Improving Science Education (closed)

This grant-funding round closed on 9 April 2018. Thank you to all those who put the time and effort into submitting your ideas for our consideration. We will be in touch with applicants in due course.

Using insights from research to improve science education

Closing date: 9th April 2018

Summary

Improving Science Education is a new funding scheme, launched by the Wellcome Trust and the Education Endowment Foundation (EEF), in December 2017.

This one-off scheme aims to generate new evidence about science teaching, with the particular aim of closing the science attainment and progression gap that exists between disadvantaged pupils and their more affluent peers.

We are looking for interventions or approaches that are informed and supported by encouraging evidence of impact on attainment and/or progression. Interventions should focus on science attainment and/or progression and we are particularly interested in approaches that are likely to be beneficial for disadvantaged learners.

Interventions should be practical for schools and we expect project teams to include relevant expertise to ensure that approaches are feasible for schools to deliver.

The Wellcome Trust and EEF have undertaken pieces of work that we hope will support applications to this funding scheme and these can be found below.

Project criteria

Successful proposals will:

- **Focus on raising the science attainment and/or the progression of pupils within the age range 5-16 in UK schools.** We are particularly interested in approaches that seek to improve the attainment of disadvantaged learners (pupils eligible for pupil premium funding) and would expect applicants to be willing to work in challenging schools. The progression of students is likely to focus on progression to study a science A-level or other post-16 science qualifications.

- **Be informed and supported by encouraging evidence of an impact on attainment and progression.** If available, evidence of the impact of the approach being proposed should be provided. Please refer to the Sutton Trust and the EEF’s Teaching and Learning Toolkit and the recent review “A review of SES and science learning in formal educational settings”, both available on the EEF website as a starting point.

- **Be practical, appropriate, affordable and scalable.** Our aim is to identify interventions and approaches that, if shown to be successful, could be taken on by other schools. Therefore we are only interested in testing initiatives that are practical and affordable for schools. We also need to understand what training and support is needed so that schools and teachers can use the intervention effectively.
• **Be willing and able to be independently evaluated.** We will rigorously evaluate the impact on attainment and, if appropriate, impact on progression of the projects, wherever possible by randomly allocating which schools or pupils receive it. We will appoint an independent evaluator, and work with successful applicants to design an appropriate evaluation plan. Note that this does not need to be included in your project plan and budget.

• **Be led by a project team with expertise in the relevant areas.** For example, the team should have experience of delivery with teachers, or within schools. Ideally, the team would include someone with extensive teaching experience. We welcome applications from a variety of organisation including, schools, universities, charities and for-profit organisations.

### Type of projects

We are interested in projects that either:

• **Test the impact of a fully developed intervention through a randomised controlled trial** (with the evaluation aspect designed in collaboration with the independent evaluator). For this to be applicable the intervention would need to have been previously been delivered in a number (at least 10) schools and be fully developed in terms of the resources and training required. There would also be clear descriptions of what good fidelity to the intervention looks like and evidence indicating that the programme is likely to impact on attainment. An example of an existing EEF project that met this criteria is Thinking, Doing, Talking Science, which had previously been evaluated in 16 primary schools through a match study. In addition there was background evidence that supported the rational for the programme.

• **Test the feasibility and collective evidence of promise of a more developmental project through a pilot evaluation** (again, with the evaluation aspect of the project being designed in collaboration with the independent evaluator). For projects to be suitable for this funding they would need to have evidence (from the literature) supporting the rationale for the approach and why we would expect this to lead to the intended outcomes. They would also need to demonstrate the need for the project and that they are not re-developing something that already exists.

### How to apply

To submit an application please register for the Improving Science Education Round on the Apply Now section of the EEF website and complete the online form before 9th April 2018.

Guidance notes for the form are available below. We are expecting a high level of interest in this round. The Application Form is designed to be short and easy to fill in.

Following the closing date, we will review the applications received against our criteria. We will begin conversations with a small number of the most promising proposals, with a view to jointly developing a project and evaluation plan with the independent evaluator that will be appointed by the EEF.

We do not expect to make final funding decisions until the end of June 2018.

### Supporting documents

The EEF and Wellcome Trust have carried out two pieces of work that we hope will provide useful support during an application to this scheme:

- A literature review, examining the attainment gap in science, possible causes for the attainment gap and
approaches that may help to address this. This review was carried out in collaboration with the Royal Society.

- The Wellcome Trust Science Education Tracker, a nationally representative survey of more than 4,000 students between year 10 and year 13 in state-funded schools across England.

Please note that we have a Science Teacher Retention grant-funding round open from 16 January to 22 March 2018.

If your primary aim is to support science teachers such that they are more likely to stay in the profession, this may be a more appropriate avenue. Please read the science teacher retention guidance notes before deciding which round to enter.

Potential grantees may apply to both rounds -- however, we would expect the applications to differ significantly given their different aims, and it is unlikely we would fund two projects by the same organisation.

FAQs

**Does the intervention need to cover all the sciences?**

In either round, your project would not have to cover student or teacher knowledge in all areas of science. However, it is worth considering that the projects will be measured against broad outcomes. For example, if your project team had identified Physics pedagogical knowledge as a major area of challenge for science teachers, then we may reasonably expect to see a change in science teacher retention if we targeted only this area. Similarly, if your team has identified osmosis as a significant challenge for students, we may reasonably expect to see improvements in Science GCSE outcomes if this was taught better; the project would be measured against this sort of outcome, rather than a test covering only osmosis.

**Can the funding cover staff and product development costs?**

Staff costs are likely to constitute the majority of your budget, including staff time spent on recruiting schools and delivering training etc.

In terms of funding development of new materials, we generally expect your programme materials to already have been used and developed, even in the case of pilot studies. It may be the case that you need to adapt your existing resources to fit the project, and we can fund small amounts of product development where important for project success. It also may be the case that there is a good reason for developing a new programme, for example the wider evidence suggests that the approach is likely to be beneficial, but there isn't a programme to get this into schools (an example of this is formative feedback). However, as a guide, we would not expect this to constitute a high proportion of the funding.

**How much matched funding are applicants expected to secure?**

As a general rule, we expect applicants to source 5-50% of their total programme costs from other sources. This could come from a variety of sources, including: funding from other funding bodies, staff time contributions, schools involved in the project paying some of their costs or contributing staff time. The amount you self-fund is flexible, depending on the nature of the project and your organisation. Please note that for-profit organisations would be expected to make substantial contributions.

**My project isn’t ready for funding yet. Are there any plans to repeat these rounds?**

There are no current plans to repeat either the Improving Science Education round or the Science Teacher Retention...
round. The EEF usually runs two general application rounds per year. Science programmes with evidence that they are likely to improve the science attainment of students would be eligible to apply in future general rounds.

**Who is responsible/has ownership for publications?**

As with EEF grants usually, the delivery team are responsible only for the delivery of the intervention and a separate evaluation team are appointed to conduct the evaluation of the trial. This evaluation is subject to Crown copyright. During the set-up process we work with the delivery and evaluation teams to agree any additional publications either or both teams may wish to pursue in relation to the trial. With our permission and in agreement with the evaluation team, the delivery partner may produce their own reports that can be published any time after our original evaluation report. If the delivery partner would seek to collect additional information from trial participants to support their own research, this would need to be agreed during the set-up process. We would advise applicants to limit additional data collection as this can be burdensome to participants and lead to drop-out.

**Regarding the Improving Science Education round, are you only interested in directly addressing the holes in the research identified in the Literature Review?**

No. The report identified the most promising areas for further exploration, but the EEF and Wellcome are open to other ideas. The onus is on the applicant to present a convincing case as to why it would be most beneficial to do something else.

**Is there a minimum proportion of schools that should be in England?**

The Science Teacher Retention round funds activity in England only. The Improving Science Education round can include regions elsewhere in the UK. Programmes should be relevant to English schools, and a sizeable proportion of activity should take place in English schools, due to the EEF’s funding being exclusively for the benefit of these students. If a project were to take place in, for example, some Scottish schools, it would probably be advisable to have a reasonable proportion of schools recruited from Scotland in order to render any adaptations necessary for the Scottish syllabus worthwhile. As a guide, applicants may want to avoid proposing much under 50% of activity to take place in England.

**In the application form, there is a question about taking the programme to scale. How much could a programme reasonably cost schools after the trial grant?**

We generally use a school’s per-pupil Pupil Premium budget as a guide for the costs that a school could reasonably be expected to pay for a programme. If schools would struggle to pay for a programme, and there is no obvious other source of funding, we would have concerns about its potential scalability. When thinking about scalability we also take into account a programme’s feasibility and whether the training could be scaled to a greater number of schools (for example is it manualised? and it there a mechanism by which schools could receive training from someone other than the original developer). It is good if projects think about these issues early on, although they do not need to have all the answers when applying.

**What types of improvement are suitable outcome measures?**

For the Improving Science Education round, the primary outcome should be an attainment outcome. Generally we prefer nationally administered tests (e.g. Science GCSEs), but if this is not appropriate for your age group, a measure of general science attainment could be administered. The evaluation team assigned to your project would work with you to decide the exact measure, so it is not necessary for you to have considered this before applying. We are interested in other outcomes that are central to your improvement model and usually would measure these as secondary outcomes. These outcomes will depend on the nature of your intervention, and could include scientific reasoning, teacher confidence, or progression to A Level study. Similarly, for the Science Teacher Retention round, the
primary outcome is teacher retention in science teaching in the UK. Secondary outcomes could include teacher wellbeing, subject knowledge confidence, or retention in challenging schools, again depending on the nature of the intervention. During the set-up process, we would work with the delivery and evaluation teams to decide suitable outcomes and relevant measures.

*Where a project has multiple outcomes (for example, improving both student attainment and teacher confidence), how will the success of the project be judged?*

Our trials usually specify one primary outcome. This would likely be attainment for the Improving Science Education round, and teacher retention for the Science Teacher Retention round. Therefore, success, and the first key conclusion of the trial would be based on that outcome. However, during the set up process, we would also decide on any secondary outcomes, which would be reported at the time of publication. We may also decide to follow the outcomes of pupils as they progress to further key stages, which would later be added as an addendum to the report, and publicised appropriately.