Science beyond the classroom

Experiments in Engagement:
Engaging with young people from disadvantaged backgrounds

April 2014

wellcome trust

Foreword

Young people who are at a relative socioeconomic disadvantage can find it hard to connect with certain educational and cultural experiences. This is of serious concern, given that such experiences can develop personal, social and emotional skills, nurture relationships between young people and their peers and adults, and benefit their educational outcomes. Furthermore, we fear that a wealth of inspiring and enjoyable science activities may be inaccessible to such young people, with their main connection with science being mediated through formal schooling. We want to change this.

We believe that all young people should have the opportunity to enjoy science in a way that is relevant to them. This could be through the hands-on creativity that is central to science, or through using it as an inspiration for art or drama; science might help young people understand the limits and potential of athletic performance, or discuss the impact of new medical advances or technologies upon their lives. Science should never undermine young people's confidence, but be something that they can firstly appreciate and enjoy, and then use to build knowledge and skills that may empower their futures – whether by aiding decision making about health and technology or by acting as the foundation for their training and employment.

We would like to improve the support available to those who work with disadvantaged young people, so that they can engage and, most importantly, enthuse young people with science, technology, engineering and maths. But they do not need to do this alone. The science engagement community in the UK has some of the best, most exciting and unexpected activities going. The community's expertise will be invaluable in supporting a sustained change in how we reach young people from disadvantaged backgrounds, and we urge the community to embrace this mission.

In November 2012 the Wellcome Trust's *Review of Informal Science Learning* highlighted the challenge of reaching young people from lower socioeconomic groups. In response, we commissioned Platypus Research to undertake two strands of work: first, a literature review that examined previous work with this audience; and second, new research to find out what such young people do in their spare time and how we might better engage them with science. Finally, Platypus Research have drawn together their two research reports in this practically oriented summary document.

We are publishing these reports with the intention that they should inform our own work and that of others working in public engagement or with young people from disadvantaged backgrounds. Some of the findings and recommendations will be broadly applicable to all young people and all sorts of engagement.

We ask that you work with us on this endeavour and hold us to account for what we hope will be a step change in ensuring that all young people are inspired by, and can benefit from, their relationships with science.

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Introduction

Science, technology, engineering and maths (STEM) are enabling. They enable people to make sense of the world around them, they enable people to make informed decisions, and they enable people to pursue a wealth of exciting and fruitful career opportunities. For example, advances in science and technology have provided improved telecommunications and healthcare that provide tools and lifestyles that we increasingly take for granted.

For young people from relatively low socioeconomic status (SES) backgrounds in particular, STEM subjects can be invaluable. They can provide a means by which these young people can better engage with the modern world and take advantage of the opportunities it affords. This is a view shared by others: one of the most vocal might be will.i.am, who recently gave £500 000 to the Prince's Trust to help disadvantaged young people build skills to support themselves in today's job market.

We know that the classroom is not always a welcome environment to learn about science, especially for those who are more disengaged from formal (school-based) learning. To this end, it is important that opportunities to engage with science outside of formal education in the classroom – that is, opportunities for informal learning – are as accessible and engaging for disadvantaged groups as they are for those families from better-off backgrounds, who already make extensive use of such activities.

The Wellcome Trust commissioned Platypus Research to explore what activities disadvantaged young people engage with, and how their engagement with science might be improved. A literature review was conducted, followed by 16 group discussions with young people aged 9 to 19 years, depth interviews with teachers and youth workers, and six discussions with parents. In total we spoke to 26 young people aged 9 to 11, 67 young people aged 12 to 19, eight schoolteachers, eight youth group workers and 16 parents. The research was conducted in London, Birmingham, West Yorkshire and Glasgow between December 2013 and February 2014.

The above work has been published as a separate literature review (Wellcome Trust, 2014a) and a research report (Wellcome Trust, 2014b), which have been brought together here in this practically oriented summary. The summary's 'Ten steps to successful engagement' draw upon a number of themes emerging from its subsequent 'Summary of findings'. In addition, there are some recommendations for funders to consider.

We hope that both the ten steps and the themes that underpin them will be useful in guiding not just funders and providers of informal science experiences, but any organisation wishing to engage with young people from low SES families or young people more generally.

Ten steps to successful engagement

The research identified ten steps that can be taken to maximise the success of engagement activities – including informal science activities – for young people from disadvantaged backgrounds.

1. Know your objectives and audience

Objectives for any engagement strategy must be clear from the outset.

Identifying and understanding your audience is vital for success, as the best strategy will differ depending on the individuals and the community you wish to engage. For instance, a young person's age, ethnicity and their level of engagement with school and education will have a big impact on choosing the best engagement strategy.

2. Engage a champion and be mindful of family influence

Engagement works best when a trusted and relevant champion is involved. This is particularly important for those disengaged from education, who can mistrust traditional authority figures such as teachers and people coming in from outside organisations. Coaches, youth workers, club leaders and peers are examples of effective champions.

Strategies to engage young people from low SES families may need to tackle the attitudes of their surrounding network of influencers. For example, some interviewees, including a minority of the children themselves, described some parents' influence as either lacking or sometimes negative, and older participants were heavily influenced by peer pressure.

3. Ensure the activity is young person-led

The best engagement involves young people in the whole process, right from the very start, and also consults teachers, youth workers, peers and those within the community. Both schools and youth organisations acknowledged the powerful impact of involving young people in decision making and in generating and implementing ideas. In some cases, guidance may be required to help with this process.

When shown a variety of Wellcome Trust-funded engagement projects (wellcome.ac.uk/Education-resources/Education-and-learning/Resources/index.htm), all the young people and adults reacted positively and were attracted by the surprising execution of these informal science learning activities. There is a clear opportunity for using varied types of science engagement activities with new audiences.

4. Ensure the activity is relevant and pitched at the right level

Activities should link, directly or indirectly, to something of interest to the young people targeted, and should be pitched at the right level to maintain engagement. Given that many activities popular among young people are sports-based, drawing links between science and sport may prove effective. Linking to or using technology could also be a good way to generate interest and foster engagement with young people.

To ensure activities are at the right level:

- recognise young people's existing skills rather than focusing on a deficit model that emphasises where young people's skills may be lacking
- consider the demographic make-up of the young people involved, and design teams and activities accordingly
- provide activities that challenge and stretch those involved, but pitch challenges at the right level to ensure participants can achieve success
- provide novelty and excitement by regularly changing activities
- allow for progression through stages or levels to maintain interest
- celebrate achievements
- take into account both the educational level and cultural differences of the young people

when communicating with them, either verbally or in writing
- avoid being overtly educational as this can be off-putting for those disengaged from school
- provide the opportunity for 'taster sessions' so that young people can try something to see if they enjoy it.

It is worth noting that there is huge diversity across low SES families, so a 'one size fits all' approach is less likely to be successful. To be relevant, activities will have to be tailored to fit the intended audience (see step 1).

5. Invest in long-term relationships for maximum impact

Long-term relationships are likely to have a greater and longer-lasting impact on young people, their schools or organisations, and the wider community. The reliability and regularity of interactions seem to be more important than their actual length *per se*, so consistent engagement (that happens, for example, every year or every month) is the most impactful, as it becomes part of a young person's life experience.

It appears that there is little collaboration or sharing of information or resources between establishments who work with young people. While some schools may engage with other schools for older or younger children, or local youth organisations, links between schools at the same level or between youth organisations were not mentioned, and the sharing of information, resources, tools and best practices is rare. The level of collaboration could therefore be improved.

Both schools and youth organisations welcome the chance to give young people different experiences; this provides a clear opportunity to establish links between them and funders or providers of informal science experiences.

6. Make it practical and interactive

Young people enjoy practical activities in which they can actively get involved rather than just watch. Informal science activities should be interactive and hands-on to maximise enjoyment.

7. Facilitate socialising with friends

Activities need to be organised in places where young people can be with their friends, as this is key to them finding something fun and enjoyable, particularly from secondary school onwards.

8. Be financially and geographically accessible

As much as possible, provide activities at low or no cost. Cost is a barrier to engaging with regular activities and cultural offerings for some, especially those with larger families, and trips to expensive attractions are rare.

Many young people and families from lower SES backgrounds rarely travel outside their local area. Places they already go to are ideal for holding activities, such as schools, youth groups, churches, leisure centres and local parks.

Parents are more likely to engage in activities if they are hosted at venues with easy access, that provide a safe environment to play in, that have good 'drop-off' arrangements and that offer facilities for other family members to use while their child is doing his/her activity.

9. Celebrate and reward successes

Recognise and celebrate genuine achievements. Praising and rewarding young people for their efforts and achievements (through points, levels, badges or treats, etc.) is motivating and can help increase their self-esteem.

Ensure certain activities are such that young people can recognise them as being intrinsically rewarding and worthwhile to do or be a part of.

10. Communicate carefully and through trusted channels

The words used to describe any activity need to be carefully considered. The word 'experiments' tends to bring about more positive associations – young people are enthusiastic about the hands-on, practical aspects of science – whereas 'science' itself appears to be strongly linked to formal learning and can be quite divisive.

Word of mouth appears to be extremely important as a trusted channel for communicating. Creating 'buzz' or 'social currency' among young people is an important way for providers and funders of informal science offerings to attract this audience. Schools can also be used to communicate with young people and parents who are more engaged with education.

Recommendations for funders

The ten steps laid out on the previous pages are intended to support organisations who work with disadvantaged young people, as well as science engagement organisations who are interested in extending their current reach. However, another theme that arose in our discussions was the role of funders, such as the Wellcome Trust, in shaping the engagement landscape.

Two recommendations stood out:

1. Funding processes need to be developed in a way that allows activities to be led by young people. This may mean considering less-defined applications, where activities will be finalised with participants during the delivery phase of a project.

2. A desire for an online central resource system for sharing informal science knowledge and tools was expressed. Funders could provide such a resource or support the sharing of knowledge and tools in other ways, such as by creating online communities or facilitating face-to-face meetings.

Summary of findings

Diversity and influences

There is huge diversity among young people from low SES families, who range from the highly engaged and aspirational to the very disengaged. That said, there are a number of common challenges faced by these families, such as: having to make trade-offs or sacrifices due to low disposable income; relative isolation due to a lack of, or unwillingness to use, personal transport; large or blended family composition; and, for some, exposure to difficult home circumstances, such as substance abuse and domestic violence.

Young people are influenced by, and have influence upon, other individuals and organisations within their communities, such as families, friends, schools and youth clubs. They are also influenced by other factors, such as the social context, overarching beliefs, values and culture that surround them as they grow up. We will highlight impacts of these factors throughout this summary, but we note some key influences here.

Notably, only a few young people we spoke to were heavily influenced by people they did not know personally. A minority mentioned being influenced by people that worked in an area they were interested in, such as cricket players and athletes. One 12-year-old boy mentioned a science-related influence – doctors – because he wanted to be a doctor in the future. Interestingly, while some young people, particularly girls, were interested in celebrities, they did not see them as having a large influence on them. Some girls did mention that social media influenced them, and some followed non-celebrity vloggers on YouTube.

Parents and families are highly influential

Most of the young people described their parents as key influencers, especially those still at primary school. For some, parents were a positive and consistent influence, providing guidance and support and introducing them to new experiences.

But some teachers and youth workers – and a minority of the children themselves – described some parents' influence as either lacking, or in some cases, negative. Such parents were unlikely to seek out activities with an educational focus for a variety of reasons, including negative preconceptions, feelings of intimidation, or a lack of cultural relevance. Some young people also preferred not to visit museums with their parents as they felt their parents would not be interested.

In some cases, a lack of parental support contributed to young people stopping activities. This could be driven by a perceived lack of time, concerns about cost, concerns about the safety of their children being out in the local area, or because some parents did not see the benefits of participation as compared with pursuing other activities such as doing homework.

There is a wide body of evidence demonstrating the importance of parental support and engagement to children's educational outcomes (McCoy and Cole, 2011; Siraj-Blatchford et al., 2011; Harris and Goodall, 2008; Desforges and Abouchaar, 2003; Melhuish et al., 2001). While positive parental engagement is clearly ideal, it is not necessary to engage parents in order to reach out to these young people.

Those working with these young people worked hard to overcome issues, supporting, guiding and inspiring them to see and fulfil their potential. It is therefore still beneficial to engage directly with young people even if their parents or wider family are not also targeted.

As well as parents, most young people had other family members who influenced them. Many mentioned spending a lot of time with their brothers and sisters, relaxing, playing, socialising and supporting one another with schoolwork. In Asian communities links with cousins were often described similarly. Some young people had extended family

that influenced their lives and sometimes took on main or shared caregiving roles. This seemed particularly to be the case within the Asian communities we researched, and in Glasgow.

Ethnicity affects engagement

Ethnicity was highlighted by teachers and youth workers as a key factor in how engaged families and young people were. White British families were often described as the most difficult to engage, due to reasons such as low aspirations, a lack of positive role models, a lack of support for educational achievement, distrust of authority figures and an inappropriate value base.

The teachers and youth group workers we spoke to described their ethnic minority and immigrant communities as having higher levels of aspiration and, in some cases, more supportive family and community networks. Young people in minority ethnic families faced different challenges to white British families, such as increased likelihood to relocate, parents with English as a second language, restrictions on time and freedoms due to more traditional views on male/female roles, and high levels of pressure to succeed in school. Previous research has also shown that children from minority ethnic families are more likely to experience poverty (Kenway and Palmer, 2007), in particular those from Pakistani, Bangladeshi or black ethnic groups.

Sandell (2004) argues that museums (and other cultural offerings) have historically played a role in disempowering and oppressing minority communities, and that this provides an indication as to why ethnic communities are under-represented in museum visitor figures. Museums and other cultural offerings are now working hard to overcome these cultural biases.

School has a key role in influencing and increasing aspirations

A number of schools were very successful in influencing their students and communities and raising aspirations. This was typically credited to an inspirational headteacher and the positive character of the school as a whole. In such cases young people were clearly proud of their school and teachers spoke of their school as a 'family'. Schools can also play a pivotal role in changing embedded cultural attitudes to encourage young people, parents and the community as a whole to have higher aspirations. A number of qualities underpinned this success: a clearly communicated school ethos, rewards and awards for good behaviour and achievement, exposure to aspirational experiences, and strong links with parents and the local community.

Attitudes to science

'Science' can be a divisive word

Young people who loved science were excited and enthusiastic about it.

> *"[Science] makes me feel bubbly, I don't know why!"* (Girl aged 11)

Most young people had quite mixed views about science, finding some parts interesting and others less so.

> *"I wrote 'half and half'. It depends what you are doing."* (Girl aged 12)

However, some students reported 'hating' science, giving extremely closed and negative responses. In some cases the young people could not articulate why they didn't like science, aside from feeling that they didn't 'get it'.

> *"It's dull, proper dull."* (Girl aged 14)

Many found certain aspects of science difficult and confusing, in particular the language used and the fact that it is constantly evolving and changing.

> *"I don't like it because I don't know the words they use."* (Girl aged 11)

Upon further discussion, most young people revealed something science-related that they were interested in, but they didn't always make the connection between what they found interesting and the word 'science'.

> *"I want to be a doctor but I don't like science, that's so weird!"* (Girl aged 11)

Attitudes to science varied with demographic factors such as gender and age; primary school children tended to be more excited by science and some gender bias towards boys was evident.

Summary of findings (continued)

A number of young people aspire to science-related careers

A number of young people had clear aspirations for future careers, including science-related and other careers. Some were already studying science-related subjects either at school or college. Several young people aspired to be doctors. Other science-related careers mentioned included engineering, computer science, animal care, veterinary medicine, nursing, healthcare, forensics and architecture.

Science means experiments

> *"I don't really like science to be honest, but I love experiments!"* (Girl aged 11)

'Experiments' had by far the strongest association with science, both spontaneously and when prompted. Young people liked the interactive, practical elements of science and preferred actually doing the experiments themselves.

Interactive and hands-on experiences are the most enjoyable

Participants reacted positively to examples of existing engagement opportunities supported by the Wellcome Trust. Existing content clearly works, but may need adapting to new audiences. All the young people described interactive exhibits as the most enjoyable aspects of visiting informal science offerings; they preferred exhibits where they could 'do' something themselves rather than just observe. Shocking or surprising exhibits were also enjoyed.

The experience of science in school is key

For many young people, particularly those at secondary school, 'science' was strongly associated with school and the core science subjects. As such, the role of schools in providing positive science experiences, both formal and informal, was very important.

Key components of a positive school science experience included: adequate resources for practical work; speakers from science, business and other educational establishments; and engaging and enthusiastic teachers. Science field trips and visits to informal science offerings with school were also important because they happened infrequently outside of school.

Technology could provide an interesting link to science

Many young people described themselves as 'techy'. For some, techy meant an interest in gadgets and technology; for others it was more about what technology allowed them to do, such as gaming and communicating with others. Linking to or using technology could be a good way to generate interest and foster engagement with young people.

Parental influence on attitudes

Research has also highlighted the role of parents in influencing young people's attitudes to science. George and Kaplan (1998) state that the more positive the parents' attitudes to science, the better a pupil's achievement in the subject; they state that parents influence pupils through a combination of discussing school experiences and supporting them via activities such as visits to libraries and museums.

The importance of engagement in activities

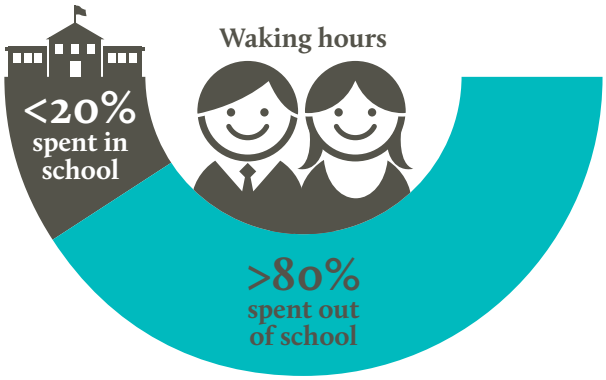
The majority of young people's time is not spent in school

In 2012 two Wellcome Trust reports highlighted that young people, even when in full-time education, only spend about one-fifth of their waking hours in school, leaving a huge amount of time for informal learning opportunities. A large part of that available learning time is during school holidays, in particular the summer holidays. There is a wide body of evidence that shows that learning experiences during the summer holidays can have a positive impact on student performance (Wellcome Trust, 2012a, 2012b).

“

Science makes me feel bubbly, I don’t know why!”

(Girl aged 11)



Source: Bell P et al. (eds). Learning Science in Informal Environments. Washington DC: National Academies Press; 2009.

Young people from low SES families are less likely to be engaged in structured leisure-time activities

A report from Adamson and Poultney (2010) for the Centre for Excellence and Outcomes in Children and Young People’s Services found that around three-quarters of young people participated in some form of ‘positive activity’, but that of these young people far fewer were from lower-income families or from rural areas. The under-representation of these two groups is concerning since a range of positive outcomes were reported to be delivered through participation in these activities, including improved personal, social and emotional skills, improved relationships between young people and their peers and adults, and improved educational outcomes. The more positive activities young people engaged in, the greater the activities’ resulting benefits.

The Taking Part survey, which measures engagement and non-engagement in culture, leisure and sport in England, has reported similar findings (Department for Culture, Media and Sport, 2010). People who live in the lowest SES areas of England are significantly less likely than those in the highest SES areas to visit museums and galleries, heritage sites and public libraries; they are also less likely to engage in the arts.

Engagement with informal science offerings

Television is the main source of in-home informal science experiences

All the young people we spoke to were engaging with media in the home, some of which provided opportunities for informally engaging with science. A range of science-related TV shows were mentioned, including documentaries, science/experiment programmes, and science-based shows such as dramas (e.g. *CSI: Crime Scene Investigation*), reality TV programmes (e.g. *24 Hours in A&E*) and comedies (e.g. *The Big Bang Theory*).

Engagement with informal science offerings is fairly rare even at weekends and during holidays, and declines with age

Most young people did not spontaneously talk about informal science experiences, although a minority spontaneously mentioned visits to museums or science centres with school. While some teachers mentioned that their school held a science or STEM club, they admitted that they were not as popular as other types of clubs, and the young people we spoke to did not attend any science clubs.

Visits to science-related offerings were generally provided by schools, and included trips to museums, science centres, zoos, aquaria and day or residential science field trips. Visits were more common during primary school and early secondary school; school trips were rare once studying for GCSEs was underway.

Non-school visits to informal science offerings tended to be one-time experiences; most of the young people mentioned visiting them just once. Repeat visits, when they did happen, usually took place many years apart, often to allow younger siblings to visit the offering for the first time. Visits tended to be in the school holidays rather than after school or at weekends.

Children in primary school spoke with the most enthusiasm about visiting informal science offerings. Even in early secondary school, young people still enjoyed these visits when they happened, but by later secondary school interest in days out with the family had decreased in general and particularly with respect to trips to informal science and cultural offerings.

A minority of young adults were still interested in visiting museums, but they tended to have interests in specific areas of science or history.

Summary of findings (continued)

Engagement in regular activities and factors influencing it

Engagement in activities outside of school varies widely

Our research highlighted wide variation in levels of engagement with activities, ranging from those who spent most of their time at home and rarely engaged in any activities beyond socialising with friends or family, through to those more regularly involved in clubs, sports and activities. The way young people spent their free time varied depending on whether it was after school, at weekends or during holidays.

Some engage with regular clubs after school

After school much of the young people's time was spent at home, watching TV, playing with siblings, gaming, cooking, reading and fulfilling any household responsibilities. For some older girls, chatting with friends on social media was one of their main pastimes. In warmer weather some spent time outdoors with friends, at the park or local playground. Some young people engaged in activities after school, typically through regular clubs held at school. Many activities were sporting activities, such as football, netball and martial arts, or other physical activities, such as dancing, drama and cheerleading. Non-physical activities included belonging to a choir, brass band and film club.

Some young people were also involved in activities or clubs held outside of the school environment, and some of these were also attended at the weekends. Football was mentioned most often, particularly by boys, though some girls also played. Other activities outside of school included ice skating, dancing and karate.

Family time is more common at weekends and during holidays

Weekends and holidays provided young people with the opportunity to spend more time with their families, and some used this time to do things with parents, siblings and other family members, such as going out for meals, shopping and visiting relatives. For older teenagers spending time 'hanging out' with friends was important.

Occasionally, families would do other activities, such as going to the cinema or a local leisure centre, and during the school holidays 'special' days out might include a trip to a leisure complex, the seaside or an annual trip to a theme park. These family days out became increasingly uncommon as the young people reached their teenage years.

Young people engage in regular activities for friendship and fun

The ability to spend time with friends and have fun were the main factors driving young people to take part in activities. Friends were particularly key from secondary school upwards.

> *"I like cricket because we are all friends who come together. I enjoy myself and socialise, we do teamwork, it helps communication."* (Boy aged 17)

'Fun' encompassed a number of different reasons for, and outcomes of, engaging in an activity: interest, enjoyment, excitement, exhilaration, doing something new/different, and achieving something. For sports-based activities, the opportunity to exercise, stay healthy and engage in competition made them enjoyable for some.

A number of strategies are used by teachers and youth workers to maintain engagement

Providing the opportunity for young people to take control and make decisions about activities and how they were run was a powerful tool for maintaining engagement, and was particularly important for reaching the most disengaged young people. Increasing self-esteem through success, incentives to take part and rewards for achievement were also effective in encouraging young people to continue their participation.

> I want to be a doctor but I don't like science, that's so weird!"
>
> **(Girl aged 11)**

Inertia or boredom were often the main reasons given by young people for stopping regular activities – i.e. that they had become too repetitive and were unexciting. Activities need to have some form of progression or change built into them to maintain young people's long-term interest.

Easy access to activities is vital

The accessibility of activities was very important in determining participation, and related to a number of issues:

- Limited availability. In some areas there was simply a lack of cheap or free activities for young people to take part in. Generally, what was available depended heavily on what was offered by schools.
- Lack of transport. Some families did not have their own transport, therefore any activity had to be accessible by foot or public transport.
- Unwillingness to travel. Even among families with access to a vehicle or who could use public transport, many were unwilling to travel outside of their immediate local community. As such, activities held close by and at places where young people and families were already going were the most likely to be attended.

Cost is a barrier to engaging with regular activities and cultural offerings

> *"If you do it for one you have to do it for the others, and we can't afford that."* (Parent)

The cost of activities was certainly prohibitive for some families, particularly larger ones, and the young people themselves appeared to be aware of this issue. Some young people described having to give up regular clubs due to the cost of the classes or equipment.

Families often looked for free or cheap activities to engage in and trips to more expensive attractions were rare. For many families, discounted family tickets for attractions were not beneficial because they do not cater for single parent families or those with more than two children. Annual passes were not seen as attractive as parents often believed the offering would not have changed significantly between visits, and would therefore not continue to be of interest.

A number of other barriers affect participation

Lack of time was often given as a reason for stopping activities, particularly at secondary school. Young people felt they did not have enough time to participate due to the amount of homework they had to do, or because they were too tired after their day at school. As a result, those who had engaged with regular activities in primary and even early secondary school had often stopped them by Year 10.

Peer pressure is a powerful barrier once young people reach secondary school, when friends and boyfriends or girlfriends become increasingly important. The pressure to fit in with peers influences participation; if an activity was deemed to be 'uncool', then some chose not to be involved.

Some of the young people gave up activities or were afraid to start new ones as they lacked self-confidence; this could also limit young people enjoying and celebrating their achievements.

Youth organisations have a key role for the most disengaged

Youth group workers and sports club coaches strived to increase the aspirations of young people, providing them with guidance, encouragement and support. This seemed particularly to be the case when the young people were disengaged from parents and school.

Young people involved in youth groups had the opportunity to engage in activities organised by the club at weekends and during holidays, such as day trips, residential trips and other projects/courses.

Closing thoughts

The Wellcome Trust will be working with others to ensure that all young people are able to connect with and see the relevance of science. Here we have identified some challenges that will need to be overcome in achieving this goal, and some ways in which this might happen. The most worthwhile work is not always the easiest, and on this note, we leave the final comment to a 17-year-old participant in one of our focus groups.

> “Science is like life. Science is hard and life is hard. You get new things in life; you get new things in science. The reason I say that science is life is that the way the building is made is science, the way the chairs are made. Everything you see around yourself is based on some law related to science or something… Maybe in some years’ time all these things will change all because of science. It’s like life moves on – it never stops.”
>
> **(Boy aged 17)**

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Report comissioned by the Wellcome Trust and written by Rebecca Atkinson, Kate Siddall and Carolynne Mason from Platypus Research.

Cover image: Illustration showing cartoon people playing the board game 'snakes and ladders'. *Tim Ellis*

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