



STEM Directories Gap Analysis Coding Framework

Organisation Provider

University/Educational Institution	[1]
Science Centre/Museum/Zoo/Aquaria	[2]
Research Council/Learned Institution	[3]
Industry	[4]
Other Charity/Voluntary	[5]
National/Local Government	[6]
Regional Partnership	[7]
Resource Centre/Technical Facilities/Research Institution	[8]
Science Communication Company	[9]
Self-Employed	[10]

Organisation provider is based on Phase 1 of the gap analysis, in addition to consultation with a prior mapping (e.g. Wellcome Trust n.d.

http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_peda/documents/web_document/wtd0034_18.pdf). A number of categories have been combined or made more distinctive, for example there are now separate categories for industry and science communication companies. In addition 'other' has been added to charity/voluntary indicating that for example although organisations such as science centres are also charities, they will be coded by their main function first and foremost.

Key Stage Targeted

Key Stage 3 (11-14)	[1]
Key Stage 4 (14-16)	[2]

Note that as previously discussed, Phase 3 of the gap analysis will focus only on Key Stages 3 & 4.

Specific Student Targets

(Can be coded to more than one)

All students	[1]
Gender	[2]
Ethnicity	[3]
Gifted or Talented	[4]
Specialist Education Needs/Access for All	[5]
Engaging Parents/Wider Community	[6]

In addition to the age of students targeted, specific target groups will be recorded where applicable. This will only occur when an entry specifically states it is targeting such groups for example via their websites and this will need to be monitored to avoid entries which have included such statements as a 'catch all'.

Activity Categories

(Can be coded to more than one)

Teacher Resources

Continuing Professional Development and Training	[1]
Websites and Downloads	[2]
Teaching Packs, Resources and Lesson Plans	[3]
Interactive Whiteboard Resources	[4]

Student Resources

Websites and Downloads	[5]
Careers Advice and Mentoring	[6]
Work Experience and Placements	[7]

Out of School Events

Trips and Visits	[8]
Partnerships with Universities and Industry	[9]
Summer Schools, Residentials and Camps	[10]

In School Events

Lectures and Talks	[11]
Debates and Discussions	[12]
Science Shows, Interactives and Demonstrations	[13]
After School Clubs and Science Clubs	[14]
Competitions, Quiz's and Challenges	[15]
STEM Ambassadors	[16]

The inclusion of the four key activity categories is based on their utility in Phase 1 of the gap analysis. In addition the search terms currently utilised on the STEM directories website has established additional categories within the four overarching themes.

Number of Activity Categories Offered

- 1
- 2
- 3
- 4

In addition the number of activity categories an entry includes will be noted in order to note the numbers of entries that are providing multiple types of activities. This will code at the four category level (e.g. teacher resources, student resources, out of school events, in school events) as opposed to the level of detail indicated within Point 4 which is likely to become overly complex.

Preparation Time

<1 hour	[1]
1 – 4 hours	[2]
4-8 hours	[3]
1 day to 1 week	[4]
1 week to 8 weeks	[5]
8 weeks >	[6]

Running Time

<1 hour	[1]
1 - 4 hours	[2]
4 – 8 hours	[3]
1 day – 1 week	[4]
1 week – 8 weeks	[5]
8 weeks >	[6]

Frequency of Activity

One off event	[1]
Two stage event	[2]
Continuous	[3]

Cost of Activity

Cost per head

< £5	[1]
< £10	[2]
< £15	[3]
£15+	[4]

Cost per activity

<£100	[5]
<£500	[6]
£500+	[7]

The cost will be incorporated based on the type of information given by the provider. For example a provider who has given a cost per head indication will only be coded as 1-4 not 5-7. The costs indicated will also be checked at the point of piloting in order to make sure they are accurate estimates or to establish if more discreet categorisations are useful.

Subject Areas Featured Under

(Can be coded to more than one)

Science	[1]
Engineering and Technology	[2]
Maths	[3]

Number of Subject Areas Featured Under

- 1
- 2
- 3

Curriculum (Subject/Skills) Content

The following curriculum links are based on information on the UK national curriculums for science and maths (<http://curriculum.qcda.gov.uk/>) Key Stages 3-4. Overlapping curricula (e.g. Design and Technology) have not yet been included as the team judged that feedback on the current version would be useful first.

Entries would be categorised against the highest Key Stage they target (e.g. an activity targeting Key Stages 3 and 4 would be mapped to Key Stage 4 only). This decision is based on pragmatic reasons of data entry in SPSS but also that proficiency for the higher Key Stage is likely to have a greater impact on participants than achievement of the lower level. In addition, connections will be made utilising a fuller description of the curriculum content and focus (see attached document).

Key Stage Three

- [1] (S) Scientific thinking
- [2] (S) Applications and implications of science
- [3] (S) Cultural understanding
- [4] (S) Collaboration
- [5] (S) Practical and enquiry skills
- [6] (S) Critical understanding of evidence
- [7] (S) Communication
- [8] (S) Energy, electricity and forces
- [9] (S) Chemical and material behaviour
- [10] (S) Organisms, behaviour and health
- [11] (S) The environment, earth and universe

- [1] (D&T) Designing and making
- [2] (D&T) Cultural understanding
- [3] (D&T) Creativity
- [4] (D&T) Critical evaluation
- [5] (D&T) Generate, develop, model and communicate ideas
- [6] (D&T) Respond creatively to briefs
- [7] (D&T) Apply knowledge and understanding to make products
- [8] (D&T) build on others' design
- [9] (D&T) plan and organise activities
- [10] (D&T) Use appropriate tools
- [11] (D&T) Solve technical problems
- [12] (D&T) Reflect critically
- [13] (D&T) Resistant materials
- [14] (D&T) Food
- [15] (D&T) Textiles

- [16] (D&T) Systems and control
- [17] (D&T) Designing

- [1] (M) Competence
- [2] (M) Creativity
- [3] (M) Applications and implications of mathematics
- [4] (M) Critical understanding
- [5] (M) Representing
- [6] (M) Analysing
- [7] (M) Interpreting and evaluating
- [8] (M) Communicating and reflecting
- [9] (M) Number and algebra
- [10] (M) Geometry and measures
- [11] (M) Statistics

Key Stage Four

- [1] (S) Data, evidence, theories and explanations
- [2] (S) Practical and enquiry skills
- [3] (S) Communication skills
- [4] (S) Applications and implications of science
- [5] (S) Organisms and health
- [6] (S) Chemical and material behaviour
- [7] (S) Energy, electricity and radiations
- [8] (S) Environment, Earth and universe

- [1] (M) Competence
- [2] (M) Creativity
- [3] (M) Applications and implications of mathematics
- [4] (M) Critical understanding
- [5] (M) Representing
- [6] (M) Analysing
- [7] (M) Interpreting and evaluating
- [8] (M) Communicating and reflecting
- [9] (M) Number and algebra
- [10] (M) Geometry and measures
- [11] (M) Statistics

- [1] (D&T) Designing and making
- [2] (D&T) Make decisions, consider sustainability and develop skills
- [3] (D&T) Understand different dimensions
- [4] (D&T) Build on previous solutions
- [5] (D&T) Decision-making
- [6] (D&T) Culture and lifestyle
- [7] (D&T) Critical analysis
- [8] (D&T) Creative product brief
- [9] (D&T) Communication
- [10] (D&T) Wider considerations
- [11] (D&T) Build on others' work
- [12] (D&T) Planning and organization
- [13] (D&T) Using relevant tools
- [14] (D&T) Critical reflection

Topic Area

- [1] Animal Sciences
- [2] Behavioural and Social Sciences
- [3] Biochemistry
- [4] Cellular and Molecular Biology
- [5] Chemistry
- [6] Computer Science
- [7] Earth and Planetary Science
- [8] Engineering: Electrical and Mechanical
- [9] Engineering: Materials and Bioengineering
- [10] Energy and Transportation
- [11] Environmental Management
- [12] Environmental Sciences
- [13] Mathematics
- [14] Medicine and Health Sciences
- [15] Microbiology
- [16] Physics and Astronomy
- [17] Plant Sciences

The INTEL International Science and Engineering Fair category descriptions of subject areas (http://slvsef.org/participate/teacher/documents/SLVSEFCOMPETIONCATEGORIES_000.pdf) provide an alternative manner in which to determine specific subject categories which teachers may find more helpful than the combination of skills and subjects measured on the curricula. Alternatively the Science Citation Index (SCI) or subject areas covered in similar mapping exercises (e.g. Wellcome Trust n.d. http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_peda/documents/web_document/wtd0034_18.pdf) could be used to determine categories. The search terms teachers are using are relatively specific so an alternative might be that we code using the 9 categories offered to providers (Applied Science, Biology, Chemistry, Design & Technology, Engineering & Manufacturing, ICT & Digital, Mathematics, Physics and Science) and breaking that down to specifics examples (e.g. dinosaurs, earthquakes etc.) related to specific entries.

Evaluation

Not Evaluated	[1]
Evaluated	[2]
Evaluation in Public Domain	[3]