ABERDEEN CITY COUNCIL
Education Culture and Sport

Science, Technology, Engineering and Mathematics (STEM) Development Policy

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1   INTRODUCTION AND PURPOSE OF POLICY (Rationale)

Aberdeen City Council has high aspirations for the development of quality learning and teaching of science and technology in all of our schools. This is a key priority in the Scottish curriculum and our strategy will promote greater partnership working, build capacity and support development of our staff's skills

It is important that the modern school curriculum reflect the dynamics of global change in technology and science. Curriculum for Excellence will provide the platform for teachers to achieve this; however success in this area is unlikely to be achieved by schools alone. It is therefore essential that we work closely with a wide range of partners to keep abreast of the changes taking place in the world of work and to support teaching staff to build a greater understanding of the demands of a workforce of the future.

Our science and technology policy will support the implementation of the strategy.

Purpose of Policy

In taking this policy forward we will:
- Increase the profile of science and technology across Aberdeen City Schools
- Support the improvement of science learning and teaching, raise attainment and achievement and gain a clear understanding of standards and expectations across Aberdeen City schools.
- Put in place STEM curriculum and subject support networks for practitioners
- Build capacity and confidence of primary school staff in STEM curriculum areas
- Support the development of learning, teaching and assessment materials for National Qualifications
- Recognise, share and celebrate improvements and success in science and technology
- Ensure best practice in science and technology is shared across Aberdeen City schools and nationally
- Build effective partnerships and encourage a greater understanding of the applications of science and technologies in the world of work
- Encourage more young people to consider a career in science or technology related disciplines
- Encourage the development of positive attitudes towards science and technology
- Work more closely with parents to help them understand the relevance of science and technology
- Identify areas for further development in science and technology

2   POLICY PRINCIPLES

We need teachers at all levels with the knowledge, skills, dispositions and readiness to be effective teachers of science and technology and who, by leading change and improvements, will increase the profile of science and technology and so improve the learning and teaching of these subjects across all city schools.

The aims and objectives of our STEM Action Plan (Appendix 1) will articulate with those in our School Improvement Plan. We want to equip more individuals at all levels to be confident, enthusiastic practitioners in science and technologies.

The key principles upon which this policy is based are:

Supporting effective learning and support effective teaching in science and technologies

High quality learning experiences are crucial in providing motivation to learn and achieve. We will support teachers to develop teaching approaches which will actively engage young people in the science and technologies curriculum areas.

We will do this through a range of approaches including:
- Establishing primary science co-ordinators meetings
- Providing specific and targeted support through provision of a dedicated Curriculum Development Officer
- Introducing and supporting subject network meetings
- Extending participation in Primary Science Quality Mark to all primary schools
- Offering additional opportunities for personal and professional development in science and technology by offering a wide range of high quality CPD opportunities to teaching and support staff.
- Developing high quality learning and assessment materials for science and technology courses and new qualifications
- Fostering effective partnerships with business, industry and other local and national education organisations

Raising standards and expectations

We have high expectations of all of our learners. We will work to support learners at all stages to develop and reach their full potential. We will support learning by developing high quality learning and assessment materials. We will use value added diagnostic assessments in primary and early secondary to assist with understanding the learner's journey and to evaluate progress. We will also continue to use analysis of performance in qualifications to target support and intervention.

We will do this through a range of approaches including:

- Use analysis of SQA performance to monitor progress, identify areas for development and identify areas which need specific support
- Encourage greater uptake of the Science Baccalaureate
- Trial in a number of schools the use of e1 in the assessment process for science and technology.
- Establish a working group to provide guidance to schools 3-14 in the assessment process
- Establish science and technology specific moderation groups across sectors to help to understand share and apply standards consistently across City schools.
- Establish discussion forums on National 4 and 5 courses.

Recognise, share and celebrate improvements and success in science and technology
It will be important to recognise achievements and success in science and technologies.

We will do this through:

- Organising science and technology awards ceremony which celebrates success and reflects business and other partner involvement
- Introducing science and technology promotions, events and competition opportunities
- Organise open door and professional exchange opportunities
- Establish the 6th year science ambassador programme in all Secondary establishments.
- Establish primary 6 and primary 7 science champions in schools.(specific to 2012/2013)
- Continuing to identify aspects of good practice across our City schools and share this with all establishments.

Develop partnership links which enhance the delivery of science education within schools

We will work with a wide range of partner organisations and agencies to offer better opportunities to support teachers and to fulfil the needs of learners. Effective partnership working will assist in offering contextualised learning opportunities and provide varied experiences for learners. It will also help to ensure that partnership working is recognised as a valued and essential element in securing success and improving achievement.

We will do this through a range of approaches including:

- Create termly newsletter for all schools

- Identify school initiatives linked to the British Science Festival (specific for 2012)
- Continue to develop relationships with external stakeholders and partners to develop exciting learning materials and quality CPD for teachers
- Create a calendar of events and resources for schools which is co-ordinated and in line with the Authority strategy.
- Promote & work with city owned resources such as the Duthie Park; Maritime Museum; city archaeologists etc.

3 EXPECTED OUTCOMES

In implementing the policy statement we expect the following outcomes to be achieved:

All staff accessing, using and benefiting from a meaningful programme of science CPD experiences, including: accredited training, open learning, learning on-the-job, coaching and mentoring. This is to be sourced by the authority and made available for all staff through promotion in the CPD calendar and regular communication with schools.

Expertise within our own staff is identified, shared and built upon to continue to develop and sustain excellent learning and teaching of science at all levels. Approaches for identifying expertise to be established by the Authority and shared with schools.

The production of highly motivated and confident science teachers, delivering higher quality and more effective science lessons. This is to be achieved by the authority continuing to source high quality experiences and training in STEM subjects.

The profile of science is raised across Aberdeen City Schools resulting in increased uptake in the STEM subjects. This will be achieved by the authority identifying schools where the uptake is low providing support and guidance as to how to raise the profile of STEM subjects to pupils.

Learners have access to high quality teaching and learning in STEM subjects, raising the motivation and attainment of pupils.

Parents and carers across the City view STEM subjects as valuable and leading to viable career opportunities. This will be achieved by schools and the authority informing parents of STEM opportunities and experiences across the City.

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All Partnership working will be co-ordinated by the Authority and in line with the City STEM Development Policy. A calendar of events and opportunities will be produced by the authority and distributed to schools.

3b   MEASUREABLE OUTCOMES
In implementing the policy statement we expect the following measureable outcomes to be achieved:

PRIMARY SCHOOLS

Increase in staff numbers participating in CPD events
- Increased uptake of schools participating and gaining the PSQM
- Increased uptake of schools and pupils participating in the P6/7 Science Champion Award
- A named primary science co-ordinator in every school
- Increase in schools developing specific approaches and policies to science
- Increased motivation of pupils
- Increased uptake in participation in local and national science initiatives and events
- Increased attendance at Satrosphere by schools

SECONDARY SCHOOLS
- Increase in staff numbers participating in CPD events
- A network co-ordinator for each subject network
- Increase in the number of pupils studying science subjects beyond the broad general education phase
- To have all schools involved in the S6 Science Ambassador scheme and so increase the number of pupils participating
- To see a 3% increase, across the city, of attainment at Higher and Advanced Higher. (As National 4 and 5 rolls out, attainment will be measured and compared).
- Increase in the quality of resources available to support courses
- Increased uptake in participation in local and national science initiatives and events
- Increased attendance at Satrosphere by schools

4   ROLES AND RESPONSIBILITIES

We all have a responsibility to develop science learning and teaching.

Specifically, **teachers** will:

- Be aware of and ensure any development priorities are in line with the STEM Development Policy

- Be aware of the science development opportunities available to them, make best use of them and actively contribute to the evaluation and on-going improvement of the development programme;

- Take ownership of their own science development and actively seek out opportunities to develop themselves and others;

- Be prepared to share information and expertise with others;

- Embrace a positive culture which celebrates achievement and success.

In addition, Faculty Heads and Primary Science Co-ordinators will:

- Promote the Science Development Programme and support participation in appropriate development opportunities by all involved staff members.

- Evaluate and feed back on the impact of science development activities on the work of their staff.

5   LINKS

5.1 To Council Values and Priorities

The aims and objectives of this policy articulate with those in the Strategy for Learning and Service Plan.

5.2 To Other Policies

o *Corporate Employee Development Policy*
   The corporate Employee Development Policy is the overarching document for staff training across the Council. This Education, Culture & Sport policy articulates with and compliments the corporate policy and procedures. The corporate Employee Development Policy can be found on the Zone:
   http://thezone/nmsruntime/saveasdialog.asp?lID=12872&sID=3241

6 DISTRIBUTION AND PUBLICATION

This policy applies to all members of staff within the Education, Culture & Sport Service. It will be made available for colleagues to access electronically on the Zone and on Glow.

Copies will be sent to all managers and head teachers, who will be asked to ensure that members of their teams are aware of the policy. All staff are expected to adhere to the policy with immediate effect.

7   REVIEW

This policy will be reviewed on a three year cycle.

8   ORGANISATION AND RESPONSIBILITY

8.1   Director

The Director is responsible for:

- The implementation and monitoring of this policy within the Directorate, and ensuring good communication with employees at all levels;
- Motivating and empowering employees to actively seek out and take advantage of appropriate professional development opportunities.

8.2   Heads of Service/Service Managers/Head Teachers/Line Managers

Heads of Service are responsible for:

- Implementing and complying with this policy as it relates to their areas of operation and control;
- Ensuring that all of their staff are conversant with and accept their responsibilities under this policy, as outlined in Section 4 above, and are provided with adequate support and resources to undertake these responsibilities;
- Motivating and empowering employees to actively seek out and take advantage of appropriate professional development opportunities.

Service Managers/Head Teachers/Line Managers are responsible for:

- Implementing and complying with this policy in their area of responsibility;

- Ensuring that all staff under their direct management acknowledge and accept their responsibilities under this policy, as outlined in Section 4 above, and are provided with adequate support and resources to implement them;
- Motivating and empowering employees to actively seek out and take advantage of appropriate professional development opportunities.

8.3   All Employees

All employees have a responsibility for:

- Adhering to this policy at all times and ensuring they carry out their responsibilities listed in Section 4.

9.0   PLANNING AND IMPLEMENTATION

The implementation of this policy is managed and monitored by the Quality Improvement Officer with lead role for Science development

The overall progress of policy implementation is monitored by the Head of Educational Development, Policy and Performance.

10.0   COMMUNICATION

A briefing note will be sent to all staff to inform them of the publication of this policy. The approved policy will also be shared with senior managers at improvement conferences and head teacher meetings and managers are asked to ensure that staff for whom they are responsible are aware of its existence.

11.0   STRATEGIC AND ENVIRONMENTAL ASSESSMENT

A strategic environmental assessment is not required for this policy, as its implementation will have no effect on the environment.

12.0   EQUALITY AND HUMAN RIGHTS IMPACT ASSESSMENT

An Equality and Human Rights Impact Assessment has been carried out and no negative impacts has been identified.

13.0   APPROVAL

Approval for this policy will be requested from the Education, Culture & Sport Committee on 31 Jan 2013.

14.0   AGREED REVIEW DATE

This policy will be reviewed on or before December 2013.

16.0   APPENDICES

Appendix 1

Science and Technology Action Plan 2012 - 14

Improve learning and teaching in science and technology in all schools. • Establish primary science co-ordinators meetings • CDO attends subject network meetings • Increase the number and range of CPD courses on offer to both teaching and support staff. • 15 schools to take part in the pilot PSQM supported by science CDO and QIO (2012). • Extend participation of Primary Schools in PSQM – aspiration that all Primary Schools will become involved in Science curriculum development activity. • Easter/ Summer school to run for 20 staff. • Evaluation of impact of strategy
Raise standards and increase pupil uptake in SQA science and technology courses. • From analysis of SQA results identify where raising the profile of science and technology is required. • Create a structured approach to supporting the Science Baccalaureate
Develop systems for assessment in science and technology which are in line with the assessment strategy for the City. • Trial in a number of schools the use of e1 in the assessment process for science and technology. • Establish a working group to provide guidance to schools 3-14 in the assessment process. (sub group of assessment strategy group) • Establish discussion forums on National 4 and 5 courses.
Develop partnership links which enhance the delivery of science education within schools and link to the City Strategy. • Create termly newsletter for both primary and Secondary. • Identify school initiatives linked to the British Science Festival (2012 only). • Meet all external stakeholders and partners in the area of science /education and create an overview of current provision in Aberdeen City. • Create a calendar of events and resources for schools which is co-ordinated and in line with the Authority strategy.
Create a culture of ambition and achievement for the areas of science and technology in Aberdeen City. • Contribute to the Learning Festival in February providing a number of exhibits and presentations. • Organise an end of year science and technology awards ceremony. • Organise open door events and professional exchange opportunities in line with the Authority CPD strategy. • Establish the 6th year science ambassador programme in all Secondary establishments.