as a vocational lecturer in the Mechanical & Electrical Services faculty and am based at the Parkside Lane site. My specialist area is gas installation & maintenance and domestic heating installation. Employees and Employers that I have spoken to or asked to complete a questionnaire/survey are all employed/working within the same sector of the construction industry that I teach in, because I have over 30 years experience, I would like to think that I have good knowledge and understanding of the complexities and challenges of working within my specialist field.

My initial thoughts: In terms of the statistics listed above my initial thoughts lead me to believe that I am looking at a problem that is itself part of a bigger problem. To conduct my Action Research I am going to concentrate on what I perceive to be the problem within a problem “Very small numbers of female students on work based learning apprenticeship schemes”.

- The total percentage of female students at 7% seems to me in our modern society to be very low; this could lead me to believe that Leeds College of Building may not be promoting the Construction industry in general, and the College to **all** potential female students. On the other hand it could also be the case that despite excellent and comprehensive promotion, large percentages of female learners are simply **not** interested in a career in construction or continuing their education at a specialist Construction college. If this is the case it could be that a figure of 7% female learners is as good as we can expect in the historically and traditionally male dominated construction industry.
- If I accept that the figure of **7%** female learners is reasonable, because the simple truth is that the large majority of females have no desire to work in the construction industry or obtain construction related qualifications. I then think that it is a logical and reasonable assumption, to expect that **7%** of students on work based learning apprentice schemes would be females. **The actual figure is much lower at only 2%**. A reason for this could be that in order to obtain a place on a work based learning apprenticeship scheme you **must be** employed full time and be receiving relevant work based training and experience etc.
- The above leads me to believe that females find it much more difficult to obtain an apprenticeship within the construction industry. This could be due to some employers within the construction industry discriminating against potential employees because of their gender.

As I intend to follow (**Lewin's Action Research cycle/spiral**) having identified an initial idea and having completed some initial fact finding and planning. I need to take my first action steps, I will do some case studies, and these will take the form of short informal interviews. I hope to formulate

questionnaires/surveys from the data/information that I collect from the interviews. I have stated earlier, that in order to obtain honest answers, opinions and to fully comply with issues of confidentiality, all people taking part in this project **will not** have to disclose their identity. Information etc obtained from the interviews will be evaluated and will hopefully allow me to formulate suitable questionnaires/surveys.

THE RESEARCH

Case Studies/Interviews

Employees: Speak to two female students who are currently on a work based learning apprenticeship schemes within the Mechanical & Electrical faculty.

Employers: Speak to two employers, one from the private and one from the public sector working in the Domestic Gas/Heating & Plumbing sector.

Employee Case Study/Interview (1): Is currently employed by a medium sized private company and is studying for an NVQ level 3 qualification, decided in her penultimate year at school that she wanted to work in the construction industry. Despite having good school reports, glowing references and 6 GCSE's at grade A – C including Maths & English, and making lots of enquiries and applications she was unable to obtain an apprenticeship in her chosen field. To prove that she was serious and committed, she enrolled on a level 1 full time plumbing course and obtained an apprenticeship with her current employer after achieving the plumbing qualification. In addition she also had a recommendation/reference from the college. She strongly feels that some of her male classmates despite being less qualified etc found it much easier to obtain an apprenticeship within the sector. Also told me that on more than one occasion she was told over the phone that companies were not setting on apprentices, classmates who were boys were not told the same, one was given an interview and subsequently a job, he phoned the company 2 days after she was told there were not setting on apprentices and had no vacancies. She is doing well and is highly thought of, currently working on appliance servicing and repairs, says that she does not feel physically strong enough to work installing

new central heating systems and boilers. Strained muscles in her neck and injured her back during a 1 week (NVQ level 2) work placement with the installation department last year.

Employee Case study/Interview (2) She decided that she wanted to work in the construction industry in her last year at school after speaking with a relative who is employed by the local authority direct labour organisation as a plumber. Applied for an apprenticeship with the authority, needed to pass written exams in Maths, English and a trade specific test and have 2 interviews to get an apprenticeship. Feels that she was in a strong position having a close relative working in the same sector, the advice and pointers that she was given prior to the interviews was really helpful. Attained 4 grade A – C GCSE's but they were not in Maths, English or a science subject. She is currently working on Appliance Repairs and wishes to continue working in this particular field after completing her qualification in July of this year. She does not like installing new heating systems/appliances, as finds the work too heavy and physically demanding.

Having completed the four short case studies, I can now look at, and analyse the qualitative research information that I have obtained. I am now in a position where I have an appreciation and understanding of some of the underlying reasons and motivations, I now have an insight into the setting of the problem. From this I will be able to generate ideas for some quantitative research. I have decided to carry out approximately ten number short telephone interviews/questionnaires with employers (private & public) from the Gas/Plumbing & Heating sector. I will endeavour to speak to three small companies, three medium sized companies and four large companies. In addition I will conduct surveys/questionnaires with a minimum of 3 groups of learners this should provide me with between 40 and 50 completed questionnaires.

THE RESEARCH (CONTINUED)

Following on from the initial Case Studies/Interviews that I carried out previously, the results etc were discussed in detail to satisfy learning outcomes 4.1 & 4.2.

I asked students from 4 different groups studying at the Parkside Lane Plumbing/Gas assessment centre to complete a questionnaire that I had compiled. The main purpose of the questionnaire was to try and ascertain why we have very low numbers of female students at Leeds college of Building on work based learning apprenticeship schemes. I received in total 54 completed questionnaires after carefully analysing all the responses and calculating percentages etc. I will present the results in a number of different formats using both bar/line graphs and pie charts. In addition I will also be presenting the results of the telephone surveys that I carried out with employers, large and small, private and public.

Telephone survey responses

The telephone calls that I made were spread over a three day period, I found it very difficult to catch people in, and when contacting medium and large sized companies/organisations I found it very difficult and in some instances impossible to get through to speak to the appropriate person to answer my questions. I estimate that I must have made forty calls, incurred some personal expense and spent in excess of three hours on the phone in order to obtain my target of ten completed surveys. Having looked at bar and pie charts and various other data presentation tools, I decided that the best way to present the complex results generated by the telephone survey would be in the written report form used below.

Q1: How many people in total work for the company/organisation?

The three small companies/organisations that I spoke to were all sole traders.

The three medium sized companies/organisations that I spoke to employed 15, 25 and 60 people.

The four large companies/organisations that I spoke to employed 100+, 115, 1000+ and 6000+ people.

Q2: Does your company/organisation employ any tradespersons that are female?

The response from all three of the small companies was 'no'. One of the medium sized and two of the large companies/organisations said that they did employ female tradespersons.

Q3: Does the company/organisation employ any apprentices? If YES are any of them female?

The three sole traders did not have apprentices. Two of the medium sized companies did have apprentices but none of them were female. All four of the large companies/organisations currently had apprentices but only two had apprentices that were female

Q4: Has the company/organisation employed any apprentices in the past?

One of the three sole traders said that he had employed an apprentice in the past. All three of the medium sized and all four of the large sized companies/organisations also said that they had employed apprentices in the past.

Q5: Would the company/organisation now, or in the future consider employing female tradespersons?

All three of the sole traders responded **NO** and justified their answers by adding that due to the economic climate at the current time and in the foreseeable future they had no intentions of employing an apprentice male or female. Two of the medium and all four of the large companies/organisations said that they would employ female tradespersons. The responses that I got from the people who said **YES** their company/organisation would employ female tradespersons included the following.

- The company/organisation was fully aware and complied in full with all aspects of the sex discrimination act. People were selected and judged on their abilities/qualifications, previous experience and relevant skills.
- The company/organisation had in place an equality policy designed to eradicate discrimination in any shape or form on the grounds of Gender, Sexuality, Religion, Ethnicity, Disability or Age.
- The companies/organisations that employed female apprentices/tradespersons stated that they were more than capable of doing the job and were contributing and well respected members of the teams that they worked in.

Q6: If you have answered (NO) to question 5 could you please explain your reasons for doing

so:

Listed below are the responses:

- Two of the sole traders said that they would not consider employing an apprentice or additional member of staff either male or female.
- Concerns regarding maternity rights and pay, and child care problems and issues, and the financial strain that these issues would inevitably have on the company/organisation. The sole trader and both of the medium sized companies/organisations who said that they would not consider employing a female apprentice or tradesperson gave the above as a reason.
- Concerns regarding their ability to carry out all aspects of the job, lifting and hanging heavy boilers, and been able to carry out duties in terms of the emergency out of hours call out service. This was given as a reason for the negative response by both the medium sized companies/organisations.

Q7: What would help/encourage you to consider employing a female apprentice or tradesperson?

This question was not applicable to any of the three sole traders that I spoke to. This is because none of them are considering employing an apprentice now or in the foreseeable future. This was a contradiction because one of the sole traders in response to question six said that he would not take on a female apprentice because he was worried about the possibility of financial implications in terms of maternity pay/leave and child care issues. Two of the medium and all four of the large companies/organisations said that they would consider or already did employ female apprentices and tradespersons. The two medium sized companies/organisations referred me back to the answers that they had given in response to question six. Neither could think of any thing or measure that may be introduced which would cause them to have a change of heart.

The telephone survey results do back up the results of the case studies that were carried out earlier. Females are being discriminated against and are being denied the opportunity of entering

the services sector of the building industry as apprentices or tradespersons. On reflection when I need to carry out a telephone survey in the future I will think very carefully about the questions that I ask. Some of the questions did not go down well with some of the respondents and the data that I got back from their answers was of no use. I will also need to decide whether to tell the respondents the reasons for the questions and the purpose of my action research. I personally believe that a number of the responses were not a true reflection or the honest opinion of the respondent; they gave me an answer that they thought was what I wanted to hear and that was politically correct. The decision to keep all responses for both the telephone surveys and the written questionnaires totally anonymous, in my opinion was fully justified, I think that it encourages and allows people to be honest with their answers.

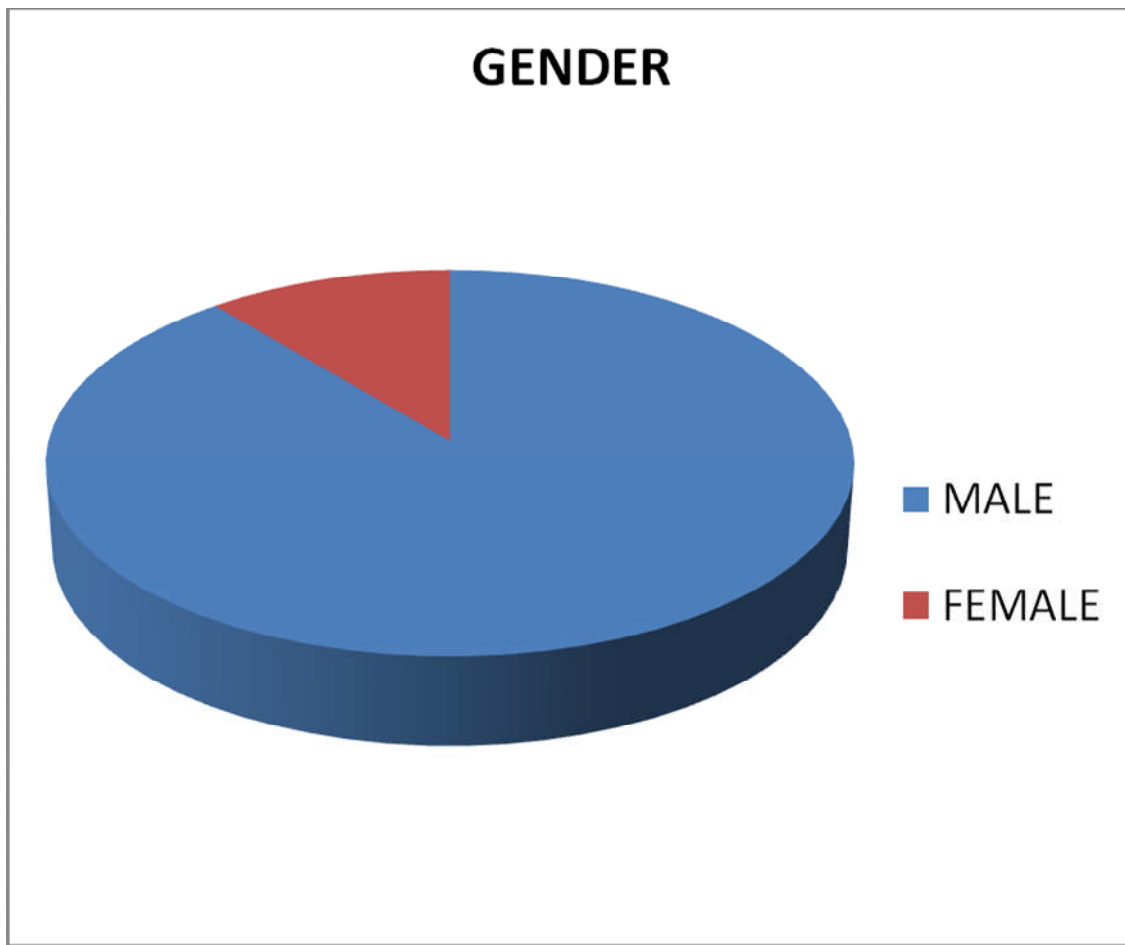
On the whole the telephone survey was a success; it did suggest that some employers are illegally discriminating against females. The findings back up the results of the four case studies that were carried out earlier.

The next stage of the process is to show the results from the fifty four completed questionnaires. The data obtained from the questionnaires will be presented in the form of either a pie or bar chart. The results will be analysed and as with both the case studies and the telephone surveys, I will state my conclusions.

EVALUATION

Learner Survey/Questionnaire

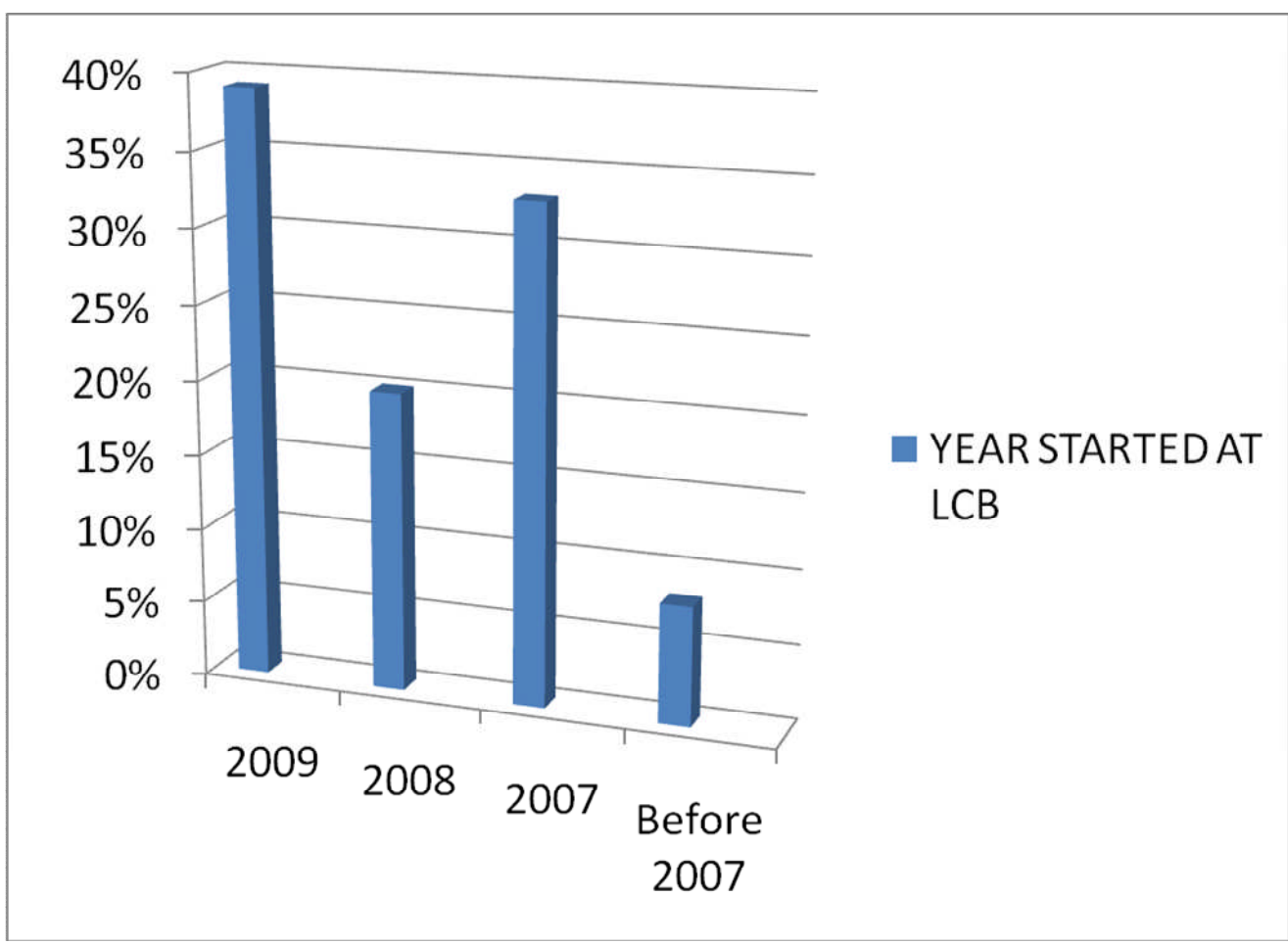
Question 1: Gender



In response to Question 1 (48 Males = 89%, 6 Females = 11%)

There are at Leeds College of Building at the current time only eleven female students on a work based learning apprenticeship scheme. In view of this fact six female responses could be deemed to be a representative sample.

Question 2: When did you start studying at Leeds College of Building



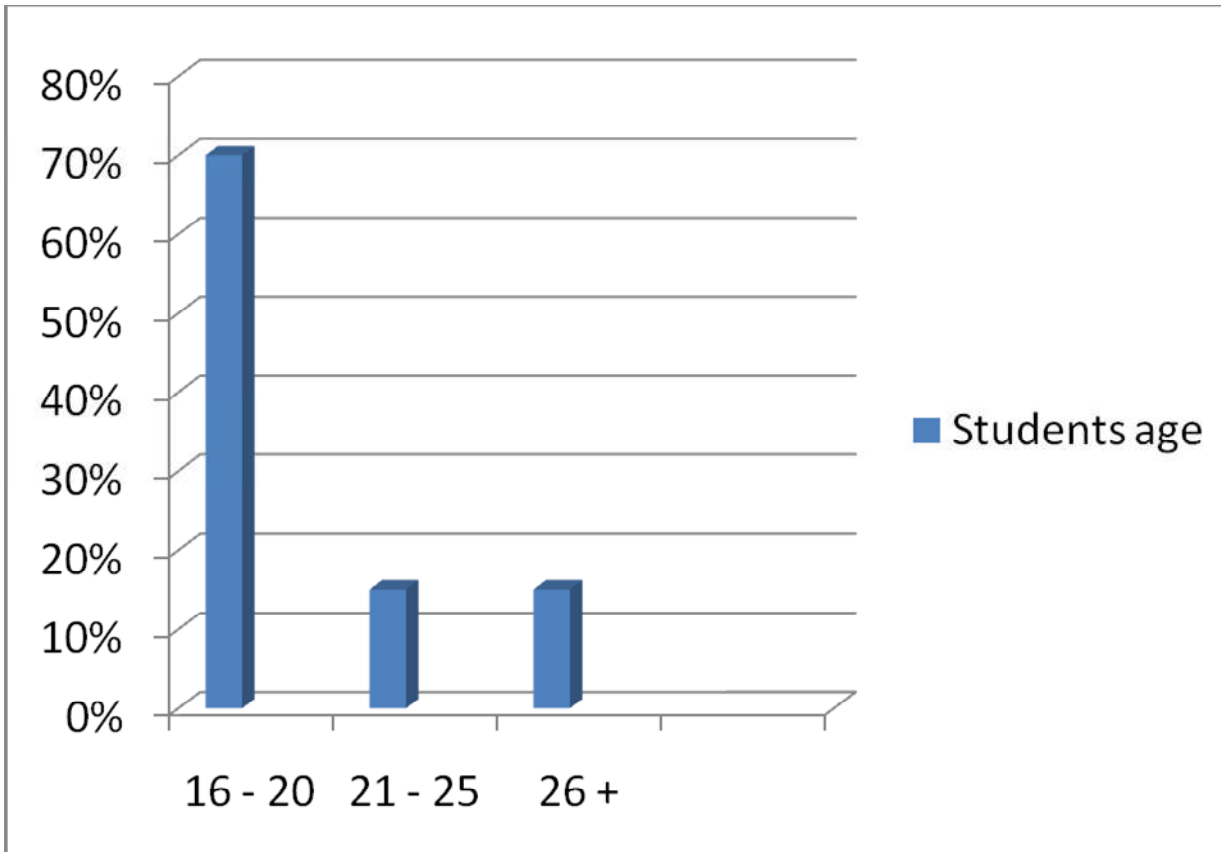
Started LCB in 2009. 39% of the students completing the questionnaire.

Started LCB in 2008. 20% of the students completing the questionnaire.

Started LCB in 2007. 33% of the students completing the questionnaire.

Started LCB before 2007. 8% of the students completing the questionnaire.

Question 3: Your age?



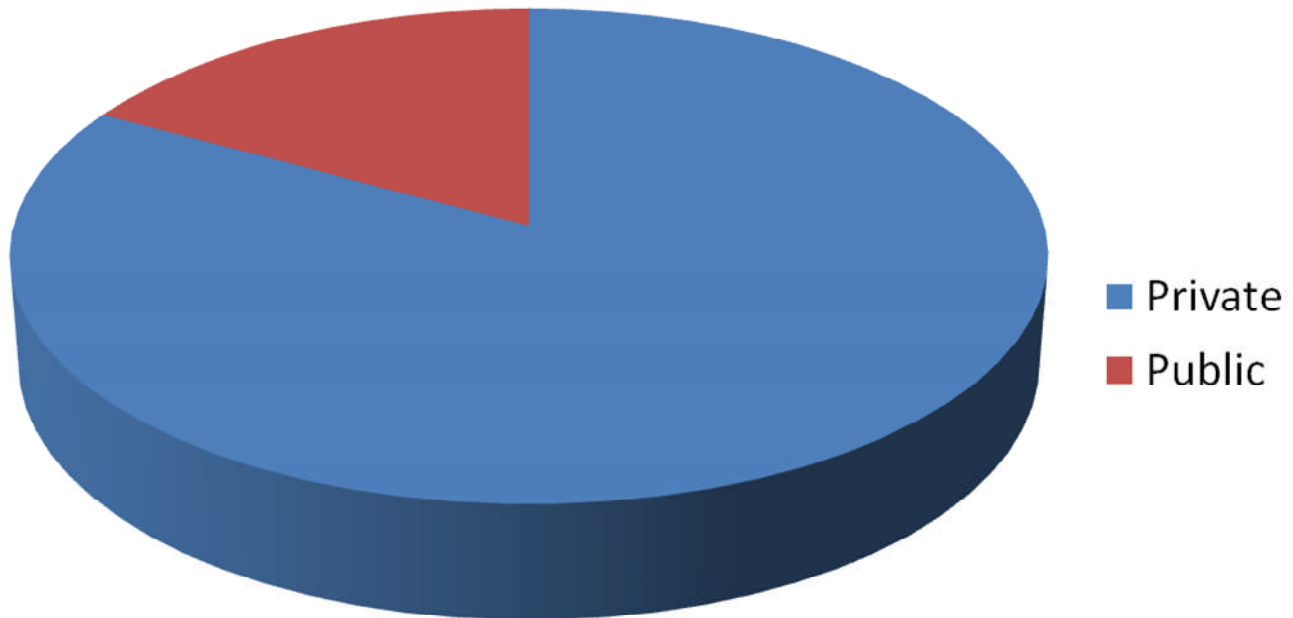
70% of the students surveyed were between 16 and 20 years old.

15% of the students surveyed were between 21 and 25 years old.

15% of the students surveyed were aged 26 or above.

Question 4: The Company you work for. Is it Public or Private?

The Company/Organisation you work for.

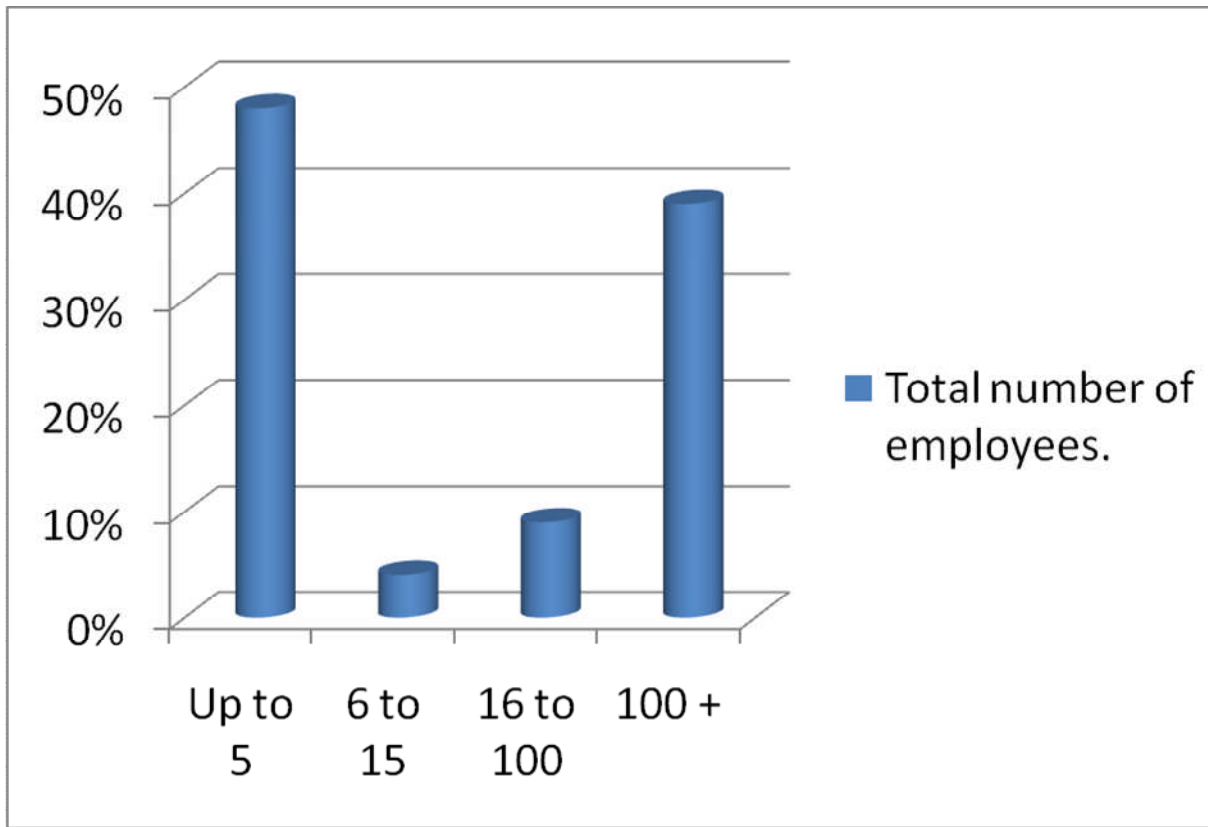


83% of the students surveyed worked for a Private Company/Organisation.

17% of the students surveyed worked for a Public Company/Organisation. The

Gender of the students did not alter the above figures.

Question 5: How many people work there?



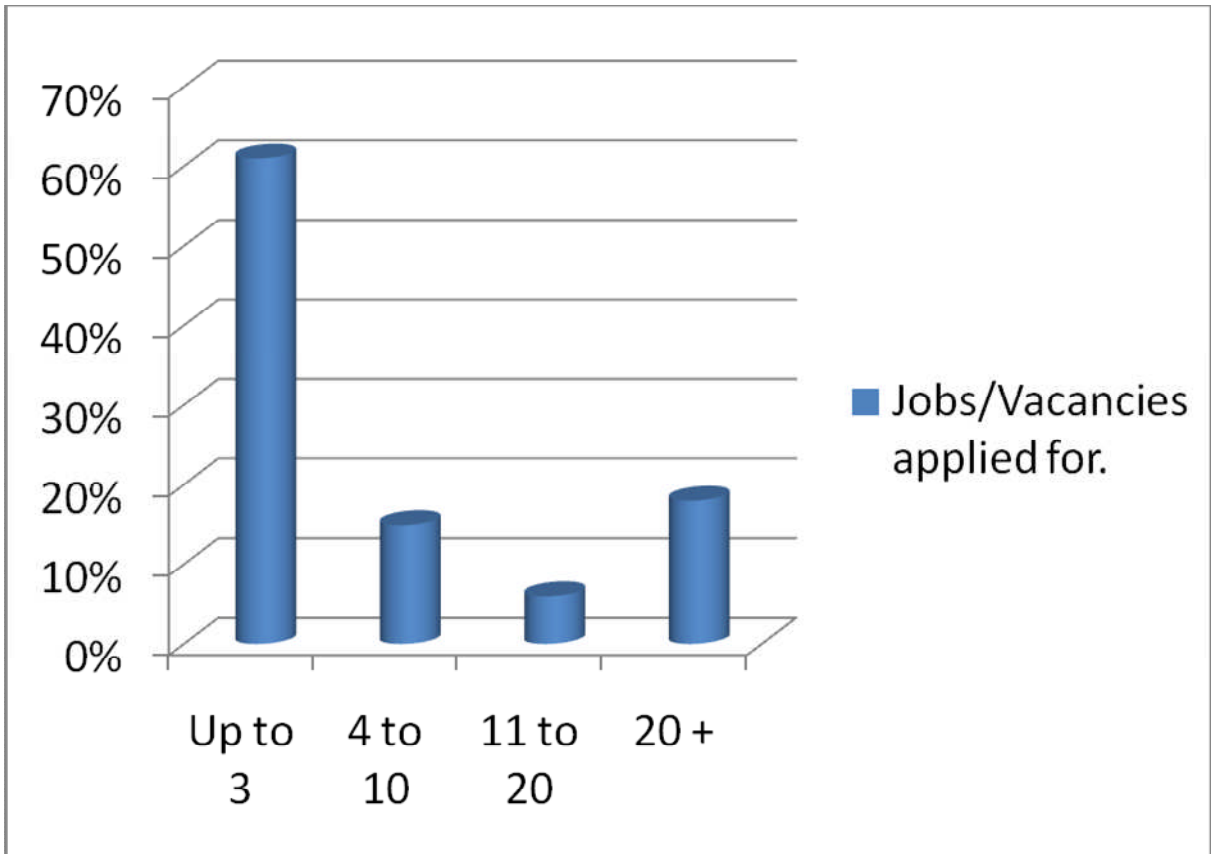
48% of the students worked at a company/organisation with up to 5 employees in total.

4% of the students worked at a company/organisation that employed between 6 and 15 people.

9% of the students worked at a company/organisation that employed between 16 and 100 people.

39% of the students worked at a company/organisation that employed more than 100 people.

Question 6: How many vacancies/jobs did you apply for before you were accepted by your current employer on to the apprenticeship scheme?



61% applied for between 1 and 3 jobs/vacancies.

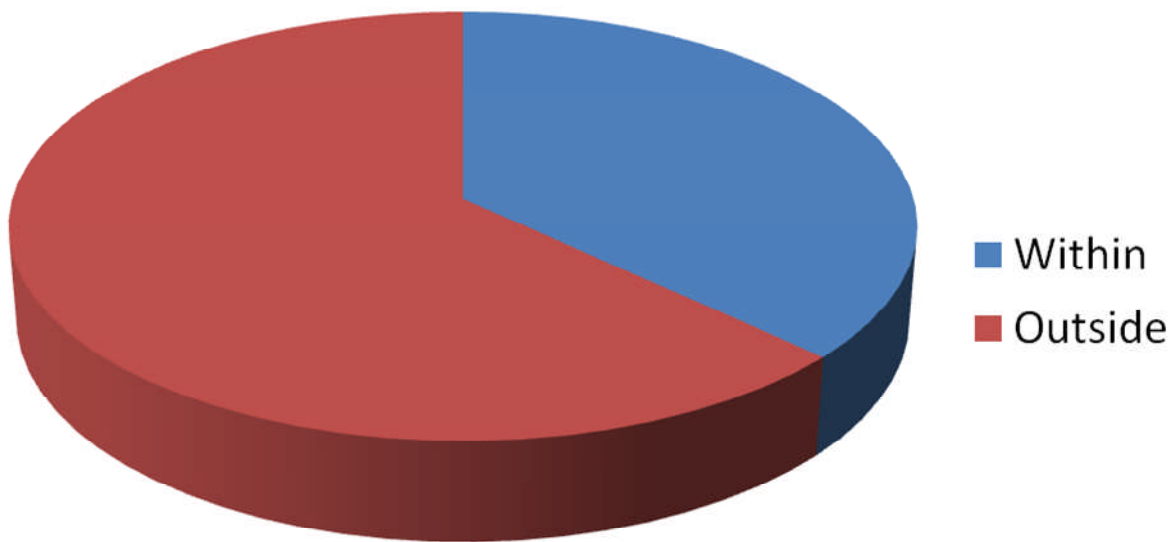
15% applied for between 4 and 10 jobs/vacancies.

6% applied for between 11 and 20 jobs/vacancies.

18% applied for more than 20 jobs/vacancies.

Question 7: Where do you live? Within the Leeds City Council boundaries or outside the boundaries.

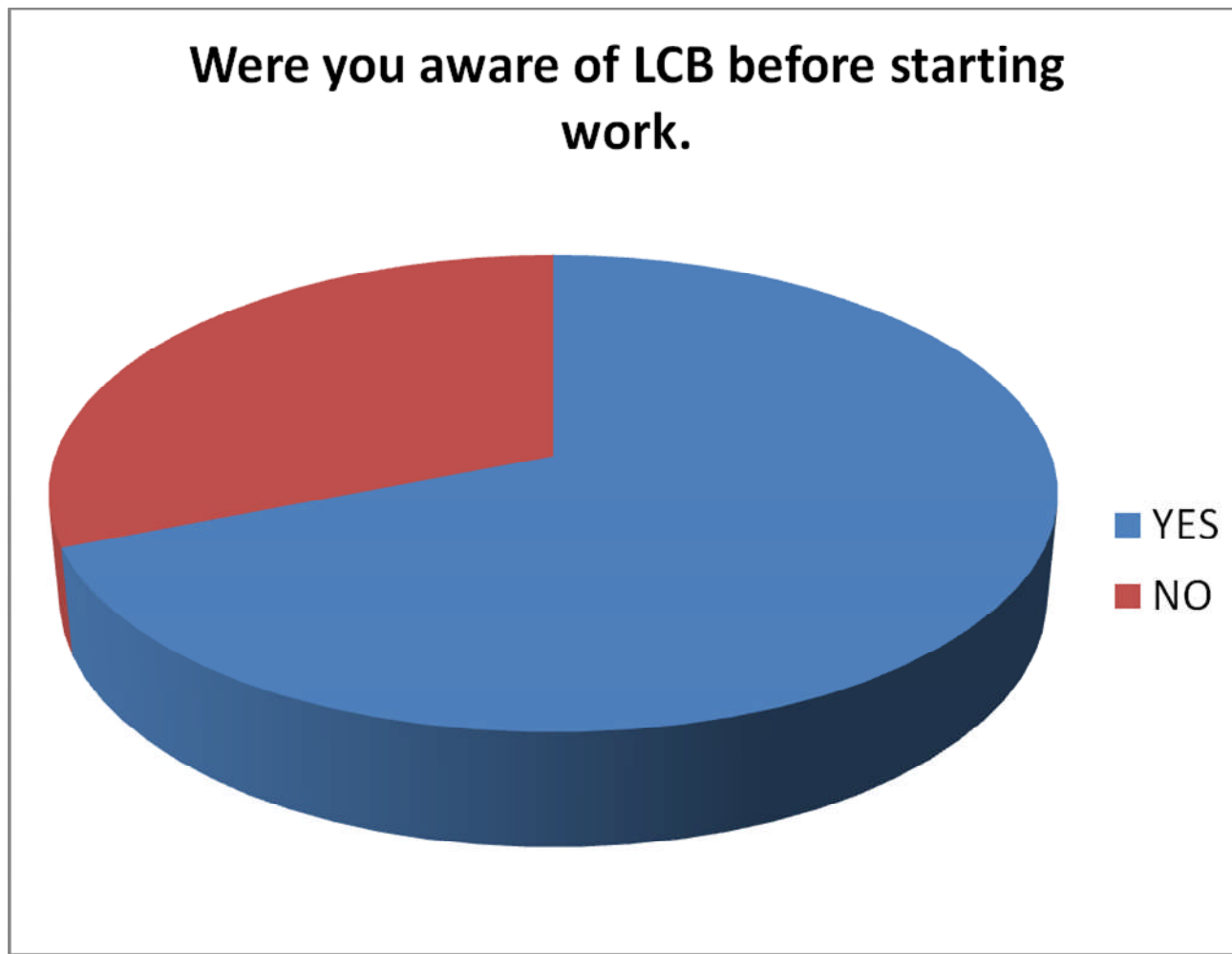
Live within or outside the LCC boundaries.



Only 37% of the students who completed the questionnaire lived within the Leeds City Council boundaries.

The remaining 63% lived outside the Leeds City Council boundaries. The percentages were approximately the same if I looked at the data for female or male only students.

Question 8: Were you aware of Leeds College of Building before you started your apprenticeship?

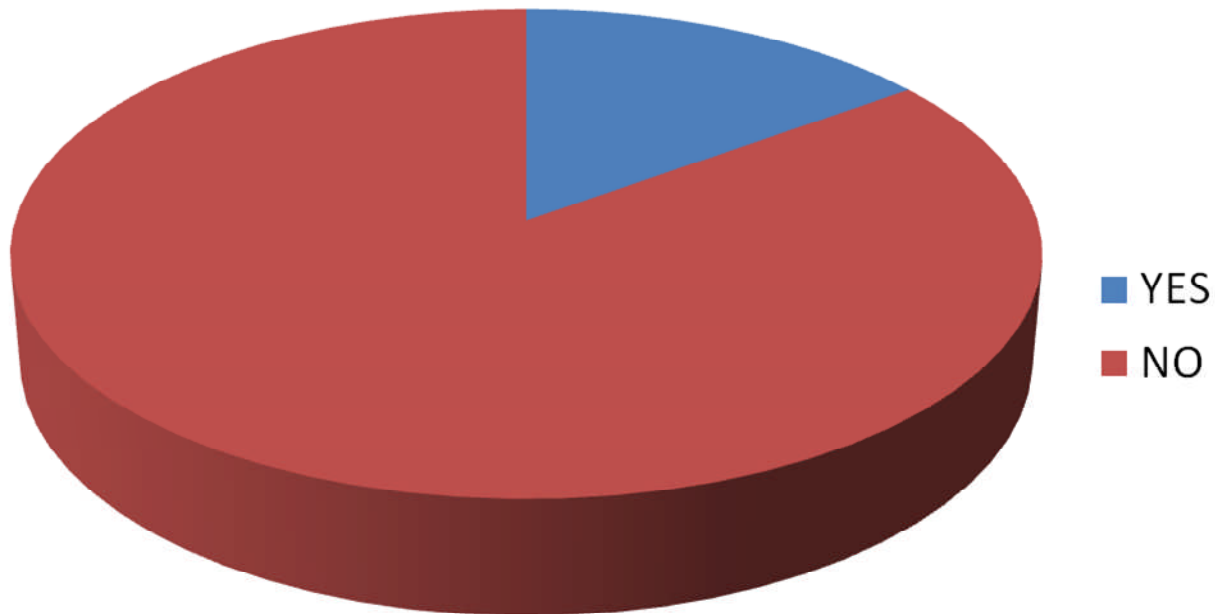


63% of the students surveyed were aware of Leeds College of Building before they started their apprenticeship.

The remaining 37% were not aware of Leeds College of Building until after they had commenced on their apprenticeship programme.

Question 9: Did Leeds College of Building visit your school on a careers event?

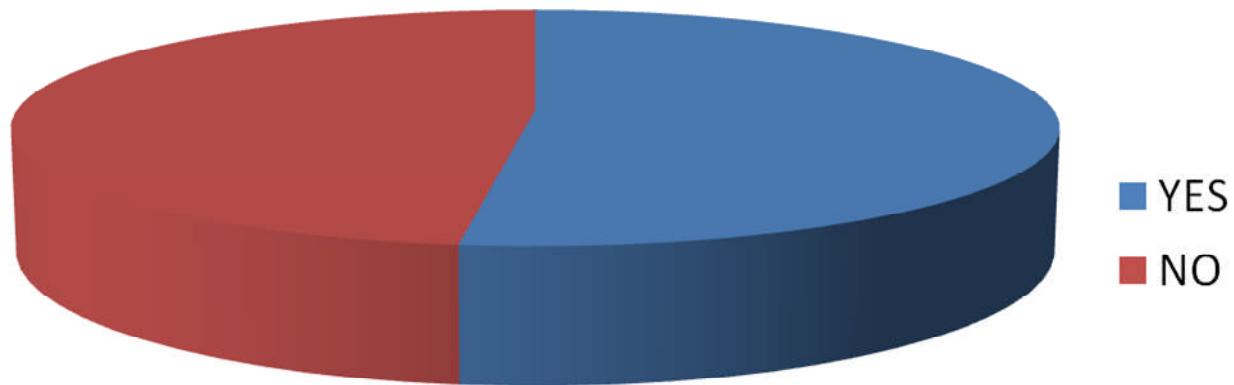
Did LCB visit your school on a careers event.



85% of the students who were surveyed said that Leeds College of Building did not visit their school on a careers event. The remaining 15% confirmed that they did visit their secondary school as part of a careers event/presentation.

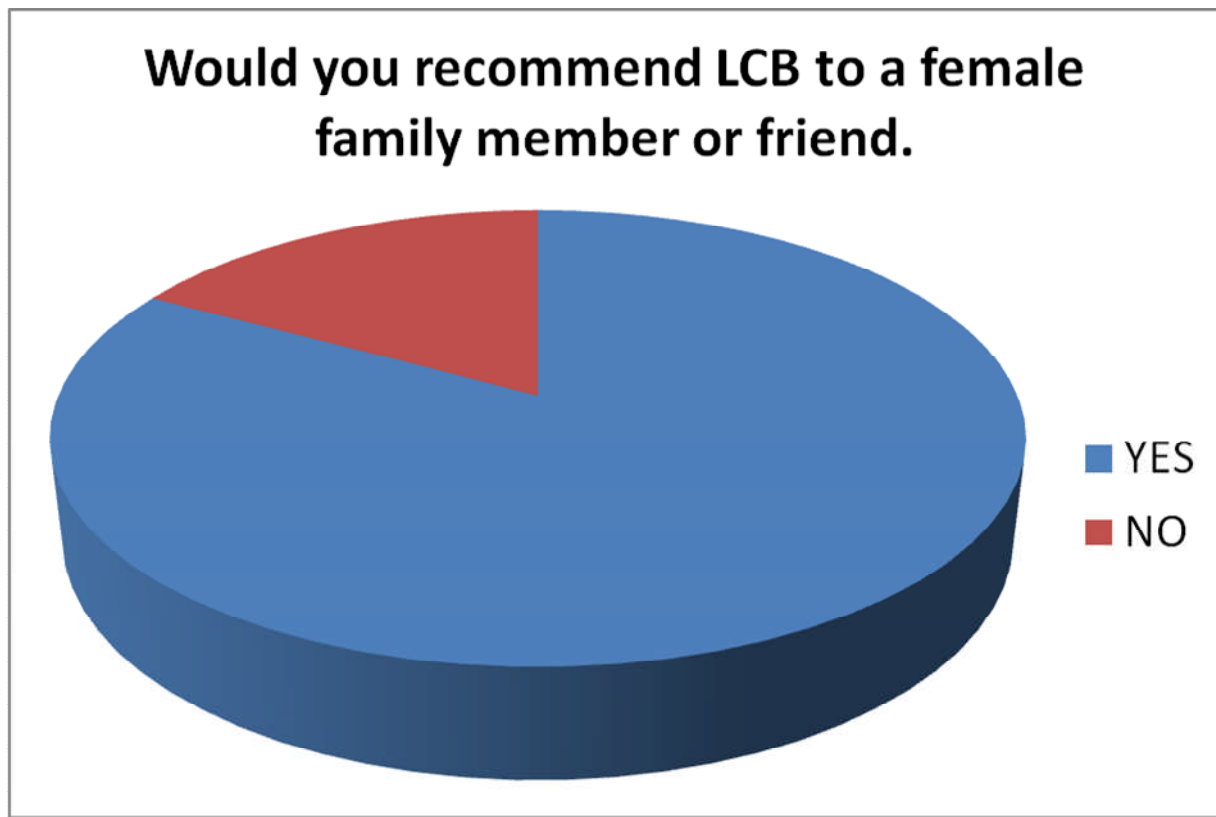
Question 10: Did your careers advisor know about Leeds College of Building and the range of courses/qualifications it offers?

Was your careers advisor aware of LCB



52% of the students said yes their careers advisor was aware of Leeds College of Building and the range of courses/qualifications that it offered. The remaining 48% said that their careers advisor did not mention Leeds College of Building.

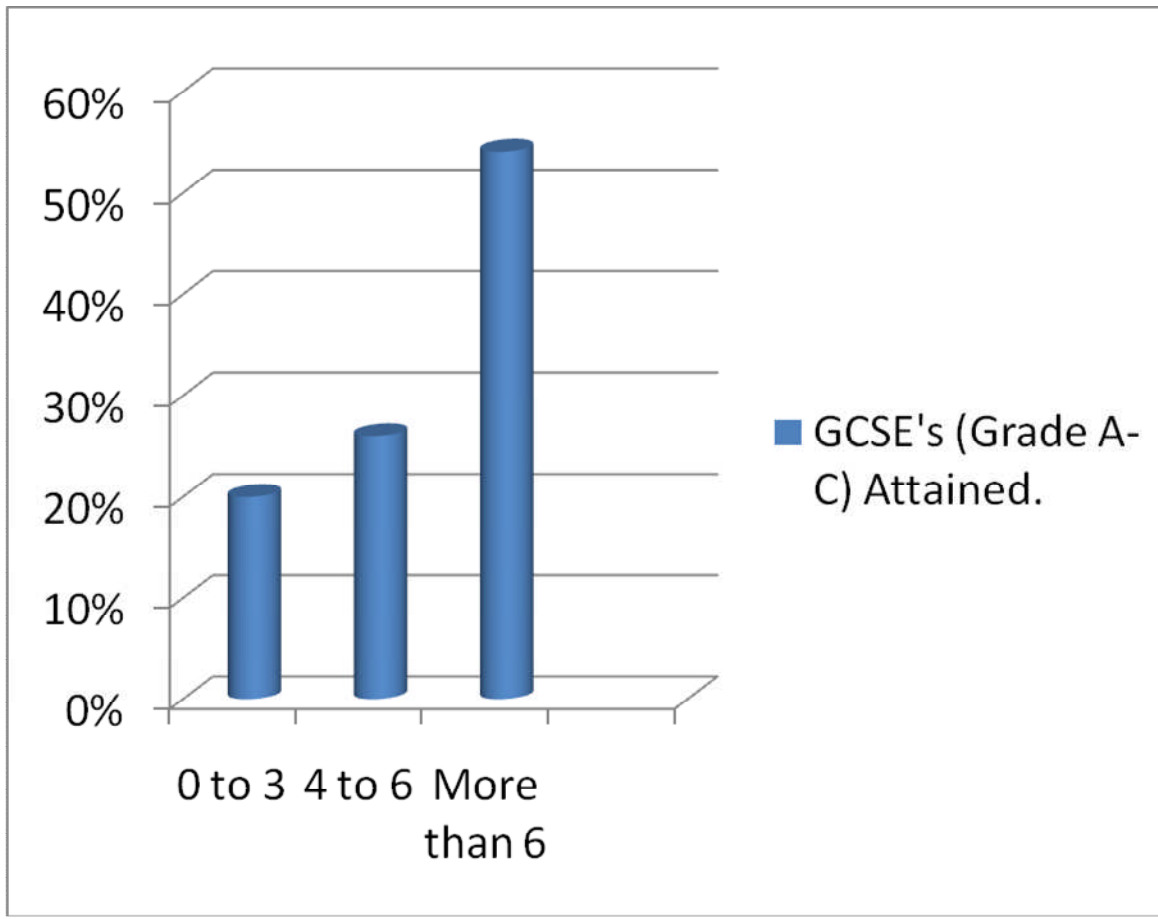
Question 11: Would you recommend Leeds College of Building to a female family member or



friend?

83% of the students surveyed said yes they would recommend Leeds College of Building to a female family member or friend. The remaining 17% said they would not recommend it. All 6 (100%) of the females surveyed said they would recommend the college to a female family member or friend.

Question 12: Your Secondary school qualifications (GCSE's Grade A-C)



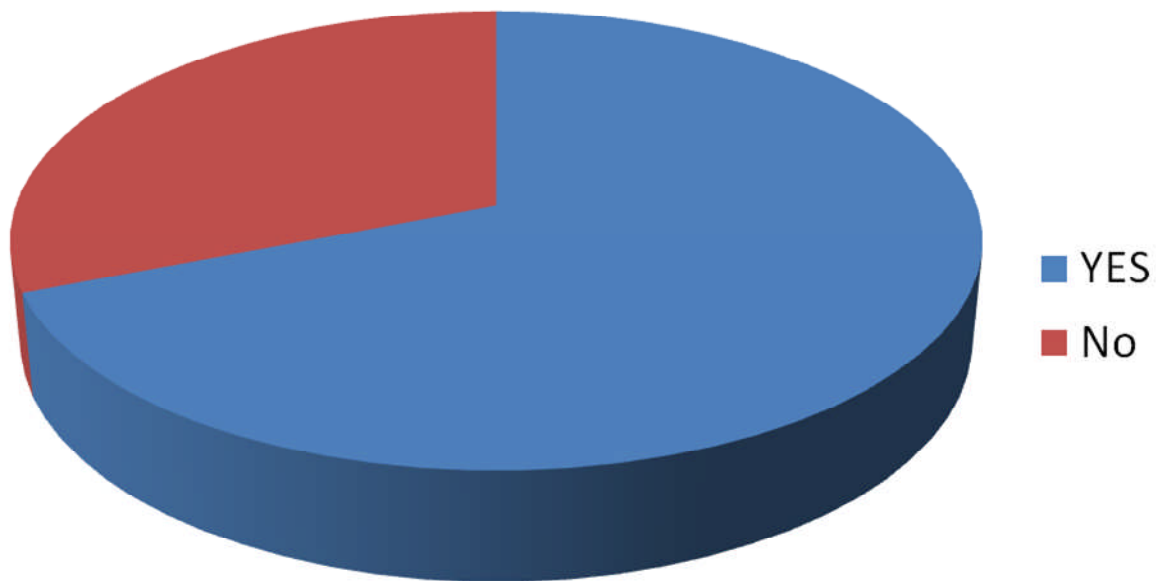
54% of the students got more than 6 GCSE's at grade A-C. For females the figure was 67%.

26% of the students got between 4 and 6 GCSE's at grade A-C. For Females the figure was 33%.

20% of the students got up to 3 GCSE's at grade A-C. All of the female students got 4 or more GCSE's at Grade (A-C).

Question 13: Do you have a GCSE (Grade A-C) in Mathematics?

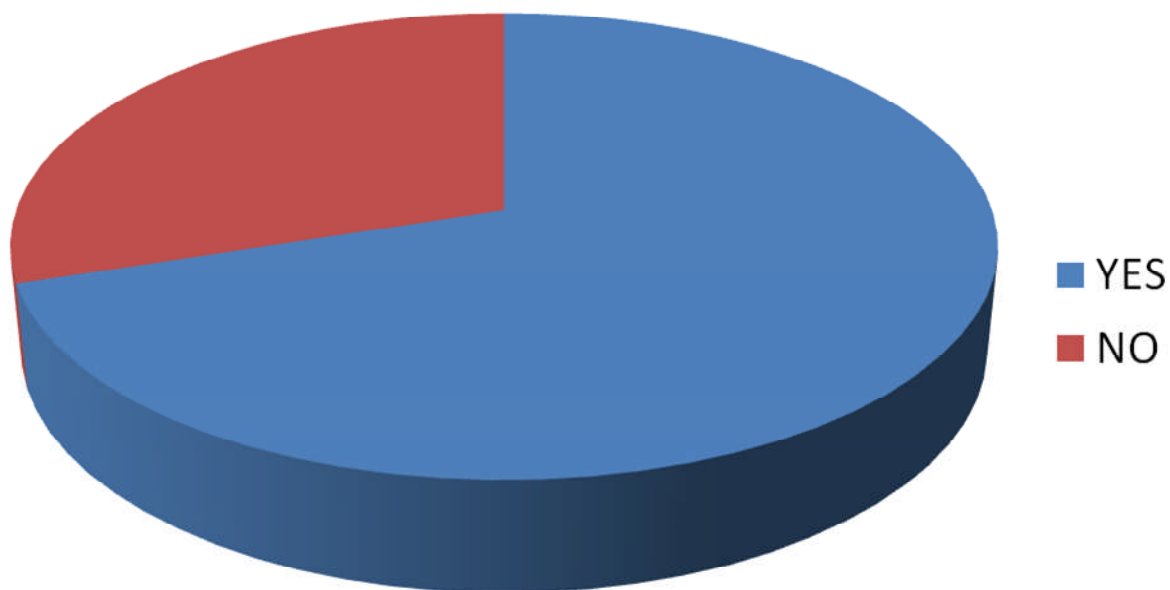
Do you have a GCSE (Grade A-C) in Mathematics.



69% of all of the students surveyed did have a GCSE at (Grade A-C) in Mathematics. This further broke down to 67% of the females and just under 70% of the males participating in the survey/questionnaire.

Question 14: Do you have a GCSE (Grade A-C) in English?

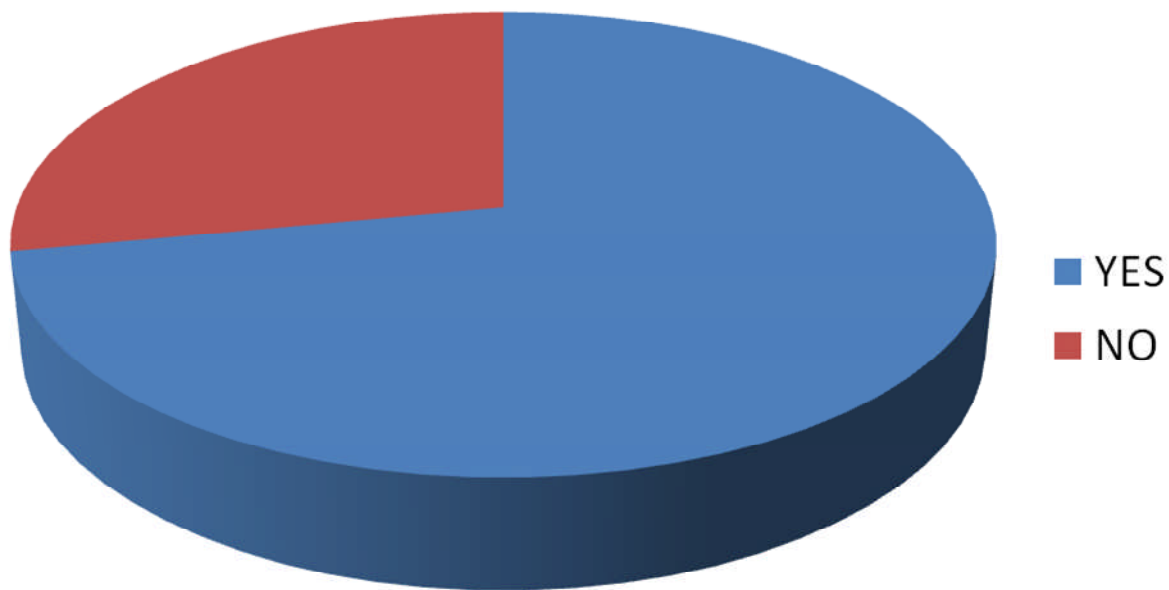
Do you have a GCSE (Grade A-C) in English.



70% of all of the students surveyed did have a GCSE (Grade A-C) in English. This further broke down to 83% of the females and 69% of the males participating in the survey/questionnaire.

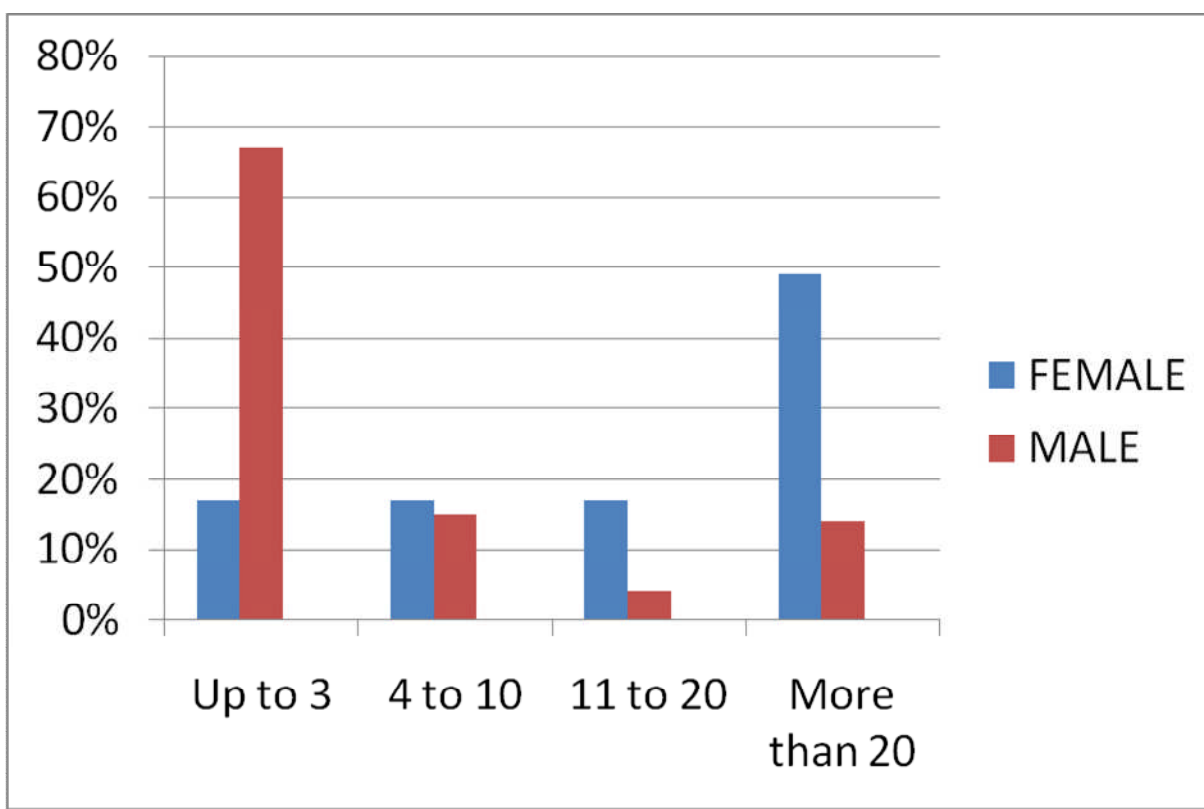
Question 15: Do you have a GCSE (Grade A-C) in a relevant Science subject. E.g.: Physics, Chemistry, or Biology?

Do you have a GCSE (Grade A-C) in a relevant Science subject.



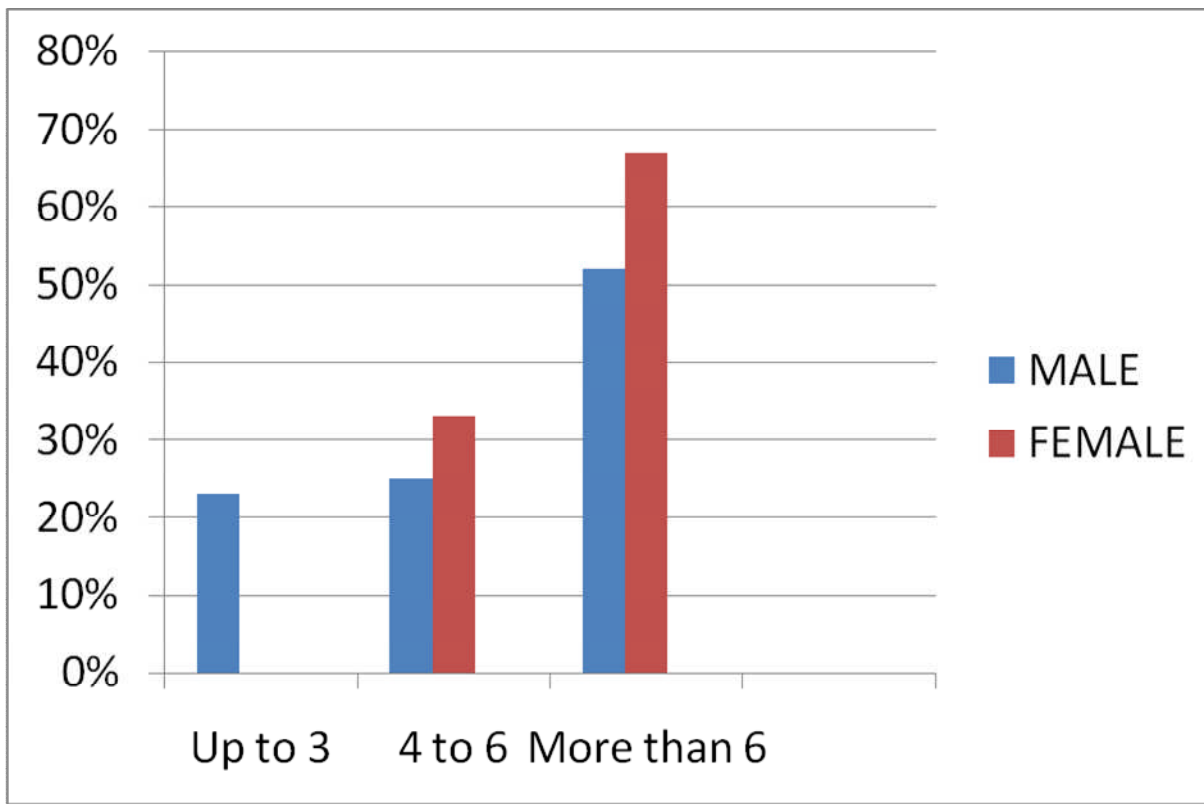
72% of the students surveyed did have a GCSE (Grade A-C) in a relevant Science subject. This further broke down to 83% of the females and 71% of the males participating in the survey/questionnaire.

Comparison: Male V Female Question 6: How many jobs did you apply for before you were accepted by your current employer on to a WBL Scheme.



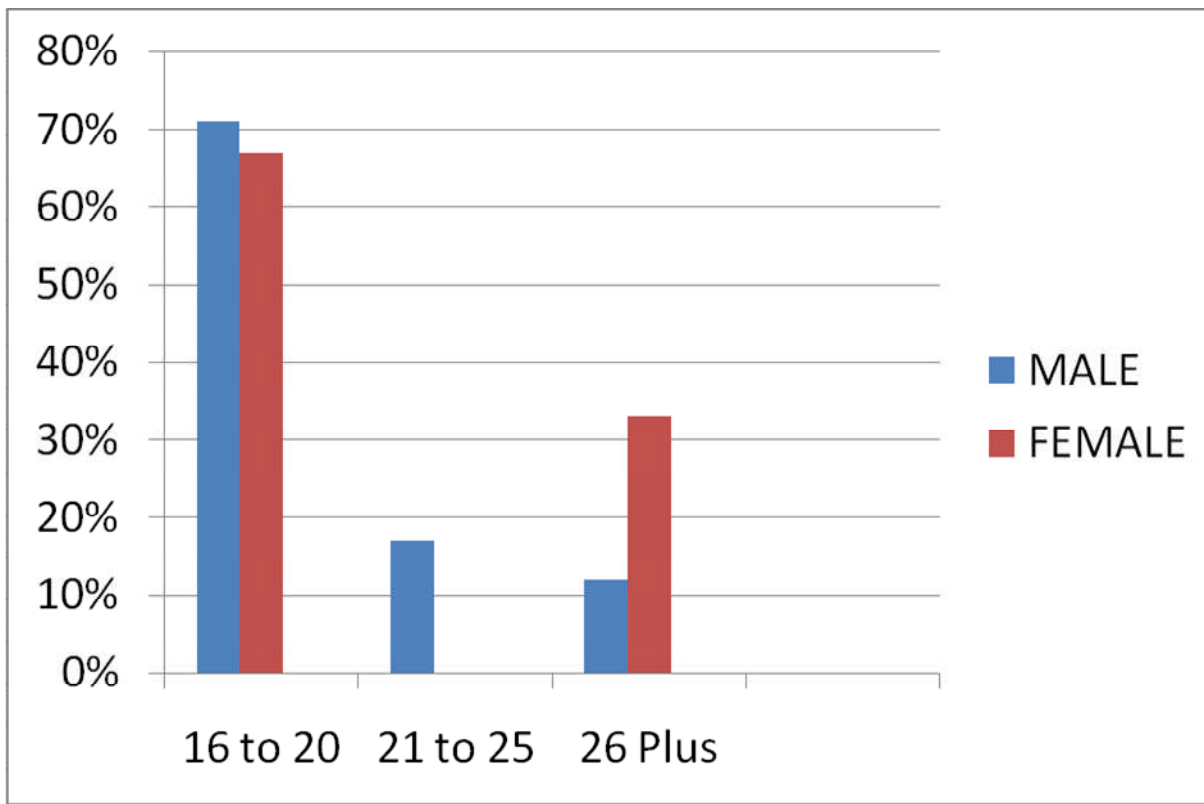
The graph above clearly shows that the female students had to apply for a lot more jobs before they gained employment on a WBL apprenticeship scheme, incorporating off the job training/study within the faculty of Mechanical & Electrical Services at Leeds College of Building.

Comparison: Male V Female Question 12: Secondary qualifications number of GCSE's (Grade A-C) attained.



The graph above clearly shows that the female students attained more GCSE's at Grade (A-C) than the male students did. It can be seen that none of the female students who completed the survey/questionnaire achieved less than 4 GCSE's.

Comparison: Male V Female Question 3: *The age of the students participating in the survey/questionnaire.*



The above graph shows that the age profile of the female students is slightly higher than that of the male students. As you can see no female students between the ages of 21 and 25 participated in the survey/questionnaire.

REFLECTION

- The female students at Leeds College of Building on Work Based Learning Apprenticeship schemes, on the whole, leave secondary education with better and more qualifications than their male classmates.
- Female students have to apply for a lot more jobs/vacancies than their male rivals in order to obtain an apprenticeship.
- It would appear that larger public companies/organisations offer the female tradesperson/apprentice their best chance of getting a job or an apprenticeship in the Mechanical & Electrical Services sector of the Building Industry.

-
- The age profile of the female apprentices that we have is higher than the age profile of the male apprentices within the MES sector.
 - The results of the questionnaire indicate that the majority of our Work Based Learning MES Apprentices (63%) live outside the Leeds City Council boundaries.
 - The results of the questionnaire indicate that a large portion (87%) of our Work Based Learning MES Apprentices are employed by either a very small or a relatively large company/organisation.
 - The data taken from the completed questionnaires suggests that the majority (83%) of Work Based Learning MES apprentices are employed by a private company/organisation.
 - An alarming (85%) of students completing the questionnaires said that Leeds College of Building did not visit their secondary school on a careers event.
 - Almost half (48%) of students completing the questionnaires said that their careers advisor at school did not talk about or mention Leeds College of Building.
 - An encouraging (83%) of students said that they would recommend Leeds College of Building to a female family member or friend. All 6 (100%) of the females completing the questionnaire said yes they would recommend Leeds College of Building to another female family member or friend.
 - The questionnaire indicated that the males achieved a higher percentage of GCSE's (Grade A-C) in Mathematics. Females achieved more GSCE's (Grade A-C) in both English and Science.

The Case Studies, Interviews, Telephone Surveys and the Questionnaires all contain evidence that says. Female applicants are being unlawfully discriminated against by some employers within the Mechanical & Electical Services sector. This is possibly one of the main reasons for only 2% of our Work Based Learning Apprentices being female

FINAL REFLECTION

-
- Contact the marketing department and student services, to ensure that all secondary schools from within our traditional catchment area. Are fully aware of the courses and qualifications that are offered by Leeds College of Building.
 - Contact Work Based Learning, ask them to talk to all employers on their books, to encourage them to trial and ultimately employ female tradespersons and apprentices
 - Encourage female students and female vocational tutors, to actively promote Leeds College of Building to potential students, especially female ones. This could be achieved by visiting local schools and attending relevant careers events.
 - Ensure that the relevant Careers Department and all its advisors are aware of Leeds College of Building, and the full range of courses and qualifications that it offers.
 - I need to speak to the Equality & Diversity Officer at Leeds College of Building. I need to make him aware of the discrimination issues that my action research project has brought to light.

Appendix 3 University of Bradford **Introduction**

The recent economic downturn and the resulting increases in redundancy and unemployment have created uncertainty and dramatic change for many workers and employers in the UK. These changes have highlighted the significance of reskilling and upskilling for both individuals and businesses and the role that HE and FE can play in mitigating against the devastating effects of the recession. To this end, the Higher Education Funding Council for England (HEFCE) created the Economic Challenge Investment Fund (ECIF) to provide the means for HE providers to meet this need. However, it could be viewed that this economic climate and the new funding stream represent a more positive opportunity to expand horizons and explore new career pathways. This action research project began with a question concerning the potential of this displaced talent pool and how focussing the funding might enable access to learning and development opportunities in skills shortage areas. This potential presented itself as an exciting question in two ways:

1. Could it help the University contribute to the economic imperative to increase higher level skills in particular sectors and industries supporting our economy to become globally competitive?
2. Could it help the University enable access to career change opportunities for individuals who may have previously missed out on achieving their academic goals?

That the research settled on the School of Engineering, Design and Technology was entirely led by “market demand”. Interest from female students was markedly higher in accessing HE Engineering opportunities through ECIF, including full time, part time and modular options. This therefore intensified the question of whether a change in practice could facilitate both business and individual needs.

“ If we adopted a strategic approach to engaging with unemployed / redundant females through the Economic Challenge Investment Fund, could we increase the number of women taking up Engineering course opportunities?”

The Action Research in Context

In the academic year 2008/09 there were 48 female Undergraduate Engineering Design Technology students compared to 333 male students at the University of Bradford. The net effect of this disparity over time has been consistent with the % split between male and female undergraduate engineering students generally falling around 88% male to 12% female (see full range in box 1).

Box 1

Percentage of students

Gender	Academic Year				
	2004/05	2005/06	2006/07	2007/08	2008/09
Female	11.1	15.6	11.5	10.0	12.6
Male	88.9	84.4	88.5	90.0	87.4

The reasons for the lower uptake of academic opportunities in Science, Technology, Engineering and Mathematics (STEM) subjects has been extensively researched (UKRC, 2005, 2008, 2009) and the contributing factors addressed through innovative practice and policies, the Jive Project being a good example of a project which was able to address school and employment choices. However, for those individuals whose choices were made in the past and who now find themselves living with the consequences of those choices, new initiatives need to take account of the fact that increasing uptake of Science GCSE and A Level subjects or making post 16 entry to industry more equitable will have no effect. Given that 70% of the 2020 workforce have already left school (Leitch, 2006) we also face a demographic challenge in terms of ensuring we have a highly skilled workforce. As the 2006 Leitch review intimated, responding to this demand means providing more employment based and employer-led learning and development opportunities, as well as ensuring we are increasing the right skills necessary to compete in a global market. As Over 30% of the UK's Gross Domestic Product (GDP) is produced by sectors intensive in science, technology, engineering and mathematics (IUSS Select Committee, 2009) it can be argued that increasing the number of higher skilled STEM employees is essential to enhancing UK economic viability.

The Economic Challenge Investment Fund is intended to facilitate a rapid response from HE to the current economic downturn. The University of Bradford's current 'open door' approach to ECIF engagement has resulted in several enquiries about science based courses, with over 60% being from female enquirers. Of particular interest to this action research process were two new female students who expressed interest in registering for the Engineering Foundation Year, with full fees needing to be paid by ECIF. Both students had recently been made redundant and both needed this pathway into Engineering as they were interested in pursuing a career in the sector but did not have the requisite entry qualifications for the BEng.

The Action Research process

In trying to establish a credible method to explore the research question:

“If we adopted a strategic approach to engaging with unemployed / redundant females through the Economic Challenge Investment Fund, could we increase the number of women taking up Engineering course opportunities?”

it was necessary to examine both the viability of the ECIF funding to reach out to women in a position to take up engineering opportunities and the time available under the funding to effect any change in practice.

The reality of the situation was that whilst the funding did have the potential to effect change, we did not have sufficient time to implement subsequent cycles of the action research. However, I was still convinced that there was merit in pursuing the research question and formulating ideas for further action based on the findings of this activity. To overcome this issue it was necessary to reformulate the research question and in light of the time constraints I decided to focus the research on the two female students who were expressing interest in the Engineering Foundation Year. The most valuable element of this interaction was to understand the processes and thoughts which had steered both of these women towards taking up the opportunity, to ensure future policy or research was guided by these principles. To capture this qualitative element I reworded the research question to explore: *“What effect can the availability of funding have on access to HE Engineering opportunities for women?”*

Data Collection

Staying with the theme of capturing the thoughts and feelings associated with taking up this opportunity, I decided that a video interview would allow a more in-depth understanding of the effect of the funding and provide a reference point for future research. Engaging with the two students in the video process also developed a better understanding of their personal circumstances which were not as evident or important through the funding application process. Whilst the two women were of a similar age and had both recently been made redundant, one had been working in an engineering environment and one had been working in an administrative environment. It was interesting to note that despite the differences in their starting points, both participants had been interested in pursuing an Engineering career previously, but both quite clearly stated that they had not been financially able to engage with the education process. In this way, it can be concluded that the effect of the funding was to open the door to learning. There was a very practical element and feel to this assertion; not being able to afford to take the time out to study or pay the fees had prevented engagement with HE in the past. Being made redundant had taken one of those choices out of their hands – the fear of stepping out of the workforce had been replaced by the fear of being unemployed and unemployable. This change seemed to engender a sense of courage in both women and they saw redundancy as an opportunity to change direction rather than an end to their previous occupation.

This did, however, still leave the problem of paying for fees. Whilst there were differences in their financial circumstances following redundancy both women were in need of financial support to enable them to make a quick decision. The effect of the funding in this sense was to buy them “breathing space”. They had the time, there was no decision to be made about leaving work but they needed the immediacy of the financial commitment to be taken away, to give them the opportunity to concentrate on the course and worry about funding later. ECIF was able to provide this space and enable the women to enrol, work out how they would manage their new timetables and concentrate on being successful learners. Whilst the need for funding for subsequent years doesn’t disappear, it is easier to manage a problem in the future than it is to “fire-fight” a problem which is immediately in front of you. Further, the effect of the funding was to enable the women to actually accept the place on the course. Had the funding not been in place they may have had no choice but to decline the place or may have been panicked into deciding they couldn’t take the chance of financial constraints.

Analysing the video data

The video process was facilitated by colleagues within the University with the full cooperation and permission of the two students. It was of paramount importance that the questioning was open and enabled the students to express what their personal journey had been and how the process had affected them. I felt it was integral to the process that the style of interview captured their personalities and their experience of both the funding and academic process. The end result is a piece of film which clearly expresses the difference the availability of funding made. Both students are clearly committed to the course and to their future career path and both express being on the course as fulfilment of either a “dream” or “putting right where I went wrong in the past”. In this respect the funding has achieved far more than HEFCE intended; it was implemented as a tool to enable rapid response from HEI’s to the current economic downturn, but in this case it has also met the HE STEM agenda, provided two future engineers and opened up a new avenue for addressing the gender imbalance in SET subjects. The original and edited versions of the video now provide a fantastic resource for both my own practice and a reference point to exemplify the findings of this research process.

<http://www.youtube.com/watch?v=IU2VdozP70w> (unedited)

<http://www.youtube.com/watch?v=Qkq1a9oqkKA> final version)

Informing Practice - Cycles of Research

Whilst time prevents further cycles of this action research being carried out (all ECIF funded activity must be completed by the end of academic year 09/10) it does provide a template for future research or action planning. For example, as a consequence of researching the effect of the funding on the two Engineering Foundation Year students I now have evidence to inform practice as and when future funding streams become available. This cycle of research also provides a basis for discussion in terms

of marketing Engineering course opportunities and the new audiences which could be explored or new partnerships to be set up. For example, working with statutory agencies such as Jobcentre Plus could be explored to investigate whether there are sufficient numbers of potential students presenting to warrant a plan of action. Working collaboratively across funding streams and agencies would facilitate the joined up approach needed to trial further cycles of this action research. Only by repeating the exercise and evaluating the effect of funding on the participants will it be possible to assert definite correlations.

Evaluation of the Research

At the beginning of this Action Research process I was aware of two facts;

- (1) there were fewer women enrolling on Engineering courses and
- (2) I had funding available which could be used to support unemployed or redundant individuals to access HE provision.

My questioning sat in the middle of these two facts and asked if the availability of the funding could be targeted to increase the take up of Engineering course opportunities by women. It was not concerned with the statistical or historical reasons behind the gender imbalance, but rather had a pragmatic focus on utilising the funding to ease access *where this may be a contributing factor to the imbalance*.

In evaluating the process I am aware of two new facts;

- (1) the rapid response enabled by the flexibility of ECIF funding gave the two students the *confidence* to accept a place on the course
- (2) the breathing space afforded by the funding for the first year gave the two students the *time* to negotiate their way through the practicalities of taking up a full time HE place

Discovering that practicalities such as time, confidence and money have a pronounced effect on an individual's ability and likelihood of taking up a place at University is not new knowledge. However, the knowledge that targeted funding applied as a rapid response to redundancy can bridge these problems is. Going forward, this knowledge can be applied as funding becomes available to enable multiple outcomes from funding streams.

Reflection

As a non-research practitioner I welcomed the opportunity to be part of a supported research process through the Get into GEAR project. I was aware that the ECIF project was bringing forward new situations and clients and that emerging new practices needed to be captured and learnt from. The opportunity to be part of this research activity gave me a practical, supported method to analyse and affect my own practice. My journey through this process has been one of discovery, from realising that I needed to narrow my focus to capture meaningful data through to realising that Action Research

could be a valuable process for improving my own practice as much as a process for gathering information and data.

It is the value of the Action research process as a tool for improving my own practice which I have found most valuable. As a non-academic practitioner research is not a daily activity for me, but being part of Get into GEAR has shown me how valuable this approach can be and how I can adapt the process to suit my field and type of work. It creates a framework for thinking about a problem and provides a structure for working this through and aiming for a clear outcome. Often, clarity is lost when I am caught up in the “eye of the storm” and capturing this retrospectively can be very difficult. The techniques, headings and thought processes the action research process guides you through provide a sense of order outside of the usual work context. The process has allowed me to conceptualise *what* I want to question as well as *how* I’m going to question it. I am very pleased that I was brave enough to embark on a video interview option. The richness of the data brought forward could not have been captured through any other process. I think the fact that I focused on two particular subjects lent itself to this medium and feel sure the message would not have been conveyed as strongly if another method had been used. Again, this opened up another point of learning for me and strengthened my own ability to analyse and evaluate my own practice. In the final analysis, I feel this is the true value of Action Research

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Identify the under representation of female students on SET courses and develop a course to challenge gender stereotyping and occupational segregation. Use the feedback from the course to make recommendations on the promotion of Gender Equality within SET.



A research project undertaken on behalf of the UKRC by Assia Hussain (Curriculum, Equality & Diversity Officer)

Background

My research paper is on gender equality with a particular focus on the under representation of females in SET courses. Before I embark upon my research and findings I want to briefly look at why educational establishments and business' encourage gender equality.

Under the Equal Opportunities Policy, all business' and educational establishments must be able to demonstrate they are committed to a proactive and inclusive approach to equality, which supports and encourages all under-represented groups, promotes an inclusive culture and values diversity.

Legislation on gender equality began with the Equal Pay Act in 1970 and the Sex Discrimination Act in 1975, which has now been updated and amended by subsequent legislation, the most recent being the Employment Equality (Sex Discrimination) Regulations in 2005. It is also unlawful to discriminate on grounds of gender reassignment.

For the purpose of this research, I planned and facilitate a session (Appendix A) on gender stereotypes to a group of 9 ESOL female students between the ages of 19 – 40. All 9 students had a FE or HE qualification from their country of origin in a SET related subject. In addition to this I carried out a questionnaire (Appendix C) on

Gender Equality to a year 1 Higher National certificate in IT students. The group was made up of 8 male and 1 female students. All the students were aged between 17 and 19 years

I decided to focus on these two groups because each group because of the following similarities and differences:

	A	B
Gender	9 Female	8 male / 1 female
Qualifications	FE / HE in SET related subjects.	FE Computing
Country where qualification was or will be obtained.	International	UK
Age	19+	16-18

I also felt that a lesson would be better with the 19+ group because they were more happy to share their opinions as most of their exams had come to an end. The 16-18 group had the questionnaire because they had a lot of work to fit in to their learning before the final exams and so didn't have time to participate in an hour long session.

The aim of delivering this session and doing the questionnaire was to look at developing strategies to achieve a gender balance within IT. The feedback from both the session and the questionnaire would lead on to look at the recommendations that had evolved from these and consider the implications in facilitating these recommendations within the SET curriculum.

Teaching and learning session with an all female group:

The session (Appendix A) was delivered as a tutorial and consisted of a warm-up and three activities all based on how certain tasks are often linked to specific genders. The aim of the session was to find ways of looking beyond stereotyping and thus avoid limiting the development of own interests and abilities.

Warm up activity

The warm up activity consisted of the group being divided in to two groups. Group A have a picture of a female (Appendix B2) and group B have a picture of a male (Appendix B1). Both groups had an identical list of questions which they had to decide an answer for in relation to the picture that they had.

Feedback from Group A:

Group A agreed that the woman had children, she was married, she drove a Nissan Micra, her hobbies included reading, she had been to university and done a degree in teaching, her favourite colour was white and she was now working as a full-time teacher in a Primary school.

Feedback from Group B:

Group B agreed that the man had had no children, he had a girl friend, he drove a VW Golf, his hobbies included going to the pub, he hadn't been to university, his favourite colour was black and he worked at a Petrol Station.

Activity A

Following the warm up there was a brief discussion on stereotyping and the potential dangers of stereotyping. After the discussion, the objectives were explained and then the second activity was introduced. This activity was a whole class activity and focused on gender related daily activities.

In this activity I write nine daily tasks on the board and asked the students to identify who they felt should be responsible for this particular task; a male or female. The results are in shown in the table below:

Task	Male	Female
<i>Go to work</i>	9	3
<i>Changing the baby's nappy</i>	1	11
<i>Decide where to go on holiday</i>	5	7
<i>Buy a computer</i>	11	1
<i>Take care of the children's routine</i>	12	0
<i>Driving on a long journey</i>	8	4
<i>Change a tyre</i>	12	0

<i>Arrange household bills</i>	8	4
<i>Taking care of the school run</i>	4	8

Activity B – 2A

Activity B focused on jobs and subjects that attracted more males and females. The class was again divided in to two groups: Group B had to identify jobs and subjects that attract more males and Group A had to identify jobs and subjects that attract more females.

Feedback from Group A:

Construction, Building, Science, Engineering, Army, Sports, Road Works, Computing.

Feedback from group B:

Midwife, Nurse, Receptionist, Hairdressing, Office Manager, Teacher, Air Hostess.

Activity B – 2B

This activity encouraged the group to discuss how certain factors influence the above groupings. Below are the results:

<i>Influential factors in creating gender stereotypes.</i>	<i>Examples of how these factors influence gender stereotypes.</i>
<i>Education</i>	<i>At school children read books that highlight, daddy goes to work and mummy stays at home.</i>
<i>Upbringing / Culture</i>	<i>In some cultures jobs such as teaching and nursing are considered to be appropriate for females and IT and Medicine for males. It is difficult to go against these expectations unless you are very confident in your career choice and own abilities.</i>
<i>Media</i>	<i>In magazines, the women all look slim, tall and pretty in short skirts and dresses with beautiful nails and make up. The men always look strong and powerful. Often on television, there will be a programme or film where the manager is a strong man and the PA is a beautiful woman. A good example of this is James Bond.</i>
<i>Role-Models</i>	<i>Most of the popular female role-models are either super models or actresses. The majority of male role models are sports personalities, celebrities or leaders (with the supportive wife alongside).</i>

The feedback from all the above activities highlights the fact that stereotypes do still exist and are further encouraged by certain sections of education, culture, media and role-models. Activity A highlights how often there is a strong element of stereotyping when it comes to dividing roles and responsibilities both at home or work. The impact of this is that it further promotes gender stereo typing and inequality in all aspects of life.

Activity C – 3A

Activity C focused on factors that had influenced the students in their choice of study. All the students said that although teachers and parents had had some influence but the final decision had been their own. Reasons for choosing to study subjects such as Science, Business and Accountancy had all been motivated by eventual financial gain.

Activity C – 3B

The final activity encouraged the students to look at how education, culture, media and role models could be used to encourage people to move in to non-traditional areas. The following feedback was received:

<i>Influential factors in creating gender stereotypes.</i>	<i>Examples of how these factors can be used to encourage people to move in to non-traditional areas.</i>
<i>Education</i>	<i>Schools should promote books that have both parents working and maybe include examples such as daddy is a nurse and mummy is a bus driver or a doctor. Also on prospectus' there should be more pictures of males doing Hairdressing or females doing construction. Each programme area should have Open Days and offer incentives to join their course to the under represented gender.</i>
<i>Upbringing / Culture</i>	<i>Parents should talk to their children and encourage them to follow their passions and not listen to what other people say.</i>
<i>Media</i>	<i>There should be characters in Coronation Street or Eastenders who are trendy, good looking females working in construction or handsome males working as Hairdressers.</i>
<i>Role-Models</i>	<i>Schools and colleges should encourage guest speakers to come in and talk to students. An example of this may be a female politician or a male midwife. The role models should highlight how happy they are with their career choice and the benefits of it.</i>

Evaluation and reflection

All the students agreed that they had found the session beneficial and what they would try and do as a result of attending this session is, to talk to their children about their future careers and to encourage their children to follow their dreams. The students agreed that it was very easy to stereotype and often they did this without even realising.

Questionnaires from an FE Computing group: 8 males and 1 female

Below is the feedback received from all 9 questionnaires:

- 1) 8 students had opted to do FE Computing because they enjoyed games and 1 student had been influenced by the Careers Advisor.
- 2) All 9 students agreed that even before they had started the course they had been aware of the under-representation of females in FE Computing.
- 3) The main reason for this was because women were not interested in games and computers as a lot of the games were violent.
- 4) 7 of students didn't have any comments on how the college could encourage more females in non-traditional areas such as FE Computing, 2 students provided the following feedback: show people that Computing is not just for males but also for females and to try and encourage females to understand the skills used in Computing.

Recommendations

The feedback received from the teaching and learning session has highlighted that once females are recruited in to SET subject, they do progress and achieve. The difficulty was the initial recruitment. The feedback from the questionnaires has highlighted that there is a real need to discourage gender stereotypes amongst the younger students. This could be done by encouraging more SET taster days for females so that they are given the opportunity to experience some of the skills used. Other recommendations include using more images of glamorous females in the prospectus when advertising SET subjects, having outside speakers to come in and entice the students with their career choice and incentives such as training placements, possible childcare assistance and flexible courses that work around school times. Other suggestions included, recruitment officers appointed to act as head-hunters and identify potential female candidates in SET and ensure that they receive appropriate support and guidance about positions that may interest them. The officers could also track the progress of the females on SET courses and run workshops on gender bias and gender equality issues for staff and students. Females on courses that have progressed on to employment within SET careers could be asked to act as mentors for other females on the courses.

Conclusion

This research has highlighted that there is still a long way to go before we have equal gender representation on SET courses; this is mainly due to the fact that a lot of people still have traditional views on gender roles in relation to study, employment and life in general. These views create barriers to gender equality and are often further encouraged by the media, education and cultural influences. However, the fact that we have roles within the college to promote equality in the curriculum, the establishment of the UKRC and various initiative to break down some of the barriers further promote gender equality in SET highlight that a lot of progress has already been made towards achieving this target and will continue to do so in the future.

Appendix 5: Action Research Bradford College 2

Exploring the use of role models in computing: how can professionals from industry support the curriculum?

“These kinds of seminars are really useful and helpful in making students clear about different topics related to their studies. And also when we meet such people and come to know about their confidence and achievements that really gives us inspiration and motivate us about our study and career.” (Student)

“I feel inspired to progress into the IT industry, maybe into an area not usually for women.” (Student)

Introducing Tamsin Spain:

Tamsin is the regional coordinator at the UKRC which is part-funded by the Department for Business, Innovation and Skills and is the Government’s lead organisation for the provision of advice, services and policy consultation regarding the participation and position of women in science, engineering and technology (SET).

Driving Force

Women in the IT industry make up about 1 in 5 of IT professionals. In IT occupations the number of males has increased by 77,000 while the number of females has fallen by 28,000 since 2001. The gender divide starts early in the ICT education system. Low female participation rates exist at GCSE level, the gap increases at A-level, is even more pronounced in Higher Education and continues into the IT professional workforce. Although females taking IT related qualifications in Secondary Education are low in number, they consistently outperform their male counterparts. The supposition is that if females were more inclined to participate in IT careers then the pool of talent available to IT employers might improve noticeably.

*(Source - Women in IT Scorecard - A de **Outcomes***

As a result of this project, the computing department has set up a steering group to look at how activities such as this can be introduced as part of the curriculum. It has been suggested that a half day session each week will be introduced to the timetable and will focus on career planning and development. These sessions will not be an optional activity.

finite up to date evidence base for data and commentary on women in IT employment and education, 2008)

Male and female students in HE computing at the College

In the computing department at Bradford College there are 22 female students and about 200 male students.

Little formal research has been done on the use and effectiveness of role models from industry, within the curriculum, although there has been much discussion on the topic. Through the UKRC’s work with women in atypical careers, we have found that role models and mentors can make a significant difference to a woman’s career progression.

The research:

This action research project took place in the HE computing department at Bradford College and was facilitated by a member of the UKRC supporting lecturers in demonstrating different career paths. We looked at how role models from industry could be used to enhance the learning environment and bring the curriculum to life increasing students’ interest in and commitment to their subject. Particular attention was paid to encouraging female students to continue into a career in IT by demonstrating that women can be successful in IT.

A steering group of four computing staff was formed to decide on the nature and timings of these sessions. Three female IT professionals were invited to talk to computing students about their careers and job roles. One female IT professional was invited to take part in the UKRC blog for a two week period and students were invited to take part in this blog.

The three 'live' presentations were optional and took place on Friday lunchtimes. Only female IT professionals were invited to speak, the intention being to encourage the female students to attend and see that women can be successful in the IT industry.

Main Findings

1. Students learnt what might be useful for planning their career / study progression

The following has been taken from students' evaluation forms:

- Had a good insight what lies ahead after graduation. (Unknown)
- Careers in the computing industry seem to be quite flexible. (Unknown)
- It is harder for women to get jobs in IT and they need to be twice as good to impress. Planning is important and keeping up to date on your chosen field and not to stagnate in your job. (Unknown)
- Dynamic IT roles are not exclusive to men. (Unknown)
- I learn that people can actually choose to have career and life at the same time. (Male)
- Passion takes you forward in this industry ... definitely. (Female)
- To not give up and persist with passion. Even if you fail pick yourself up and continue. (Female)

2. Students received clarification on misconceptions about the computing industry

The following has been taken from students' evaluation forms:

- The computing industry is really massive. If one role / task doesn't seem to work, the industry offers other opportunities to fall back. (Unknown)
- The stereotypical male IT environment is not true. I'm sure there are a lot of women like Lorna in the industry. (Unknown)
- Follow your gut instincts. (Male)
- Women can be in the IT industry and succeed in it too. (Unknown)
- It's possible to achieve if you put your mind to it. The male dominated industry and having to compete. (Female)
- Tips given were really good. Since the industry is always moving forward, hence people work in IT needs to update themselves with the IT related news, technology. (Female)
- It is not all about technical knowledge. (Male)

3. Students wanted to meet more IT professionals as part of their course

All students who attended the sessions said in their evaluations that they would like to meet more IT professionals. Some of the roles they suggested were: Networking professionals, Business system analyst, Computer programmers, Web graphics designer, women in management IT roles, user support, Project manager, Programmer in artificial intelligence / robotics.

Some students' attitudes towards lecturers changed as a result of the sessions

"One student's attitude before was 'women can't do much'. Since attending the first session, his attitude has completely changed and he has more respect [for the female lecturers]."

4. Staff found the sessions beneficial and supported them in their teaching

Lecturers comments:

“These sessions have had a positive effect in that students have claimed to appreciate their tutor’s knowledge and experience more, and that the curriculum and what is specifically taught is a pre-requisite for a good position in the specific field of the computing industry.”

“In class I referred back a lot to what the speakers had said to reiterate why certain things are important. The students who had attended agreed with me, they nodded their heads and said ‘yeh he’s right’. Their positive attitude filtered down to the students who weren’t there.”

Informing Practice:

As a result of this project, the computing department has set up a steering group to look at how activities such as this can be introduced as part of the curriculum. It has been suggested that a half day session each week will be introduced to the timetable and will focus on career planning and development. These sessions will not be an optional activity.