



STEM: Jobs for the Girls

A learning and networking conference to improve the engagement of Year 9 girl students in STEM education and to inform their knowledge of STEM career opportunities.

A description of a two-year project in Yorkshire and the North East of the UK, a discussion of the outcomes, leading to conclusions and recommendations for future developments.

Published February 2018

EXECUTIVE SUMMARY

This report describes a project designed and managed by a women's voluntary organisation, Soroptimist International of Richmond and Dales, to improve the engagement of Year 9 girl students in science, technology, engineering and maths (STEM) education and to improve their STEM career aspirations, in Yorkshire and the North East regions of the United Kingdom.

A one-day conference was organised to take place on October 5th 2017 at RAF Leeming, to provide STEM learning and networking opportunities for Year 9 girl students, teachers and parents. The two-year planning process is described and was successful in attracting over 200 student delegates from 14 regional schools. Questionnaire measures revealed that the majority of student delegates attending and their teachers were already interested in STEM subjects and that the students were motivated to learn from the topics and hands-on STEM activities offered by the conference.

98% of student delegates that returned a post-event questionnaire (response rate 59%) reported to have enjoyed the conference, finding it a positive learning experience that they wanted to take forward as a focus for their studies at school and afterwards. Similarly 75% of teacher delegates who responded to a post-event questionnaire (response rate 58%) reported that they would incorporate the STEM learning in their lesson plans.

Quantitative and qualitative feedback from the student delegates revealed that the most successful aspects of the conference were the nine hands-on STEM workshops, delivered by leading STEM organisations, companies and education providers, and the opportunities to listen to and meet young women in STEM careers. Results of a six week follow up student questionnaire suggest that STEM apprenticeships as routes to a STEM career could be as appealing to the students as graduate entry.

To optimise a legacy of the demonstrated benefits of the conference, feedback was sought from all contributors to the event, which indicated that schools, regional STEM employers and further education providers are very keen to be more closely linked.

The outcomes of the "STEM: Jobs for the Girls" project included changes in the attitude and motivation of the student delegates towards STEM further education and careers. The results are discussed and conclusions drawn for long-term change, with illustrations of the importance of sharing and delivering best practice for careers advice in schools. Highlighted as a key factor is the joint planning and collaborative working of regional education, industrial and STEM organisations.

Recommendations are made as to how this would improve the representation of girls and women in STEM education and careers, particularly in a UK region that lacks the same opportunities for STEM careers promotion offered in other parts of the country.

BACKGROUND

In the UK women are severely underrepresented in Science, Technology, Engineering and Maths (STEM) careers, particularly in physics and engineering, and this country has the lowest proportion of female engineers in Europe, (Women's Engineering Society, 2016).

An extensive survey by British Gas (2015) revealed that almost half of young women (48%) do not consider working in STEM sectors when planning their future careers. The data showed that this happens for a variety of reasons, including a lack of STEM knowledge (30%), a perception that the industries are sexist (13%) and a belief that STEM careers are better suited to the opposite sex (9%). In other words, that STEM subjects are stereotyped as "too difficult and intrinsically masculine".

Girls, particularly in their early teens when they start to think about their futures after school, may be as competent as their male peers at maths and science, (WISE Campaign August 2016). However, they often dismiss STEM careers through stereotyping and because they are unaware of the many ways that science and engineering can benefit society. Their knowledge of STEM careers is limited by a lack of inspirational women role models and family and social influences can put limits on the career aspirations of girls in STEM, despite the skills shortage and rewarding, varied employment opportunities in these industries, (Ellen Simmons, TED talk, 2017).

Exposure to knowledge about careers within the school curriculum has been found to have a small but significant positive impact, especially on a young person's personal effectiveness and career readiness, (Collins & Barnes, 2017). In line with the Gatsby Report, (2014) benchmarks, early encounters with employers, employees and providers of further and higher education are recommended to enable and encourage young people to map the possible routes into careers and the job market. For STEM careers, the Gatsby report recommends events such as Big Bang fairs, which provide young people with exciting taster experiences of STEM industries.

PURPOSE

The aim of the project, "STEM: Jobs for the Girls" has been to improve the lives and status of women and girls within the UK North East and Yorkshire regions and beyond, through raising STEM careers awareness for Year 9 girl students. Hitherto these regions, despite a local abundance of STEM industries, have not enjoyed opportunities that raise the profile of STEM careers, to match those offered in other UK regions. This is illustrated by a variety of Big Bang Fairs timetabled for 2018 in the South East and West Midlands, compared to few in the North East and Yorkshire, (<http://nearme.thebigbangfair.co.uk/>).

A regional conference was planned to take place in October 2017, to provide information for Year 9 girl student delegates, their parents and teachers on the range of STEM careers open to all. Through examples set by female role models working in STEM industries, emphasise the financial benefits within a thriving and sustainable job market, job security and, most importantly, the chance to reach one's potential and aspire to a rewarding career.

The following objectives were set for the project:

- Encourage secondary schools from a wide diversity of neighbourhoods across the North East and Yorkshire to send Year 9 girl delegates and accompanying adults, (teachers, parents, school governors, careers advisors).
- Investigate the effect of providing an opportunity for Year 9 schoolgirls, parents and teachers, to gain information about the range and benefits offered by STEM careers for women
- By the promotion of world leading science, technology and engineering, to inspire pre-GCSE girls to include STEM skills and jobs within their post GCSE educational and career ambitions.
- To work in partnership with other organisations with similar aims to optimise a legacy of the demonstrated benefits, both short and long-term.

METHOD

Soroptimist International of Richmond and Dales undertook the project in partnership with national STEM focused organisations and services. It is a voluntary organisation and the planning and hosting of the conference was led by the club membership over a two year period.

The aims and objectives of the conference were clearly stated, as above, with measurement of outcomes, both qualitative and quantitative, an essential project output.

The one-day conference was free of charge for all delegates and schools from across Yorkshire and the North East regions were invited to bring Year 9 girls, whether or not they might be interested in pursuing an academic STEM route via University or entering STEM apprenticeships. The intention was to present the wide variety of opportunities offered by STEM careers, including the beneficial employment terms, and to underline that they are not only for boys and men to pursue.

A conference venue was chosen capable of accommodating at least 300 delegates and offering space for the following:

- A conference hall for presentations, setting the context of the opportunities offered by STEM education and careers for girls and women.
- A range of hands-on STEM workshops run by prestigious STEM education and industry providers. Two 90minute workshops to be attended by each girl.
- A large market place of stands run by STEM education providers and STEM employers and mentors, offering a networking opportunity for the delegates and regional STEM industries to discuss qualification routes, career opportunities and possible work experiences.

Following completion of the conference event, plans are progressing to use the conference outcomes as a platform for developing sustainable benefits for the future of STEM education and employment of girls and women in the North East and Yorkshire regions.

The two-year project planning process was strategically managed, carefully monitored and recorded. Choices and decisions were made at every stage of the project developmental process and these were recorded on a project timeline, (Appendix A).

Short questionnaires were devised to measure:

- Student delegate interest in the conference topics before attending
- Delegate experiences, both student and adult, at the conference
- Workshop provider satisfaction
- Market place exhibitor satisfaction

Three questionnaires were devised for student delegates:

- On arrival at the conference
- On departure from the conference
- 6 weeks post – conference.

A single questionnaire was given to adult delegates to complete at the end of the conference.

All delegate questionnaires included questions with discrete yes/no answers, multiple-choice questions and some requesting comments.

Analysis of the questionnaire replies was conducted, both quantitative and qualitative and raw data interpreted. The questionnaire data can be found in Appendix D.

DISCUSSION OF RESULTS

To assess the level to which the four project objectives were met, analysis focused on project process outcomes resulting from the project management, results obtained from the questionnaires, including quantitative scores and commentary answers to open-ended questions. Also email and social media feedback quotes, (Appendix C). The degree to which each objective was met is now discussed:-

1) Encourage secondary schools from a wide diversity of neighbourhoods across the North East and Yorkshire to send Year 9 girl delegates and accompanying adults, (teachers, parents, school governors, careers advisors).

Social media was used to attract and inform secondary schools about the conference, including local authority maintained, academies and independent schools. Ofsted ratings and Independent Schools Inspectorate (ISI) results were used as selection criteria to decide which of the 500 regional secondary schools to approach first. Schools within the whole range of inspection results were targeted.

Those 14 schools (Table One) that booked delegate places were predominately Local Authority Comprehensives (9), plus 2 Academies and 3 Girls' Independent Schools. Ofsted rated "Good" schools predominated (6), with a few "Requiring improvement" (2) and "Outstanding" (2), none were rated "Inadequate". ISI ratings were all "Pass" (3). The location of the schools represented a wide geographical area from Tyne and Wear to West Yorkshire. Understandably most (57%) were from North Yorkshire.

The number of student delegate places booked (203) exceeded expectation, with the size of the student groups ranging from 5 to 36 with a median of 12. This equated to the seats on an average-sized mini-bus. Just over 30 adult delegates accompanied the students and nearly all were teachers. One parent, one school governor and one careers advisor also attended the conference.

sirichmondanddales@yahoo.com
<http://stemjobsforthegirls.co.uk/>

These results demonstrate that recruitment of conference delegates was successful in attracting a representative range of schools to attend. The adult delegates were almost exclusively teachers and these teachers are to be commended for recognising the importance of the conference aims and prioritising attendance within their school teaching curriculum.

School	Students N=203	Teachers N=30	Location
Bedale High School	12	2	Bedale, N. Yorks.
Richmond School	19	5	Richmond, N. Yorks.
Risedale Sports and Community College	13	2	Catterick, N. Yorks.
St. Francis Xavier School	23	2	Richmond, N. Yorks.
Queen Margaret's School	12	3	South York, N. Yorks.
The Mount School	16	1	York, N. Yorks.
Queen Mary's School	11	2	Thirsk, N. Yorks.
Stokesley School,	13	1	Stokesley, N. Yorks.
Titus Salt School	8	2	Baildon, W. Yorks.
Benton Park School	12	2	Rawdon. Leeds, W. Yorks
Houghton Academy	10	2	Darlington, Co. Durham
Hurworth Academy	36	3	Darlington, Co. Durham
Seaham High School	6	2	Seaham, Co. Durham
St. Thomas Moore School	12	1	Blaydon, Tyne and Wear

Table 1: Schools that attended "STEM: Jobs for the Girls"

The questionnaire completed by 88% of the attending student delegates on arrival at the conference provided a profile of their knowledge of STEM subjects, general interest in the subjects and in the conference.

The girls reported that 100% of respondents studied Maths, 92% Computing, 91% Chemistry, 89% General Science, 57% Biology and 20% Physics.

This profile is representative of Year 9 STEM curricula that, in addition to obligatory Maths, can have approaches to pre-GCSE science curricula dependent on the teachers' interpretation of core requirements. It is of interest that, although only 20% of girl respondents reported studying Physics, it could be that the 80% of respondents who did not believe they studied it, were unaware that subjects they studied, such as magnetism, were part of a Physics curriculum.

Questions about their interest in STEM subjects at school revealed that all respondents had some level of interest in these lessons but 90% of respondents said this depended on whether the lessons were made interesting.

Similarly, a multiple-choice question revealed that 59% of respondents were attending the conference because they thought it would be interesting and 21% already were considering a STEM career. 40% of respondents had heard about it from a teacher who recommended she attend.

These questionnaire responses revealed that the student delegates represented a cohort sample of Year 9 girls who were largely primed to participate enthusiastically in what the STEM conference could offer them.

2) Investigate the effect of providing an opportunity for Year 9 schoolgirls, parents and teachers, to gain information about the range and benefits offered by STEM careers for women

On leaving the STEM: Jobs for the Girls conference, 59% of the student delegates completed and returned a second questionnaire.

Of these respondents 98% said they had enjoyed the day, of which 40% found some of it enjoyable. Asked whether they had learnt anything new at the conference, 76% of respondents answered, "Yes". Some were specific about what they had learned and the most frequent comment, from 12% of respondents, was that "Girls can do STEM". Significantly 68% of the respondents said that what they had learned at the conference made them want to continue to study science.

"I was already wanting to study science, but it inspired me more"

"Not science but technology".

"Today showed me the potential, so maybe".

" There are lots of different jobs involved in engineering"

" Much more options for women than I thought".

These results concur with the previous finding that the student delegates were motivated to engage with what the conference had to offer and that, for a significant majority, it had been a positive and rewarding learning experience that they wanted to take forward as a focus for their studies at school and afterwards.

A questionnaire was also distributed at the end of the conference to as many adult delegates accompanying the students as possible but the return rate was quite low. However, of these respondents, over 80% considered that the content of the conference had been pitched at an appropriate level for the students. 75% of delegate teachers said that they would incorporate the STEM workshop teaching materials in their lesson plans.

The venue chosen to hold the conference was RAF Leeming. For many reasons this was the right decision as it attracted the attention of schools, demonstrated "STEM in action" and enabled a close, supportive logistical relationship to develop with the Soroptimist team.

3) By the promotion of world leading science, technology and engineering, to inspire pre-GCSE girls to include STEM skills and jobs within their post GCSE educational and career ambitions.

The design of the conference programme (Appendix B) was intended, firstly through short talks given by inspiring women, remind the delegates of the potential contribution of women to STEM industries and the very positive benefits of having a STEM career.

sirichmondanddales@yahoo.com
<http://stemjobsforthegirls.co.uk/>

Nearly 14% of the student delegates specified the opening speeches to be the least satisfactory aspect of the conference. However, 60% found the talk on the historical contributions made by women to STEM and the personal experience of a young female engineer's route through an apprenticeship scheme to an exciting career, to be significantly the most interesting. This suggests strongly that female role models had a powerful and positive effect on capturing the imagination of the student delegates

"Pippa was the best" *"All the speeches were interesting but could have been shorter."*

For most of the rest of the day the student delegates were involved in ninety minute hands-on STEM workshops run by experts in the fields of science, technology and engineering, with mathematics an integral component in all. Nine such workshops were available and each student delegate could choose two to attend, (Table Two).

Science and Technology Facilities Council, Daresbury	Explore your universe - James Webb telescope
Institute of Civil Engineers	Engineering our infrastructure: build a bridge
Department of Computing, Teesside University	The next big thing
Sir Robert McAlpine	Designing a building through effective teamwork: design a school
De Puy Synths - a Johnson and Johnson Company	Challenging everyday designs
Royal Air Force	Communications networks: how are they built?
Department of Computing, Teesside University	Computer games design
Department of Physics, York University	Robotics now and in the future
Department of Forensic Science, Teesside University	Crime scene science: who did it?

Table 2: 90 minute STEM workshops

The student delegate end-of conference questionnaire included open-ended questions to explore their opinions of the STEM workshops. The most highly favoured STEM workshop was the Crime Scene Science workshop run by the Department of Forensic Science, Teesside University, being enjoyed the most, that is by 17% of the student respondents.

"I really like Criminology"
"Building a bridge – I found my career"

Adult delegates could observe the workshops and also attend short talks given by STEM employers.

Feedback from the adult delegates was split equally between those that thought the overall programme was too full and therefore too rushed and those that thought that it was appropriate.

Throughout the day an extensive market place of more than twenty STEM exhibitors, together with a Military Village (Tables 3 and 4) was open for all delegates to visit and network. These stands provided information and a forum for delegates to explore opportunities for STEM further education, apprenticeships and careers, particularly those located in the North East and Yorkshire regions. Over 80% of student delegates reported having spoken with the exhibitors.

“Most interesting thing today was talking to the different stall holders in the market place”

“Meeting people in different jobs in engineering”

”Talking to paramedics in the Army”

“There’s a huge variety in STEM jobs”

“Engineers help medically”

“Teamwork is Key”

Although a student questionnaire sent out to all attending schools six weeks after the conference had a low return rate and only represented 15% of the those that attended, the respondents’ answers suggested that the event had positively affected their views on STEM education and careers. Nearly 90% of the respondents said that the conference had been worthwhile attending and had discussed it afterwards with family, friends and/or teachers. 75% wanted to find out more about STEM jobs and careers and, of particular interest, is that an equal number considered

apprenticeships as the route to a STEM career as those that would choose a University course.

HOST STAND HOLDERS N=24	
Institution Civil Engineers (ICE)	Hitachi
Science Technology Facilities Council (STFC)	SEMTA
Institute of Physics	Derwent Training
STEMnet	NYBEP
University Teesside	SIGBI & SI R&D
York University	Castle Hill Bookshop
WISE (NE)	Glaxo Smith Kline (GSK)
WISE (UK)	Sir Robert McAlpine
Women’s Engineering Society (WES)	Northumbrian Water Scientific Services
Two Ridings Community Foundation	DePuy Synthes (Johnson & Johnson)
Reece Foundation	JDR Cables
University Training College (UTC) Sth Durham	KPMG

Table 3: Market place stall holders

RAF
4 th Infantry Brigade, Army
REME
Royal Navy
Marine Soc & Sea Cadets

Table 4: Military village

4) To work in partnership with other organisations with similar aims to optimise a legacy of the demonstrated benefits, both short and long-term, of networking between schools, STEM based employers, education providers and apprenticeship schemes

A questionnaire given to market place stall holders at the end of the conference revealed some interesting results. The response rate was 66%.

Nearly all suggested the need to increase the contact of delegates with the market place, which needs to be addressed at future events. However, this also suggests that the contact and networking that did occur was considered valuable, which concurs with the student delegate feedback.

All five of the major regional STEM employers with stands in the market place, that responded to the questionnaire, stated that they offer work experience opportunities to school students, outreach STEM workshops to schools and apprenticeships. Similarly, the educational establishments with market place stands also stated that they offer STEM outreach workshops for schools.

A feedback questionnaire to the providers of the conference STEM workshops had a response rate of 33%. The replies received were very positive about the opportunity it gave them to engage with Year 9 girl students and that the girls were highly engaged with the activities.

These results strongly suggest that there is an appetite from both girl students and regional employers and further educational establishments to be more closely linked. Further investigation could reveal how well these advantageous relationships are being promoted and used.

National organisations that promote increasing the numbers of girls and women in STEM education and careers (WISE, WES, STEM LEARNING, SEMTA) were represented at the conference and provided valuable feedback. Although already closely linked nationally with common aims, these organisations found the conference a very helpful opportunity for networking and measuring the excellent engagement of the regional girl students, employers and educational establishments, particularly schools.

For the Armed Forces present, (RAF, Army and Navy) opportunities were taken for engaging with potential recruits to the military. This included a village of military vehicles, displays and a Communications STEM workshop led by RAF personnel.

2018 is the Centenary of the founding of the RAF and activities and events have been planned across the UK to promote the RAF credentials for STEM careers, particularly engineering. RAF Leeming's close involvement with the success of the STEM: Jobs for the Girls conference has led to significant investment in the Station's STEM outreach into local schools and the possible repeat of the STEM conference format in 2018.

CONCLUSIONS AND RECOMMENDATIONS

The project "STEM: Jobs for the Girls" has demonstrated that a well-managed team of volunteers, all women, can plan and host a highly successful, unique educational event for over 200 Year 9 girl students from schools in Yorkshire and the North East regions. Key skills involved have been teamwork, networking, time management and creativity. Together with a large dose of self-belief and resilience!

Crucially the project understood the importance of working in partnership with other organisations keen to meet the project objectives. It is likely that the conference would have failed to recruit a viable number of delegates without the generous offer by the RAF to hold the conference at RAF Leeming. Similarly, the financial support by regional funding grants and corporate sponsors, plus speakers and workshops providing pro bono involvement, enabled the project to meet its budgetary target.

The post-event feedback pointed to considerable encouragement by student delegates, schools and contributors: a) to hold a similar conference in 2018, b) to take forward the learning into the school curriculum and c) to build on the networking contacts achieved.

It is unlikely that Soroptimist International of Richmond and Dales will have the resources to achieve the first of these requests but it will, through the “STEM: Jobs for the Girls” website aim to facilitate the other two objectives.

The RAF has embraced all these ambitions enthusiastically with increased investment. Since the conference there has been a surge of requests from local schools for the RAF Leeming team of STEM Ambassadors to run STEM workshops in the classroom. It is hoped that this will encourage a growing number of STEM clubs to be set up as extra-curricular activity in schools

The evaluation of the project has revealed a hunger by Year 9 girl students in the region to find out more about STEM educational routes to the wide variety of STEM careers available, hitherto assumed to be based in heavy industries and not suitable for women.

Feedback from students and teaching staff suggests that there is insufficient sharing of best practice in careers advice at a local and regional level, leaving resources within regional STEM industries untapped. This lack of information applies to girls and boys throughout secondary school education, together with their parents, who are frequently instrumental in steering teenagers’ further education and career choices.

“STEM: Jobs for the Girls” has demonstrated that an event that incorporates STEM skills learning and information about STEM education and careers can be very productive. With this wide scope of purpose, students and teachers can be energised to become STEM ambassadors in their own right. School websites, parents’ evenings and Open Days can provide opportunities for STEM careers promotion and challenge some of the gender stereotypes.

In line with previous reports (Mann et al, 2010), and central to these conclusions and recommendations, is the need for better co-ordinated STEM careers advice and work experience, that encourages employers, educators and schools to work more closely together. Focussed on promoting best practice widely, perhaps, as an example, the availability of STEM activities, of which there are many. The successful outcomes from this conference will be promoted widely to build on the momentum that this project has achieved.

REFERENCES

British Gas (2015). Two thirds of young people worry about career prospects after exams.

British Gas 10 August 2015.

Collins, J., & Barnes, A. (2017) Careers in the Curriculum. What works? London. The Careers & Enterprise Company.

Gatsby Charitable Foundation, (2014). Good Careers Guidance London: Gatsby Charitable Foundation.

Mann, A., Lopez, D. & Stanley, J. (2010). What is to be gained through partnership? Exploring the value of education-employer partnerships. Taskforce paper 3, Education and

Employers Taskforce. London: Education and Employers Taskforce.

Simmons, E., (2017) TED talk, University of Glasgow.

WISE Campaign (2016) <https://www.wisecampaign.org.uk/resources/tag/statistics>

Women's Engineering Society, (2016). Statistics on Women in Engineering. Women's Engineering Society, March 2016.

APPENDIX A: Project planning process and timeline

Months	Management	Budget	Logistics	Delegates	PR	Evaluation
1-6		Finance lead appointed	Venue options explored	Feasibility study of demand		Methodology agreed
	Subgroups agreed	Project account set up	Select & invite speakers			
	Steering group terms of ref.	Funding grant submissions	Select & invite workshops			
	Seek partners & endorsements	Sponsorship categories set				
7-11	Monthly meetings continue	2 grants won 1 grant failure	Speaker bookings - free	Define Approach to Schools	Explore options and costs	
			Workshop bookings - free		Website design & build	
			Market place stall invitations		PR Materials developed	
			RAF Leeming venue option			
13 - 18	Monthly meetings continue	2 grants unsuccessful	Final draft conf programme		Plan Press launch	
	Cons. Engineer joins Steering group.	Project review presented to club	Market place stall layout		Twitter & Facebook Accounts in place	
		Recruit sponsors	RAF Leeming venue focus			
19 - 24	Monthly meetings continue	First major sponsorship	RAF Leeming venue chosen	Schools book on website	Publicity flyer to schools	Questionnaire items decided

		Successful visit by Fund trustee	Action planning venue layout	Bookings start	V successful Press Launch	
		Quote from RAF favourable	Meet RAF leads monthly		High profile endorsements	
		Recruit sponsors	Workshops and stalls booked		Twitter, Facebook and Website activity	
			Safeguarding agreed.			
24 - 27	Steering group meets more often	Major & minor sponsorships	AV company hired	200+ Students booked	Final info for location etc.	Questionnaires printed
	Frequent visits to RAF Leeming	Budget is met	Supply photo & video agreed	Adult bookings low	Twitter, Facebook and Website activity	
			Bags, ID badges folders, lanyards prepared			
			Conference stewards rehearsal			
ON THE DAY	Coordinate with RAF, Speakers, Stallholders & Schools	RAF provides refreshments & lunch	Stewards marshall delegates to all activities			Questionnaires issued and collected
POST – CONF	Review by Steering group	Cost met of 2 yr more website	Legacy strategy agreed by club		Photos/videos of event	6 wk post-event qstn to schools
	Update to club	Account closed	Post-event report			Feedback from market stalls
	Event management completed		Emphasise encouraging others to pursue		Revised Website relaunch	Feedback from workshop hosts
			Distribution of report widely			Analysis of evaluation data

APPENDIX B: “STEM: Jobs for the Girls” Programme

STEM JOBS FOR THE GIRLS CONFERENCE PROGRAMME

- 08.15 - 09.00 **Registration** 09.30 – 09.40 **RAF Security Briefing**
- 09.40 – 09.50 Welcome from Andy Cooksley, CO, 90 Signals Unit, RAF Leeming
- 09.50 – 1 “Why Soroptimists?” Judy Sheahan & Angela Edwards, SI Richmond Dales
- 10.00 – 10.20 “Not just for boys” KEYNOTE SPEAKER Ann Watson, CEO SEMTA
and Pippa – my experience and route to a career in engineering
- 10.40 – 11.00 “A classroom to boardroom strategy to achieve gender balance:
what works & opportunities for collaboration” Helen Wollaston CEO WISE
- 11.00 – 11.10 **Students move to Workshop One Assemble in Conference Hall**
- 11.10 – 11.30 “Getting girls into Physics” David Bailey, National STEM Centre
- 11.30 – 12.00 **BREAK Teachers and STEM Ambassadors bus to view Workshops**
- 12.00 – 12.10 “Helping people do more, feel better, live longer” Glaxo Smith Kline PLC
- 12.10 – 12.20 STEM opportunities in Her Majesty’s Forces
- 12.20 – 12.30 “Northumbrian Water: More than just Water” Scientific Services, N’mb Watr
- 12.40 – 13.30 **LUNCH Students return from Workshop One**
- 13.30 – 13.40 **Students move to Workshop Two Assemble in Conference Hall**
- 13.40 – 14.00 “Woman in a man’s world” Carole Cuthbertson, Sir Robert McAlpine Ltd
- 14.00 – 14.30 **BREAK Teachers and STEM Ambassadors bus to view Workshops**
- 14.30 – 14.40 Proudly building Britain’s future heritage” Sir Robert McAlpine Ltd
- 14.40 – 14.50 “Breaking down engineering stereotypes in schools” J. Smith, Hurworth Sch
- 14.50- 15.00. “It Takes a Village: The importance of STEM positive communities”
DePuy Synthes
- 15.00 – 15.50 **BREAK Students return from Workshop Two**
- 15.50 - 16.00 Evaluation and Close Judy Sheahan, President, SI Richmond and Dales

APPENDIX C: Selection of emails received after the conference.

Margaret Emsley, Soroptimist International GB & Ireland - Past President

Congratulations on a very successful STEM Jobs for the Girls Event. I do understand how much work goes into organising an event like this but I hope you now feel that it was all worthwhile. To have so many organisations and sponsors involved was fantastic and a tribute to all your persistence and planning. The number of girls attending was also remarkable.

I was lucky - I had a role model in my civil engineering cousin and without him I think it highly unlikely that I would have pursued a career in engineering - in fact I am certain I would not have as I would have remained blissfully ignorant of engineering as a career. But many of yesterday's attenders are probably not so fortunate and that is why days like yesterday are so important. I often say that the idea of such events is not to try to persuade everyone to pursue a STEM related career, but to make them aware of the opportunities that STEM offers so they can make an informed career decision. I know I would make the same choice again and I also know that STEM offers such a wide variety of exciting opportunities, many of which have a big social responsibility agenda - something which I think often appeals to girls more than boys but something we often do not make enough of.

It will be interesting to see the feedback - which I am sure will be positive.

Sgt Kevin Stannard, STEM Ambassador Lead, RAF Leeming

Soroptimist International of Richmond and Dales will not be running the event next year, one of the key objectives for them was to create a legacy. I am delighted to say that this has been achieved and in a really short timeframe. Since the event we have been asked by both schools and organisations if we will be running the event again.

I am pleased to say that we are hoping to run two events next year, one in Jun/Jul for both girls and boys aimed at the 15/16yr old bracket. The idea of this event will be to promote career choices to students who have just sat their GCSEs and will be thinking about options. The second event will be the same as this year's planned for early Oct for Yr 9 girl students only. Also, the STEM team and I from Leeming have been invited to a number of schools to run STEM events and deliver presentations, all off the back of the STEM Jobs for the Girls event on the 5th October.

Head of Richmond School

On behalf of the staff and students at Richmond School I would like to thank you for organising such wonderful experience for our students who attended the recent 'STEM jobs for the girls' conference. STEM is an important, whole school focus for us this year and the opportunity you offered the girls was really gratefully received- they relished the experience. Very many thanks for your support and partner work with the school and I look forward to the school being part of further projects with the Soroptimists.

Pearson Engineering

Thanks for hosting us. I'm glad that it went so well – the workshops did sound brilliant

The Mount School York

Thank you for the event. The girls had a great day and any glitches were not at all noticeable! They were buzzing about everything they had seen when they returned to school. Same again next year?

Ayesha Iqbal

Thank you for the amazing opportunity of having me at RAF Leeming yesterday. It really was an amazing experience and I thoroughly enjoyed it. I thought it was an educational and fun experience. I definitely have recommended it to many people for future references. It was nothing but a positive day.

Elsbeth Robinson - Darlington Soroptimist.

Please convey my thanks and congratulations to the Richmond Soroptimists for a very successful conference on Thursday. There can't have been one delegate who didn't get something out of it. I certainly came home with lots to tell Chris and my son, Peter, the engineer, who was most impressed. Let's hope many girls were also inspired into considering engineering as a most rewarding career. Well done!

Castle Hill Bookshop, Richmond

Thank you to you, and all your wonderful team, for the opportunity to be part of this STEM Conference – it was utterly inspiring and wonderful to see the young women enjoying the experience and giving them food for thought. I hope you are all recovering well – it was a very well organised event and a privilege to be part of something that helps improve young women's futures.

York University Chemistry Department

I am glad that everyone enjoyed the day. It is great to see the Soroptimists promoting STEM at such a big event. It was exciting to be on an RAF base which will make the event even more memorable for people.

Leeds Beckett University

I think the event was a great event and I wish there was something like this when my daughter was school aged. Thanks for organising - you and your team should be proud bringing a significant STEM event to the North and I hope that we can be part of another one in the future.

Vicky Allport Teesside University

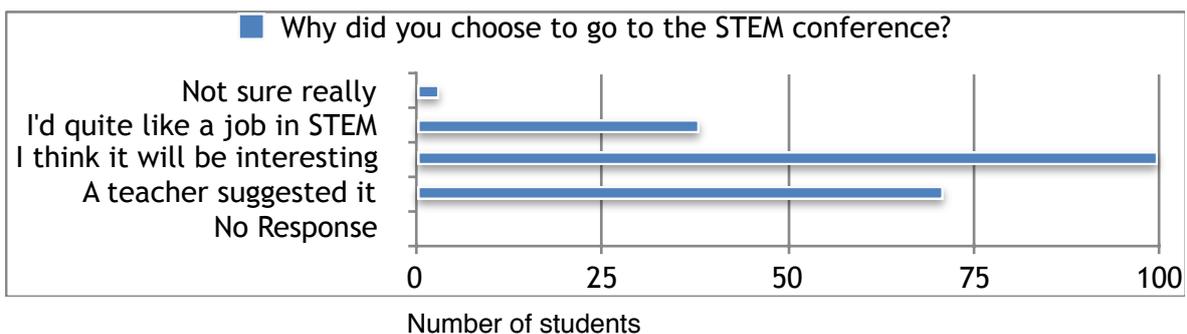
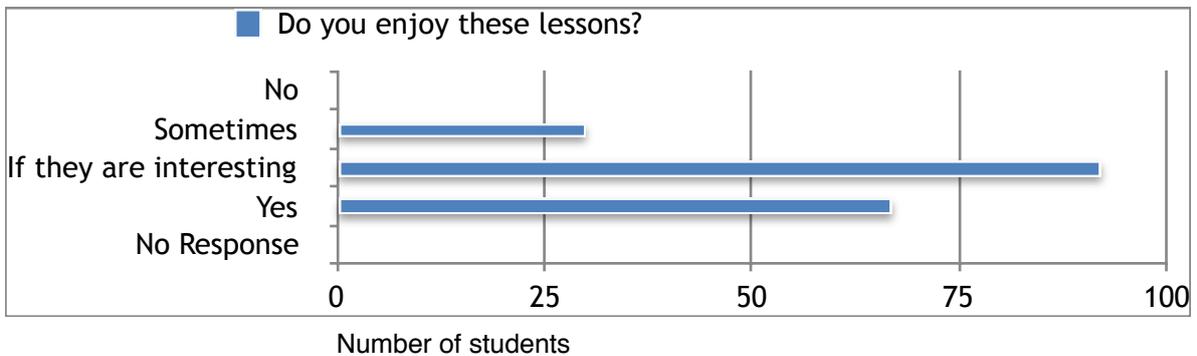
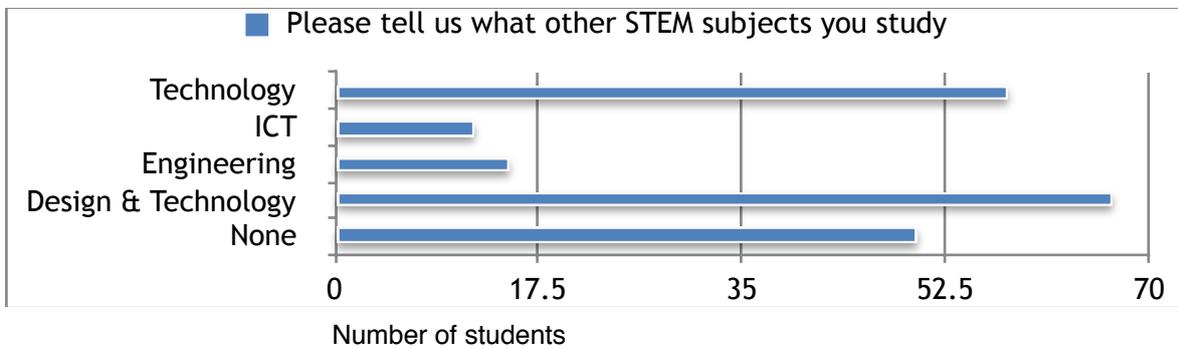
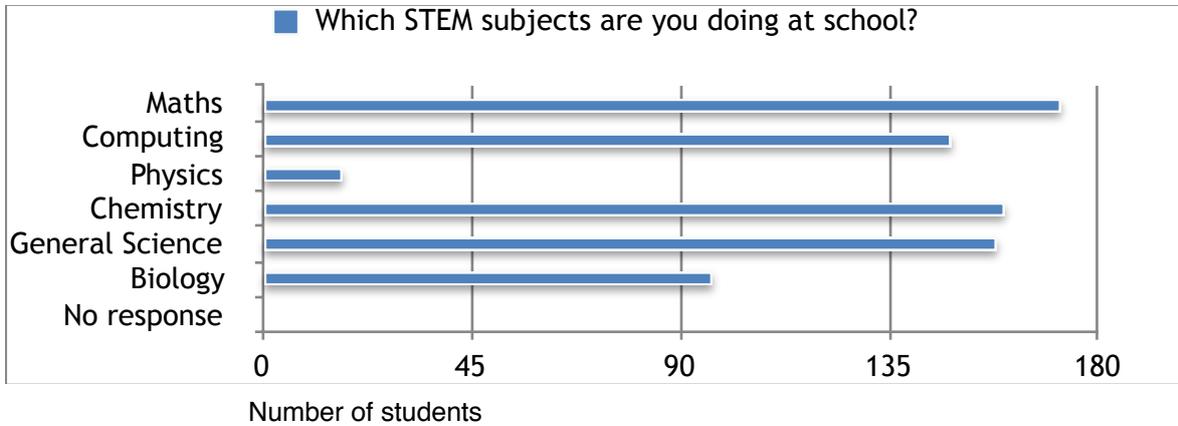
It certainly was a success, I hear from our ambassadors that the workshops went well. Thank you for letting us be a part of it. It was a pleasure to work with yourselves and your organisation and regular communication was superb! Thank you

**Science and Technology Facilities Council (STFC), Daresbury Laboratory, Warrington. -
Hosted the James Webb telescope infra red camera STEM workshop.**

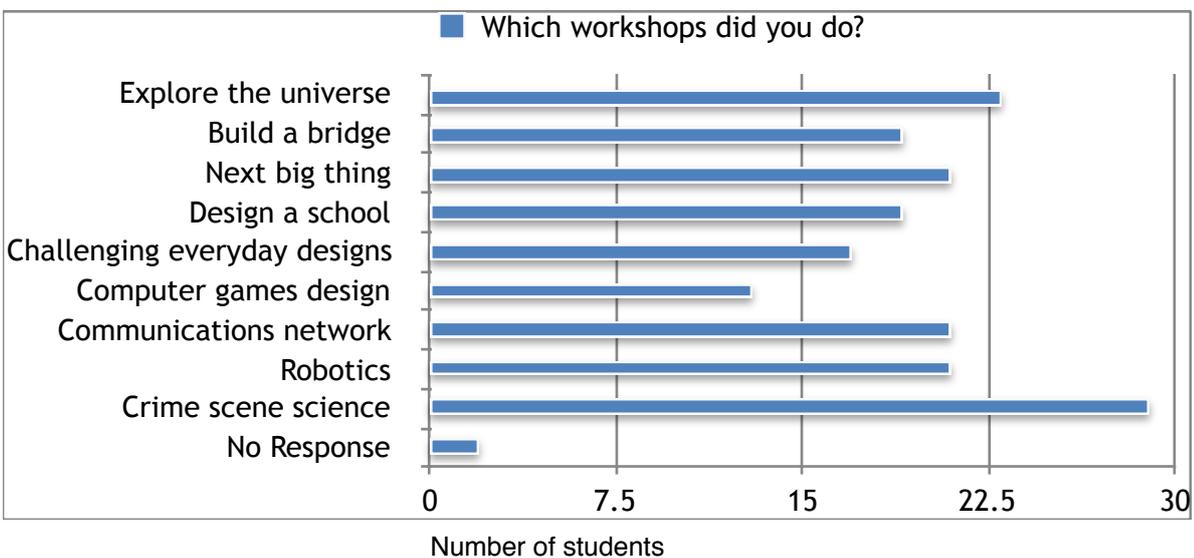
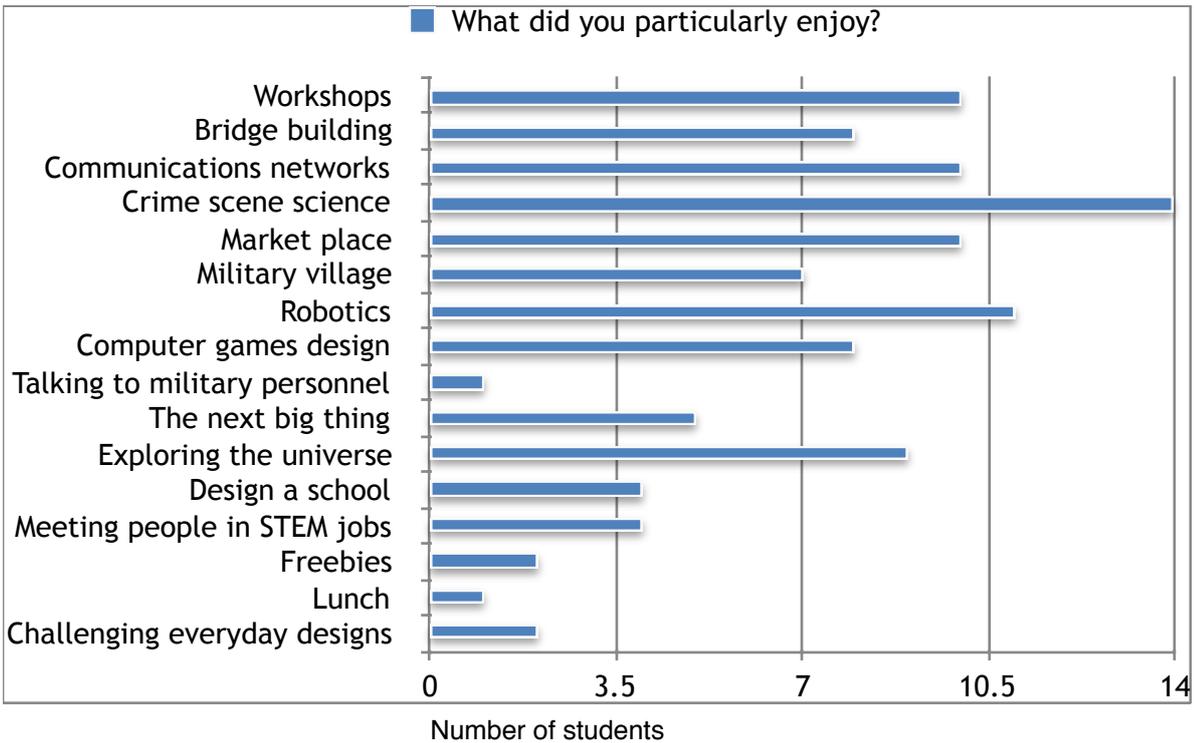
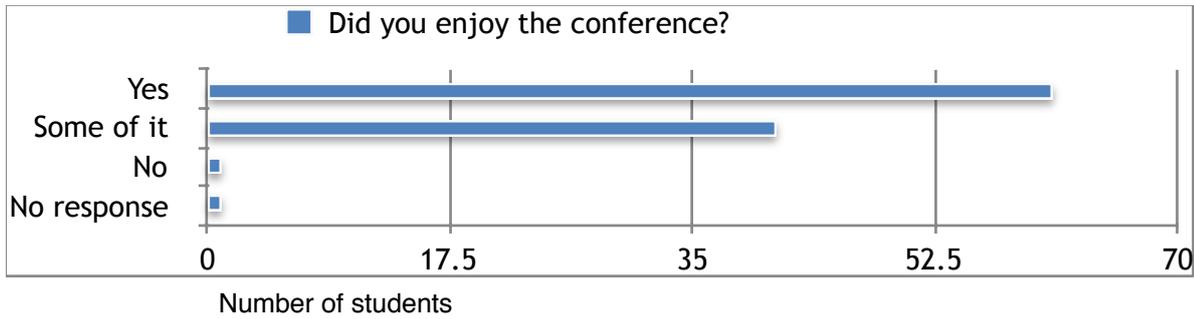
This event is a fantastic opportunity to engage with pupils from the North East. It was useful to deliver our outreach in a region that we don't often have the chance to interact with, especially as we were able to interact with pupils from a lot of schools who will hopefully go on to become ambassadors in their own schools. This was a huge highlight of the day for us! The day itself was incredibly well organised. Thank you for a lovely day and it was great to work with such passionate people. We would love to support this unique event again.

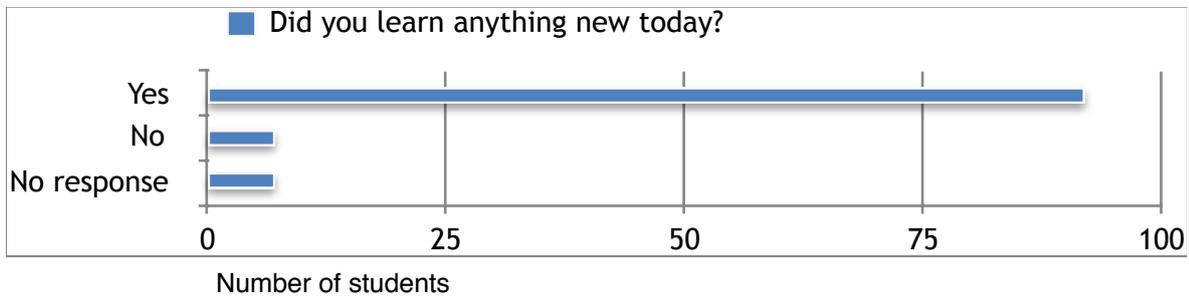
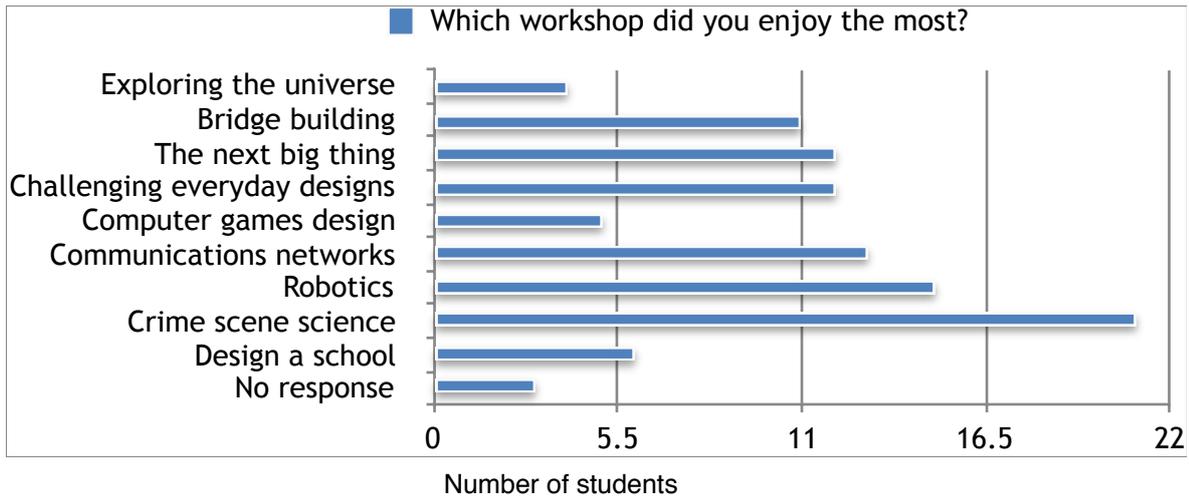
APPENDIX D: Statistical analysis of Questionnaire responses

The **first student questionnaire** was completed on arrival at RAF Leeming. The response rate was 88%.

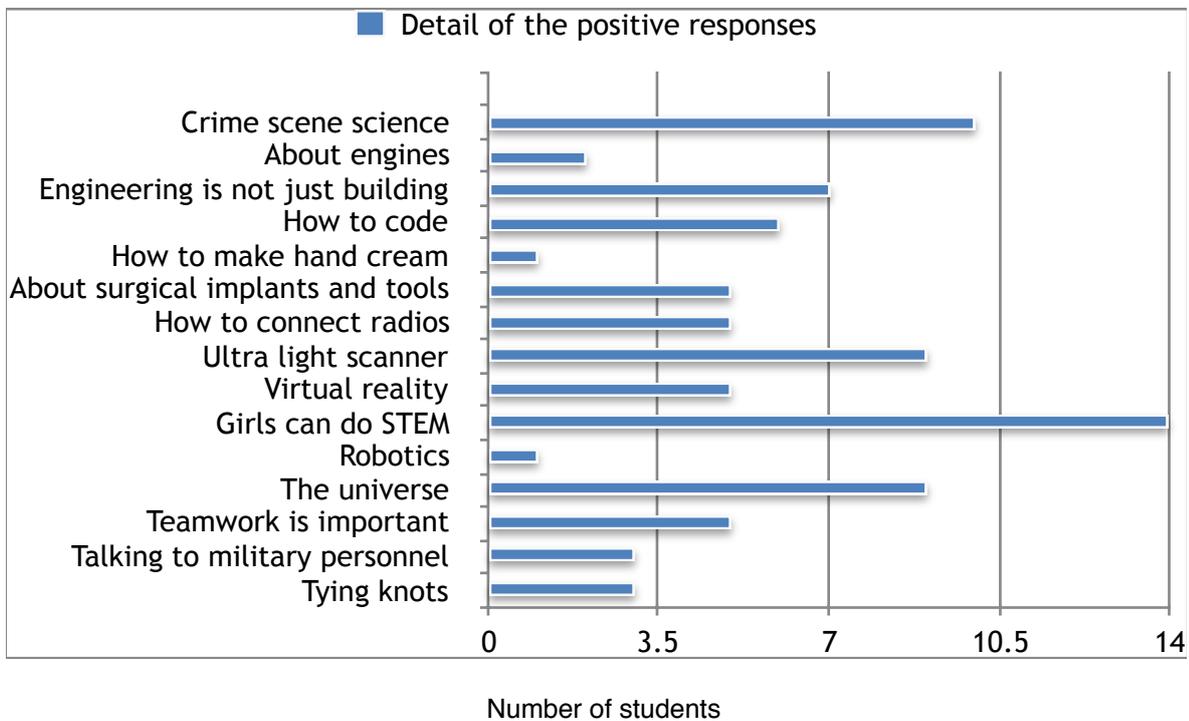


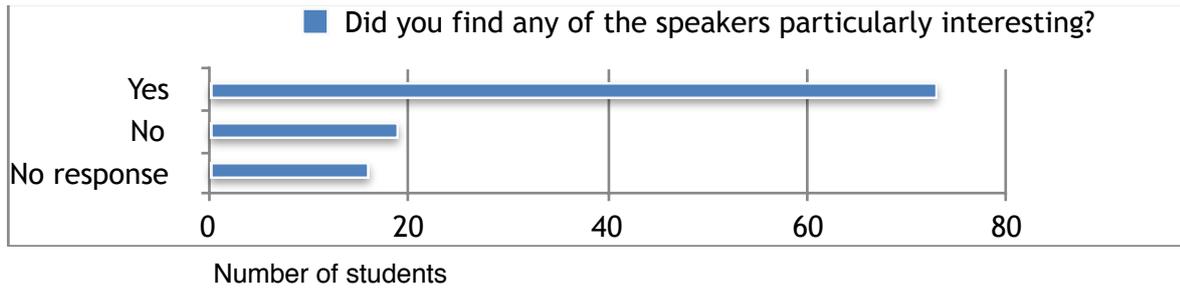
The **2nd student questionnaire** was completed at the end of the conference. The response rate was 59%.



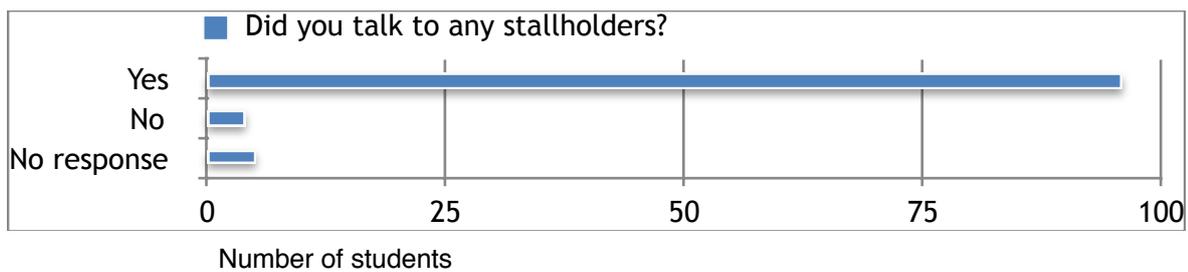
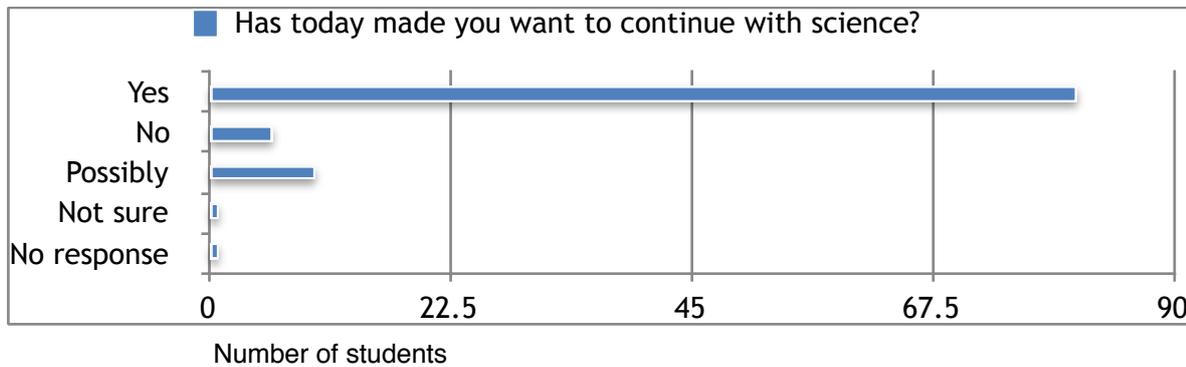
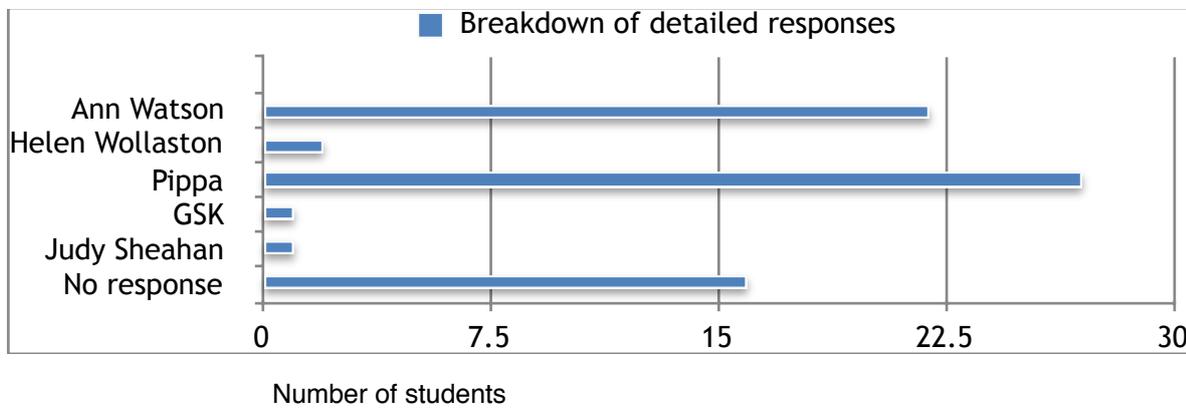


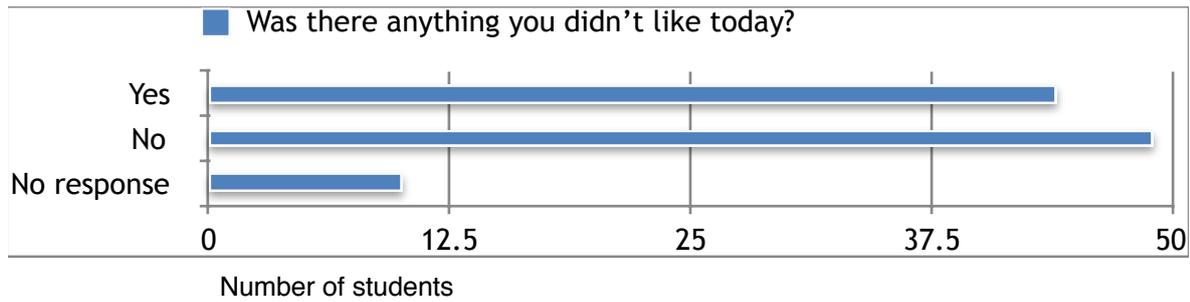
Of those who gave a positive reply, some were specific about what they had learned, or from what subject area their learning came. These responses break down as follows:



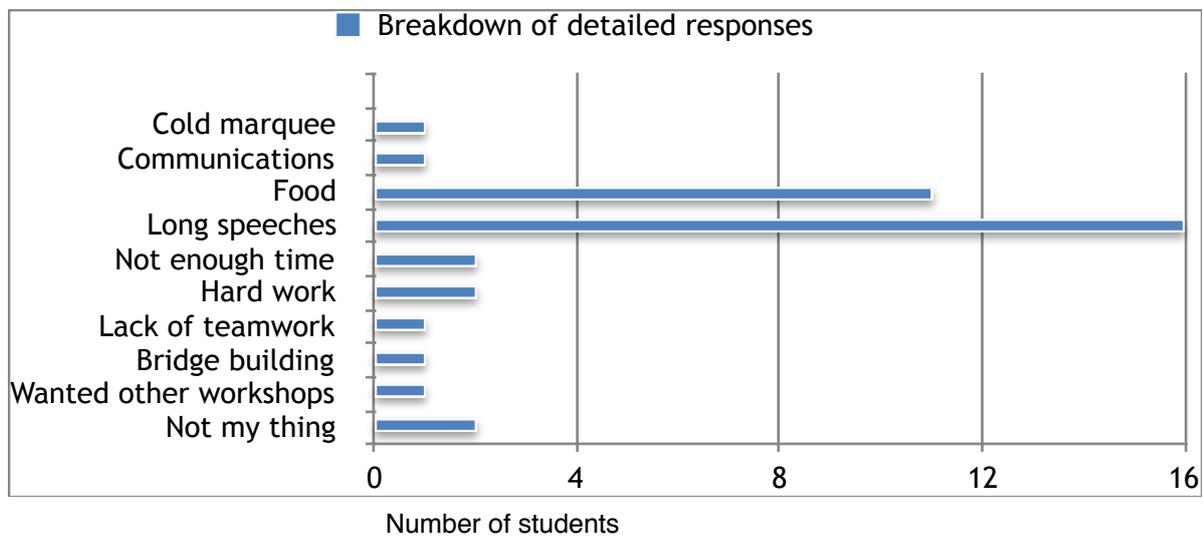


Some were specific about which speakers they liked:

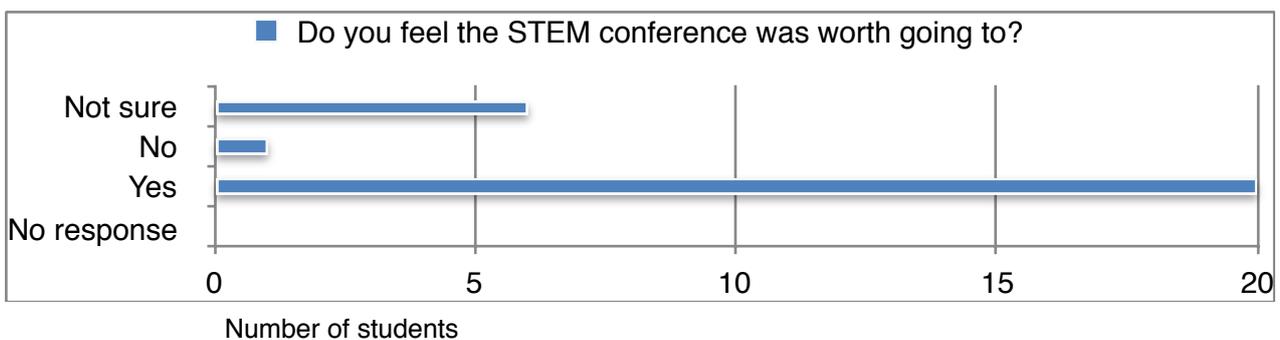
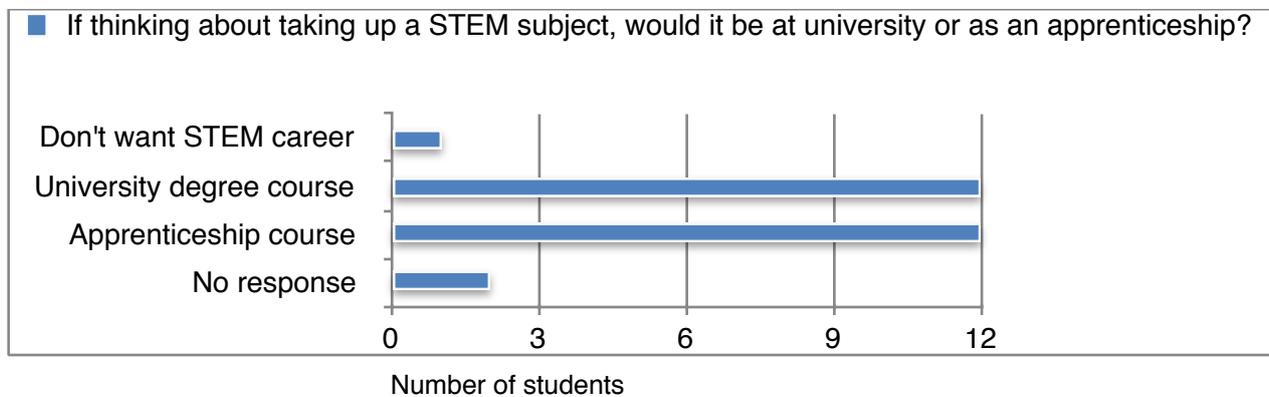
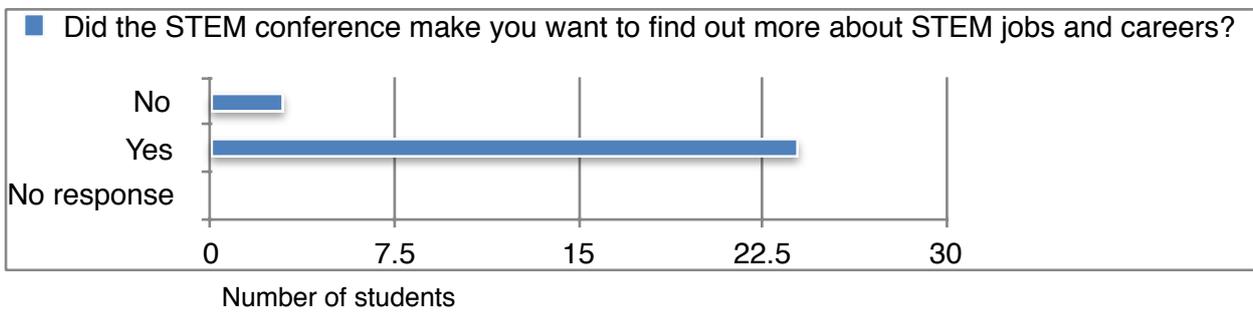
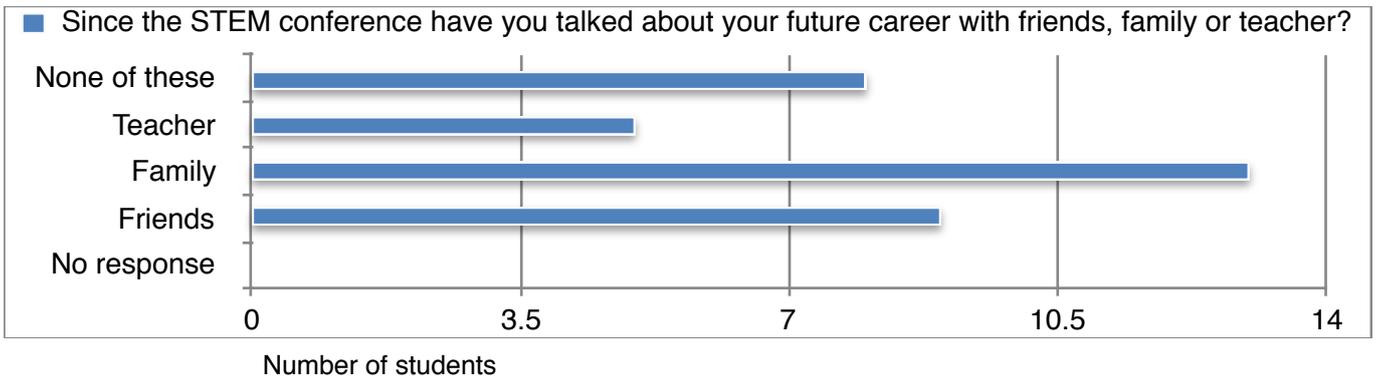




Some were specific about what they didn't like:



The **third, follow-up student questionnaire** was sent out to schools six weeks after the conference. The response rate was 15%.



The **adults' questionnaire** was administered to all adult delegates at the end of the conference. The response rate was 58%.

