

Meeting: Children, Education and Skills Sub-committee

Date: 15 February 2016

Title: Young Women and STEM

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Service: Health, Education, Care and Safeguarding
Employment and Skills

Wards affected: All

1. Purpose

This report provides the Committee with an update regarding the joint work between the council and partners to assist schools support the goal to increase the uptake of STEM subjects particularly by girls in schools and the resultant access to STEM jobs.

1.1 Recommendations

The Committee is recommended to consider the report, make comment and consider if they require further information.

2.1 Context and Background

2.2 Cabinet received a report in April 2015 that made recommendations from the Overview, Scrutiny and Policy Development Committee that were then accepted by Cabinet. This report provides a short summary regarding these recommendations.

2.3 The outcome of the scrutiny of this area was that although there were many activities being delivered to support increasing the uptake of STEM subjects in schools there was still a significant gap in terms of girls taking up these subjects at GCSE, A level and Further Education.

2.4 The six key recommendations and three additional points are summarised in Annex 1.

2.5 A short update is provided against each recommendation for information.

2.6 A full data review of A level subject take up and attainment will be completed once national data is available to us. Annually this is carried out in the Spring term. From the available data the gender gap in STEM subjects in North Tyneside continues to be a concern. This is particular pronounced in Maths and Physics and less so in Biological Sciences and IT. This is in line with national trends.

3.1 Progress update

Schools continue to prioritise activities in schools that raise awareness and commitment to increasing the take up of STEM subjects. There are many great examples of events, projects and activities taking place in schools that support this work.

- 3.2 There are also a number of activities continuing to prioritise girls to take up STEM subjects and consider STEM careers, however this remains a challenge in schools to dedicate resource and prioritise girls to consider these subjects.

4 Examples of activities currently being undertaken

- 4.1 The North Tyneside Learning Trust is leading several events that support school teaching staff to prioritise raising interest in STEM subjects. This work includes:
- financially supporting local schools to attend the recent Cutting Edge Research conference on genetics held at the Centre for Life where two senior NE female scientists provided information on relevant subject matter and resources that could be used in the curriculum
 - providing direct training sessions to primary teachers that provides practical solutions and ideas to enhance the science curriculum
 - Introducing the National Science Learning Partnership hub into schools to provide science CPD to a wide range of schools and staff. Through this teachers have been given greater skills, knowledge and confidence to teach science, which will have an impact in the classroom.
 - Delivering 'Bitesize science' for all schools, available to teachers and trainee teachers, that focuses on the key stage 2 curriculum. This has assisted in ensuring teaching staff are aware and are proactively developing the new curriculum. This work also provides support to non science specialist teachers to update their knowledge, become aware of common pupil misconceptions, and share possible practical activities. These sessions include a section on inspiring female role models in STEM.
 - Monkseaton Middle School is leading the way in supporting girls to attend the Big Bang Fair in the NE in June. These pupils and their work were recently showcased on BBC Radio Newcastle
 - North Tyneside schools are working with Northumbria University in the Think Physics programme that inspires young people to engage in real applications of physics and other sciences that are led by university staff and students
- 4.2 In addition to the work above the Council's Employment and Skills team will deliver 15 STEM events and 13 generic STEM career events in schools in 2015-16, over 1200 student's will access these events involving 35 STEM employers

Events include:

- A number of STEM Clubs and STEM Days delivered in Primary Schools across the Borough to provide young people with an early introduction to STEM. The events are supported by our partners Technology Tom and Fusion STEM, who deliver a range of interactive and inspirational STEM activities supported by employer partners.
- A highlight is the STEM Week delivered in Amberley Primary. A range of events are held across the week from Careers mornings with a STEM focus to STEM Workshops. In total 400 pupils took part in the week with 12 employers, including GE Wellstream, Durastic and HP.
- Additional events include Careers Speed Dating, World of Work Days and Apprenticeship Awareness Events. All include STEM employers and where ever possible their young employees as role models to help raise awareness of the range of opportunities available and help to inform young people's subject and career choices.
- Just a few of the employers involved in our events include Cofely, Rolls Royce, Owen Pugh, NHS, Advanced Industrial Solutions (AIS), Insure the Box, Galliford Try,

Northumbrian Water, GE Oil and Gas and Accenture.

- 4.3 Tyne Metropolitan College are also a key partner in prioritising work to increase the take up of STEM subjects at sixth form and in Further and Higher Education pathways. The college has also recently refurbished a building on Embleton Avenue next to their main campus will provide a STEM Innovation Hub within North Tyneside. This centre will be accessible to learners to raise their awareness of STEM subjects, related careers and provide inspiration using high specification technology

Recommendations

- 6.1 Committee members are requested to consider the report, make comment and consider what further information they may require.

**Women STEM (Science, Technology, Engineering and Maths)
Cabinet recommendations**

Recommendation	Officer Commentary	Action to be taken (if any) and timescale for completion	Update January 2016
1	<p>Cabinet requests the Head of Children, Young People and Learning to organise a programme of events/resources for teachers, particularly for teachers of Years 7 to 9. The programme will include up to date information on what opportunities and careers can be expected by anyone with STEM qualifications and an understanding of how to access these, including the vocational route.</p>	<p>This action will be incorporated into the regular Head Teachers Briefings, the CYPL Strategic Forum events for partners and the Ready for Work and Life programme of events.</p> <p>December 2015</p>	<p>There is a wide programme of events and specific resources developed for STEM and presented at a range of meetings that now include the NW and Wallsend School Cluster boards and the Area Strategic groups.</p> <p>In terms of the careers information available the Connexions service ensures STEM careers are at the fore front of discussions with schools and at individual pupil level. There has been a focus on including STEM career information available on the Tyne and Wear Labour market portal that the Council manages on behalf of the North East. This can be accessed at www.labourmarketnortheast.co.uk There are plans to further develop this detail.</p>

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2	<p>Cabinet requests the Head of Children, Young People and Learning to ask all schools to review existing information for parents of children aged 11-14 to provide an increased regarding the opportunities and careers available to anyone with STEM qualifications, and particularly for women, and an understanding of how to access these, including the vocational route.</p>	<p>The Head of Children, Young People and Learning will write to all schools requesting that this action is undertaken.</p> <p>July 2015</p>	<p>Schools are aware of this request and actively update information for parents.</p> <p>Further work could be undertaken to consider how focused and what information is available to parents.</p>
3	<p>Cabinet requests the Head of Children, Young People and Learning to ask each school in the borough to assign the responsibility for promoting STEM to a named member of staff and a governor. These individuals will have the responsibility to promote STEM as a subject and particularly focus on ensuring the participation of girls and young women.</p>	<p>The Head of Children, Young People and Learning will write to all schools requesting that this action is undertaken.</p> <p>July 2015</p>	<p>Most secondary and middle schools have designated STEM leads in school.</p>
4	<p>Cabinet requests the Head of Children, Young People and Learning to improve the existing school and local authority STEM network for the STEM leads/co-ordinators and ensure it meets regularly to share practice, co-ordinate ideas and organise regular events.</p>	<p>The Head of Children, Young People and Learning will write to all schools requesting that they participate in the STEM network and will influence and review the agenda for the STEM network.</p> <p>December 2015</p>	<p>The NT Learning Trust is proactive in terms of leading this agenda and much activity is in place in schools.</p> <p>Recent changes in the council's structure has meant that this network is not as formalised as it could be but plans are in place to strengthen this network after Easter 2016.</p>

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5	<p>Cabinet requests the Head of Children, Young People and Learning to ask all schools to consider holding girls only science, maths and IT clubs or if this is unfeasible advertise the girls only clubs which are held elsewhere.</p>	<p>The Head of Children, Young People and Learning will discuss this with appropriate Head teachers and consider the recommendation for girls only classes as part of the ongoing School Review process.</p> <p>December 2015</p> <p>The Head of Children, Young People and Learning will action the recommendation that the existing girls only clubs are considered by the appropriate school leads to be marketed to additional schools in North Tyneside.</p> <p>July 2015</p>	<p>Schools continue to prioritise STEM activities for all pupils and there are specific examples of Girls being prioritised. The resources in schools and viability of events mean that prioritising events for girls only continues to be a challenge for some schools.</p> <p>Schools do share events and cross attendance between schools is taking place.</p>
6	<p>Cabinet requests the Head of Children, Young People and Learning considers what support and advice would need to be offered to all middle/secondary schools to enable them to pilot single sex classes for STEM subjects and to explore these options at a meeting of the STEM Network.</p>	<p>The Head of Children, Young People and Learning will carry out a short review with relevant schools in the Autumn of 2015.</p>	<p>Via general discussion with schools in a number of forums the need would be for increased teaching resources and capacity to provide single sex classes. This remains a challenge for most schools.</p> <p>That said there are a number of</p>

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			<p>very positive events and programmes being delivered that raise awareness of STEM generally.</p>
Additional point A	<p>STEM Hubs for each tier (first, primary, middle, secondary and high) created at schools with the facilities to be used by all schools in the borough. There are already excellent facilities in the borough at Marden High School and Norham High School and these will be added to by the STEM Innovation Centre being established by TyneMet College at the former Skills and Enterprise Centre on Embleton Road. Having a place to go to do STEM events and meet others will be a motivating factor for young people and allows all to have the opportunity to use the best facilities.</p>	<p>Ongoing partnership working during the academic year 2015/16 will be undertaken to maximise the access to existing and emerging STEM Hub centres. This will include emerging centres in the private sector and the “Fab Lab” being developed by Sunderland University.</p>	<p>The NT Learning Trust and Tyne Metropolitan College are working in partnership with external partners to innovate and increase access to events, conferences and teacher CPD activities.</p> <p>The Fab Lab is now open for business, it is anticipated that NT schools will benefit from this in due course.</p>
Additional point B	<p>An evaluation of the information available in careers’ libraries and the understanding of those giving careers advice of the current and future possibilities that STEM subjects open up for students</p>	<p>The CYPL management of the Connexions service that provides much of the local information regarding careers in these sectors will undertake a review of all information as part of the development of new ways of working and increase self access to information within</p>	<p>This work is ongoing to ensure relevant literature is up to date and appropriate.</p>

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<p>Additional point C</p>	<p>Working with the North Tyneside Learning Trust to ensure a co-ordinated approach is essential and their role engaging with the business sectors should be used to its full potential.</p>	<p>Work is underway to streamline the joint working with the North Tyneside Learning Trust to make it simpler for schools and businesses to engage and influence careers education and progression of young people.</p>	<p>The NT Learning Trust has increased its focus on business engagement that includes formalising a partnership arrangement with the NT Engineering Business forum. This agreement increases the number of NT engineering companies working with schools and their pupils to increase their knowledge of the sector and potential careers.</p>