In summer 2011 the Wellcome Trust commissioned a review of informal science learning in the UK – that is, the learning of science in non-school settings, from museums and science festivals to theatres and online environments.

Two reports were published in November 2012, from GHK Consulting and from Stanford and Oregon State Universities, analysing the evidence on how informal science learning is provided and its value to science education.

The Wellcome Trust responded to the reports with a short commentary written by Clare Matterson, Director of Medical Humanities and Engagement, and Sir John Holman, Senior Fellow for Education.

According to the main recommendations of the review, we need:

• a more sophisticated way of evaluating the impact of informal learning activities
• a stronger link between research and practice
• better integration of formal and informal learning
• more effective engagement with hard-to-reach groups, such as people from lower socioeconomic groups
• better evidence to support advocacy of informal learning.

The Wellcome Trust is now following up on these recommendations. This infographic, which summarises some of the evidence for the impact of informal science learning, is part of our work in supporting advocacy of informal learning. We plan to update it as more evidence becomes available.

The full reports, the summary reports, the commentary piece and this infographic are available to download at www.wellcome.ac.uk/informallearning.

We would appreciate your feedback, including information about how you have used this evidence.

@WTeducation
education@wellcome.ac.uk

Sign up to our newsletter:
www.wellcome.ac.uk/educationnewsletter

Infographic references
Evidence for informal science learning

The Wellcome Trust Review of Informal Learning, published in November 2012, examines the informal science learning sector in the UK and its value to science education. We believe that informal learning stimulates interest in science, as well as an appreciation of its social, cultural and historical context. Informal learning experiences can also improve attainment levels and build learners’ knowledge and skills. The following evidence underpins these beliefs.

1 Increased engagement and wider interest in science and science careers
Informal learning environments encourage curiosity about science and new ways of teaching. Science-related experiences outside the classroom can strongly affect young people’s motivation to further study science and eventually choose a career in science, technology, engineering and maths (STEM).

Informal learning experiences are associated with raised interest in science – most students who did practical workshops in science centres and who visited a hands-on exhibition reported an increased interest in science afterwards.12

89% of students who did practical workshops... reported increased interest in science... 74% of students who visited a hands-on exhibition... 41% of teachers who visited a museum with their students said it encouraged them to work in a more cross-curricular style back in school.3

Nearly half of under-16s who took part in National Science and Engineering Week activities said they would continue to discuss science and engineering after the events.3

One in four students studying STEM courses at English universities report that visits to museums or science centres were important or very important in influencing their choice of course.6

Among children aged 10 to 11, 18% of boys and 22% of girls changed their view to agree with the statement “I would like to be a scientist” after visiting a science centre.7

2 Time spent in and out of school
There is huge potential for engaging with young people outside the classroom.

Even when they are in full-time education, young people spend less than a fifth of their waking hours in school.8

Nearly half of under-16s who took part in National Science and Engineering Week activities said they would continue to discuss science and engineering after the events.3

Schools with no informal learning interventions Schools with 7–10 informal learning interventions

GSCE Science entries increase, 2004/5–2008/9

+11%

+4%

PISA analyses found that, even accounting for socioeconomic and demographic backgrounds, students in schools that offer extracurricular activities... have more positive attitudes towards science... have a stronger belief in their ability to handle science-related tasks... perform better in science

During the school year, students from low socioeconomic status backgrounds make similar progress to those from high socioeconomic status backgrounds, but they fall behind during the summer. This indicates the importance of out-of-school experiences during summer break.10

60% of secondary students improved marks in classroom assessment following a museum or gallery visit

3 Increased attainment
Young people who are involved in extracurricular and out-of-school experiences perform better in assessments.

60% of secondary school students achieved higher marks in a classroom assessment completed after visiting a museum or gallery than in work completed before the visit.9

60% of secondary students improved marks in classroom assessment following a museum or gallery visit

4 Long-lasting impact
Informal activities create memorable science experiences and contribute to life-long learning.

More than 90% of children aged 9–11 add to their ideas and understanding of a science exhibit if prompted to think about it again at a later date.11

Adult informal learning experiences contribute more to the variance in adults’ science knowledge than schooling and childhood experiences.11