



## Minutes

**Meeting** : 5th GirlsTech meeting at Gateshead, United Kingdom  
**Date** : 25-9-2017 & 26-9-2017  
**Present** : Marguerite Hogg, Catherine Sezen, Irati Larranaga Aizpurua, Juan Eduardo Iriondo Martínez de Morentín, Manuela Guimarães, Teresa Santos, Pia Deveneijns, Mirjam Hensels, Manfred Polzin, Janek Suu, Jüri Puidet, Diana And one, Riitta Hirsikoski, Marko Kempainen, Barbara Pušnar, Egon Pipan, Esther van Schaik and Jara Frederiks  
**Minutes by** : Mirjam Hensels and Pia Deveneijns

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### Day 1:

#### **1. Welcome and overview of the day (Marguerite and Manfred).**

Although we do not need to produce intellectual output for this project, we strive to define the results for the project. That means that during the last three meetings we need more time for discussion and analysis.

Diana made an overview of the results of the meetings for her GirlsTech meetings in Romania. She will share these results with us.

#### **2. Introduction to and overview of the UK college sector (Catherine Sezen, Association of Colleges) – See presentation in SharePoint.**

After the management of the colleges was disconnected from the government, the Association of Colleges was founded to represent the interests of all schools in England. Scotland and Ireland have a different system.

In the UK education is compulsory from the age of 5 up to the age of 16. At the age of 16 all students do their GCSE exam, because the government thinks that students need an academic basis. It emphasizes theoretical issues. Between the ages of 16 and 18 they can choose between an academic curriculum (which leads to university) and VET-education. Students can start on different levels depending on prior experience. They don't have an idea about their possibilities at that age.

Fifty percent of the students choose an academic education. Only 6% of the students do an apprenticeship at the age of 18.

The government has developed a plan 'Skills plan Rationale', because there is a skills gap at [Pia zegt: EQF level 4 and 5, Mirjam zegt: EQF level 2 and 3, wat klopt?] The technical/vocational path is complex. The system needs to be reorganised. After Brexit this is expected to become an even bigger problem, because the employees from abroad (such as Europe and India) will leave.



The plan is to arrange 15 new technical routes (domains to skilled employment). 4 routes are work-based and 11 routes are school-based. The routes all take two years. They start with general knowledge and further on the knowledge becomes more specific. Work placement will increase from 2 weeks to 3 months and is compulsory. There are no incentives for employers, but this will probably change.

The costs are 500 million pounds a year to implement the pilots, which will start in 2020. The implications of this change in the system are huge. A cultural shift is needed. Parents are very proud when their children go to university and less so when they attend VET education.

### **3. Dr Mhairi Crawford, Development Director, Women In Science & Engineering Campaign (WISE). See presentation in SharePoint.**

Dr Mhairi Crawford has a phd degree in physics and she works for WISE with 15 other people.

There are lots of myths about girls and female in STEM.

- Girls don't choose STEM.
- Girls can't do STEM.
- Girls lack ambition and avoid 'hard subject'.

Single interventions don't work. WISE developed the 'People like me training':

- Raise awareness of Unconscious Bias and implications in the classroom
- Improve girls sense of STEM being for 'people like me'
- The research behind People like Me
- Delivering People Like Me in the classroom

Miele did an investigation on hiring people. They found that the group of females and minorities failed the intake tests. White males scored higher because they used the better keywords.

WISE receives the results from the personality/type of persons test developed by a professor from the University of Reading.

### **4. Gateshead College approach to girls in STEM subjects, Katy Malia, Gateshead College. See presentation in SharePoint.**

Gateshead is the 4<sup>th</sup> college in the country for success rates (based on inspection) and the 3<sup>rd</sup> college in the country for success in engineering, manufacturing technologies and automotive. Historically the college is strong in technical studies. Most students are male and the gender gap is huge. In apprenticeships the gap is even bigger. Within companies 1 in 8 people in STEM areas are women.

### **5. Roundtable discussion.**

#### **Barriers to females engaging in STEM and interventions:**

##### **1. Start early**



- More work should be directed at parents/carers – directing girls towards gender neutral play
- Young people need at least 5 interventions to make an impact
- Girls need a bigger picture – show the variety of opportunities that there are- transferable skills/ girls respond to make a difference eg you are making an impact

## **2. Making females into STEM a strategic priority for training providers**

- Open days – show other options; new options eg few people understand what 'marine engineering' is.
- Use alumni/peers to help to get the message across
- Review marketing materials - should have equality of males and females in promotional photos
- Language – allowing females to gain improved self esteem – what I am good at!

## **3. Teaching strategies**

- Skills championships – promoting females too
- Consider teaching strategies that engage females – project work rather than end of course assessment
- Female role models – invite in external speakers
- Opportunities for more work placements

## **4. Females in the STEM workplace**

- Staff recruitment and language - use more adjectives than verbs/actions
- Female to female buddying (within organisation/ across organisations)
- Gender neutral environment – males and females working alongside each other
- Equipment and resources made for females (PPE in female sizes)
- Flexibility within the employment market – eg part time/ job share.

## **Day 2:**

### **5. Employer perspective: Geoff Ford, Chairman and former owner family SME, Ford Aerospace Limited & Ford Component Manufacturing Limited**

The company has 140 employees. Ford is based in the Northeast and was founded by Mr Ford's grandfather in 1910. It's a small-medium enterprise (SME) and family-owned. Ford has an engineering academy. This is a 6 month course with work placement. There are 42 students at the Ford academy, including 4 ladies. (They do not only train for jobs at Ford, but also for jobs in the region). Careers in engineering are not just for engineers. (Geoff Ford is an accountant and he finds it a good working environment): sales and marketing, purchasing and supply chain, finance, information technology, R&D, HR, Administration, operating, programming, maintenance etc.

Science and mathematics are important. Mr Ford's experience is that girls do better in STEM subjects. However, when they arrive at A-level they change course. The reason why they change is: they skip the subjects, because they think it might become difficult. STEM is a very important ingredient in education. Qualified engineers are in huge demand.

Mr Ford invites us to come to Ford Engineering & Manufacturing.

There is a discussion on national level about 3 million apprenticeships needed, but this was not discussed with the companies. The companies only need 2.5 million, so half a million young people were misled.



Example of Alison Charlton: when she left school with 11 O-levels she did receive advice for her future career. She applied as a part time cook for Ford. She assisted on the shop floor. She became a quality inspector and recently she started working as a production planner. She wishes she could have started earlier. She is a STEM ambassador.

What can be done to influence more girls into following STEM subjects? Show girls the possibilities in every stage. Let them see that they have the capacities to do every job.

### **6. Presentation on Derby College's female STEM engagement, and Robin Webber-Jones, Head of Engineering, Derby College. See presentation in SharePoint.**

Derby has a strong manufacturing base. Teaching engineering is hard work. Welders work alone and earn a lot of money, why would a welder change jobs, earn less money and share his/her experience with youngsters? So there are recruitment challenges. There are role models, which is very important. Boys are underachieving. In general 90% of personnel in colleges is female, but we still need more women teaching STEM subjects. People from all kinds of backgrounds need to teach engineering on all levels.

There was a plan for recruiting new teachers with recruitment events and they have hired apprentice teachers, applied a new flexible working policy and support facilities.

Mayuri Krishnan is an Engineering lecturer and was educated in India. She was a software engineer. People in India found her Tom-boyish (not girlish). When she started teaching there was only 1 girl in 19 students. She was very important as a female teacher for female students. Now there are over 20 female students. Her suggestion is designing machines to make them suitable for (smaller) women.

### **7. Presentation on Chichester College's female STEM engagement, Elaine Johnston, Deputy Head of Learning - STEM. See presentation in SharePoint.**

Elaine Johnston is a scientist. The amount of females in STEM is rising at Chichester College. In Mathematics it is even half male, half female.

They focus on:

1. Gender focus in marketing

There is gender bias in marketing. Brochures need to show girls, boys and also gender neutral pictures. At least 50 50.

2. Local engagement

3. Widening participation

Chichester College organises a Chi STEM Fest (an event) originally targeted at local secondary schools and Chichester College students, but now they also invite local primary schools.

Elaine Johnston has a network for STEM Ambassadors. It's not only about how to attract females, but also how to retain them.



'Project Implicit' is a digital questionnaire from Harvard about gender bias.

<https://implicit.harvard.edu/implicit/index.jsp>

### **8. Presentation on Exeter College's female STEM engagement, Danni Potter, Faculty of Business, IT and A-Plus. See presentation in SharePoint.**

Danni Potter was looking for female pictures for this presentation and found out that lots of pictures at her school were showing males doing the work and females looking and not being active.

40% of the students in the STEM faculty is female. In maths & science it is 50%(!). In construction 5%, engineering 7%, IT 9%.

50% females in maths & science can be explained by the fact that a lot of females choose 'human biology'. Names of studies are very important.

Ms Potter spends 72 hours at 10 primary schools and secondary schools. There is a bus with all the equipment travelling to the secondary schools within these two weeks.

They have a school liaison with the primary schools. They carried out a research in the schools. They found differences, but it's too early to formulate conclusions. They also researched practice a pedagogical learning (how do girls learn). The results will be ready at the end of this year. Catherine will bring the results to Finland next time.

A suggestion is done to compare data between the different schools per country. Marguerite can do this for the UK.

### **9. Presentation from Joanne Icton, Head of Commercial, Sector Skills Council, SEMTA. See presentation in SharePoint.**

We need 20% of children in school to become engineers. In 1970 Lego put a letter in boxes about being creative to boys and girls. She shows a picture of a toyshop; blue colours for the boy toys and pink for girls.

IAC – Industry Apprentice Council. Figures show that females have the experience that they were less informed, have had less guidance and were less encouraged in the engineering career than males who answered the survey.

Female peer mentors increase women's positive feelings about their study/learning, job in engineering. Women underestimate their opportunities. (the confidence gap).

End-point assessment does not make students happy, they have the feeling that they can fail. Continuing assessment is better.

On the short term we can apply a lot incentives, but on the long term we need a cultural change.

In the last two years a woman was the winner of the best British engineering award. Role models are important.

Toolkit apprenticeship diversity: [www.stemappkit.com](http://www.stemappkit.com)

Marguerite says that UK is blue on the map (bad) for attracting girls in engineering and



Turkey is pink, so very good.

We will receive the link to the research.

### **10. Meeting wrap-up and conclusions (Manfred/Catherine).**

1. How to get girls in STEM subjects: you should start very early on with gender neutral activities. Be repetitive in interventions. Marketing should show pictures of men and women. Parents have an important role. Role models are important.
2. Keeping and retaining women in STEM areas. Not only getting girls to do maths, but also promote engineering. Remember the pipeline picture from girls in maths lessons. Give girls the confidence they can do it. More girls will attract more girls.
3. Retaining women in the workforce. Women shouldn't have the feeling that they are blocked in their career. The management team should be partly female.
4. Practical consideration: too large overalls and gloves (not sexy). There are no safety shoes in smaller sizes, machinery is too big, etc.