



# Planet SciCast

## Evaluation Report

**For NESTA**

**December 2009**

## BACKGROUND

Isinglass Consultancy has been invited to carry out an independent interim evaluation of the Planet SciCast project. This report draws on survey and interview data gathered in November and December 2009 and is intended to provide insight into how well the project has met its original objectives, while making clear recommendations around future developments.

Planet SciCast is an innovative approach that makes use of digital filmmaking to enliven science education. There are two key elements to the project:

1. A short film-making competition
2. A library of short films and support materials

These two elements translate into project objectives:

- To encourage teamwork, problem solving and creative thinking, within a scientific context
- To contribute to a growing resource of free, high-quality, entertaining and informative films
- To encourage the use of digital technology in the laboratory and classroom
- To explore collaborations between different disciplines within schools
- To promote learning about copyright law and its application.
- To provide a permanent record of achievement.
- To help inspire the next generation of scientists and filmmakers.

## METHODOLOGY

Isinglass Consultancy produced three online surveys, using *SurveyMonkey* software, comprising closed and free response questions, aimed at the following three groups:

1. Users of Planet SciCast
2. Non-users of Planet SciCast
3. Funders, partners and other stakeholders

A short showreel of Planet SciCast films was made available for non-users and stakeholders together with links to the website, serving as a primer and stimulus for more generic questions. Perspectives of students who had participated in film-making were sought through completion of a separate response sheet.

Recruitment of respondents drew on existing Planet SciCast contacts, Planet Science subscribers and a range of stakeholders identified by the evaluators and NESTA as significant individuals in the STEM education community:

*Users:* n=30      *Non-users:* n=13      *Stakeholders:* n=11

Supplementary telephone interviews with some of the respondents allowed us to explore some of the findings in more detail.

## RECOMMENDATIONS

1. As a valued initiative, Planet SciCast should promote more widely how its programme nurtures creativity and encourages the development of a broad range of communication skills.
2. Planet SciCast should manage expectations of users and funders by implementing a more rigorous mechanism for selecting which of the student-generated films are suitable to be used by teachers and placing these in a defined category
3. The home page to the website could help in managing these expectations by clearly stating what the scheme does and how it can be used by students, teachers, film-makers and others
4. The project should continue to target teachers of students in the latter years of primary school through to sixth form
5. Planet SciCast should increase its value to schools through extending its scope to include short science education films from other sources
6. Looking to future sustainability, Planet SciCast should explore the potential for developing closer links with other well-placed potential partners, including the National STEM Centre in York
7. SciCast should promote contributions from a greater diversity of science themes, and from the other STEM subjects, including forming links with other innovative programmes of work such as Bowland Maths.
8. Planet SciCast should explore how to increase the skills of more teachers, technicians and other support teachers, so that they feel confident to lead students to produce their own films
9. SciCast should present clearer guidance on copyright, as well as making it easier to access rights-free material
10. The project team should consider the scope for teachers, technicians and other support staff to produce short 'tricks of the trade' films that can be used for continuing professional development
11. Planet SciCast should continue to host a ceremony to celebrate achievements since this is highly valued by teachers and their students

## KEY FINDINGS

- Planet SciCast is well-received and valued by the majority of people who have had some involvement with the initiative
- The project sparks creative thinking amongst students, encourages problem-solving and promotes communication skills.
- Participation in film-making contributes to cooperation amongst students and the establishing of a team identity
- There is some confusion about the seemingly competing aims of Planet SciCast as an educational activity and as a library of educational material.
- Many of the films produced are thought to be of good quality though some concerns were expressed over the rigour of scientific content and safety issues.
- Some 70 percent of users of Planet SciCast download films, while 50 percent produce their own.
- Many teachers have difficulty in using online short films from generic online film sites as they have little time to research them for relevance, quality and pitch.
- Users and other stakeholders feel that Planet SciCast could extend its reach and increase traffic to the site by hosting other science education films
- There is significant overlap between Planet SciCast and aspects of the Government's STEM (science, technology, engineering and mathematics) initiative.
- A teacher's personal level of technical expertise is a major factor in determining whether he or she encourages students to produce films
- The speed at which students' work is reviewed and uploaded onto the site is a factor that contributes to the likelihood of a school continuing to submit material.
- The Planet SciCast Awards ceremony is seen as something special and memorable by students and teachers alike, though the team should consider how to reward prolific schools without disappointing others
- Breach of copyright, linked mainly to musical soundtracks, has been an obstacle for many SciCast film producers
- There is scope for greater cross-departmental collaboration in schools in the production of SciCast films

# RESEARCH FINDINGS

## What has Planet SciCast achieved?

We asked similar questions to the users of Planet SciCast and of non-users who had had the opportunity to view a showreel of films and give a more impressionistic assessment of the project's achievements. We also sought the views of stakeholders.

All user respondents felt that the project fostered originality, with 79 percent in strong agreement with the statement that Planet SciCast 'sparks creative thinking'. Non-users appear to concur with this view (46 percent strongly agree; 36 percent agree). A large majority of both groups support the notion that SciCast encourages problem solving (89 percent of users; 82 percent non-users) and promotes communication skills (96 percent users; 100 percent non-users). Equally, the promotion of teamwork (or the potential to promote it) is seen as an achievement by users and non-users alike, though the extent of support for this view was greater by those who had participated in the project.

Both groups agreed that Planet SciCast produces informative and entertaining films that are of high quality, though there was a little more scepticism amongst users, especially about the quality of the films (25 percent did not commit to the statement that the project produces high-quality films, and one respondent disagreed with the statement).

The potential for Planet SciCast to be a repository for students' work was recognised by teachers who had used or developed films with their students. Some 93 percent of this group agreed that the scheme provides a permanent record of achievement, as against 73 percent of non-users referring to its potential to be a lasting record.

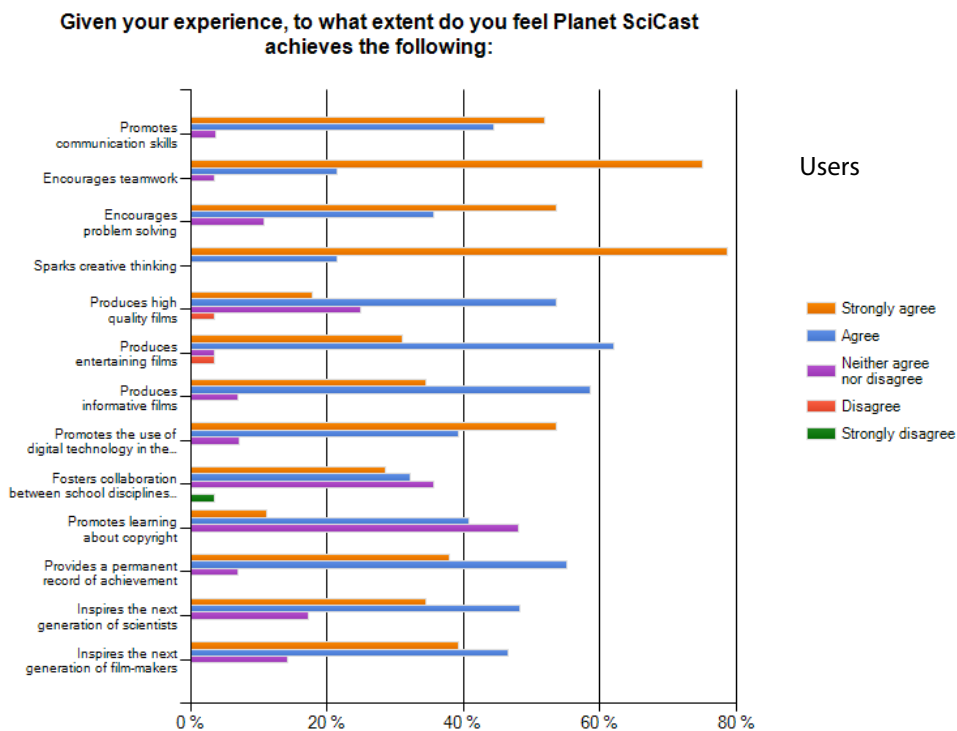


Fig. 1

Other benefits identified by teachers highlighted how enjoyable the experience was, the enthusiasm for science it generated, the value in initial teacher training - exemplifying more creative teaching approaches and the involvement of parents in students' work. It also gave students a greater insight into how scientific ideas are presented in the media. One respondent commented on how the project helped to raise the profile of science within the school and how this made others keen to participate. Another remarked that her school now has a dedicated after-school club for film production.

**Having seen the Planet SciCast showreel and some complete films, to what extent do you feel Planet SciCast has achieved the following?**

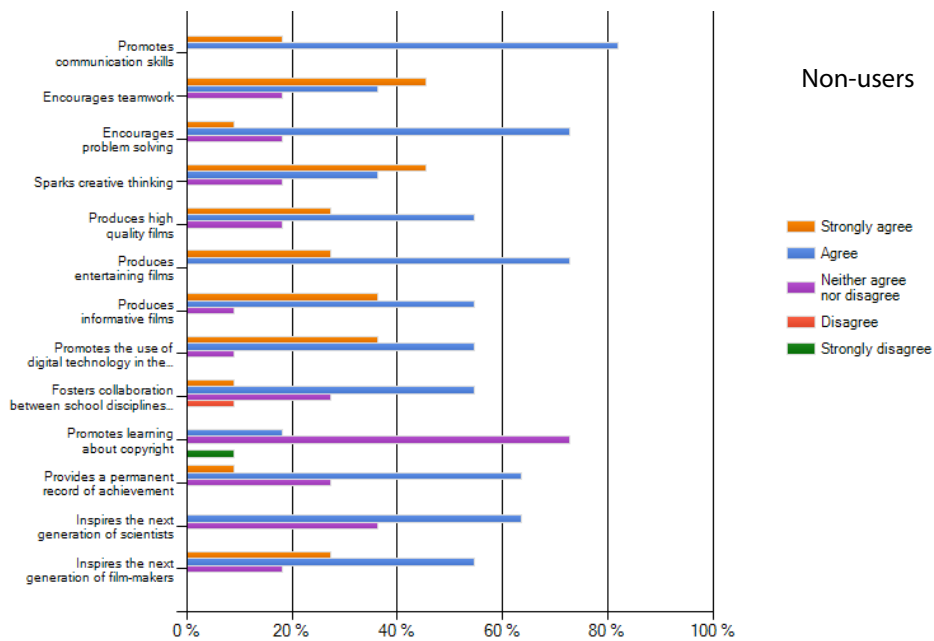


Fig. 2

**Having seen the Planet SciCast showreel and some complete films, to what extent do you feel Planet SciCast has achieved the following?**

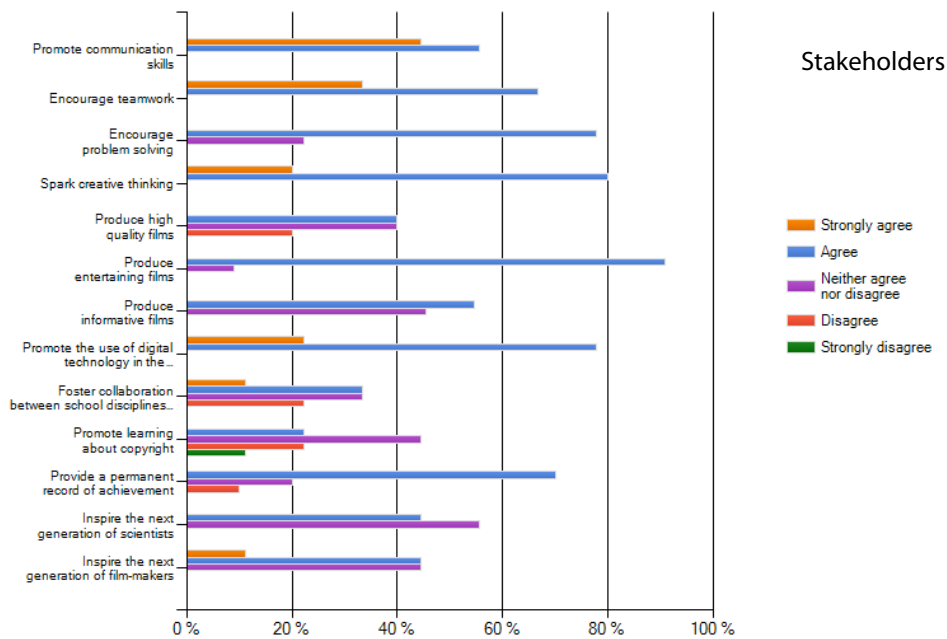


Fig. 3

## Who uses Planet SciCast?

Planet SciCast activity is, unsurprisingly, being led by teachers in the majority of cases. These teachers tend to be fairly experienced, with 43 percent having taught for between 6 and 10 years, 27 percent having been in the classroom for longer and 23 percent for 5 years or less. One respondent was newly qualified, with a further two identifying themselves as 'not yet qualified'. Two-thirds teach in secondary and 17 percent in primary schools. The independent sector accounted for one-fifth of SciCast users, and four of the sample were from specialist science schools.

Other Planet SciCast users included a school technician, a classroom assistant, two research scientists and a school science adviser. Unless otherwise stated, this report uses the term 'teacher' to cover all education professionals working in schools and colleges.

## With which age ranges is Planet SciCast being used?

The most popular age groups for making use of SciCast activity were at secondary level. The most common age range for using the scheme was those aged 12-14, with just under two-thirds of respondents stating that they have used the project with this group. Some 57 percent of respondents identified age 15-16 as a target group for the initiative, with 36 percent of the total having either made a film or used existing material with sixth form students. Though a smaller figure, corresponding to 25 percent of teachers responding, have used SciCast with older primary school pupils (aged 8-11). This figure may simply reflect the smaller response rate for this group overall, with primary teachers still being major users and producers of films.

Non-users and stakeholder groups were asked which age categories would most likely benefit from using SciCast films or participating in film production. The majority of non-users identified age ranges 12-14 and 15-16 as those most likely to benefit (both 82 percent), with the later stages of primary school and sixth form also gaining some support (64 percent and 46 percent respectively). Stakeholders consider the project suitable or ideal for all except under 8 age group, but favoured upper secondary and sixth form over lower secondary.

## How is Planet SciCast being used?

The largest category of respondents (70 percent) indicated that their experience of Planet SciCast has been to use existing films as part of their teaching on one or two occasions. The production of films with students accounted for 53 percent of responses, with one-fifth of the total having produced films with 'many groups of students'. All but three respondents stated that they have used Planet SciCast in science lessons, the others drawn from media studies, drama and technology. Some 70 percent indicated that they have used the films in their teaching or lesson preparation.

## What motivates teachers to use Planet SciCast films?

Making use of the films was thought to 'entertain and spice up lessons' by all the respondents who have used them, with approximately two-thirds identifying this factor as 'very important.' Film users felt that the familiarity young people have in using short web-based films was an important factor in influencing their decision to use them in their teaching (81 percent). Respondents gave scores of 60 percent (important) and 30 percent (very important) to use the films to illustrate 'things that are otherwise difficult to do'. Similarly the ability to demonstrate experiments that 'may not be permitted in the circumstances in which I teach' yielded responses of 45 percent for 'important' and 30 percent for 'very important.' Some 65 percent of users felt that the films helped them when preparing demonstration activities and an equivalent number dismissed the notion that they could be used instead of a demonstration. This contrasts dramatically with the response given by non-users, with 67 percent agreeing that the reason for using short films is that it is 'easier to show a film than to set up and carry out a demonstration.'

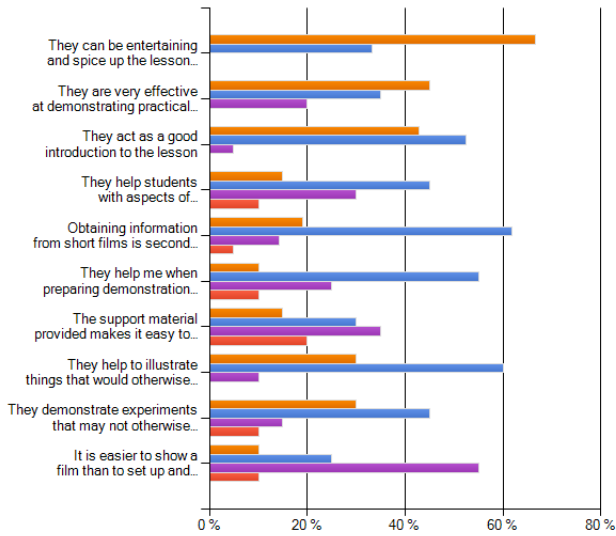
Non-users were asked to specify why teachers do not use short online films when teaching science. One of the main issues emerging was quality assurance, with 75 percent having concerns about the accuracy and rigour of such material. Some 83 percent of respondents cited that they did not have time to search through online provision to find films that are suitable, a point raised by Planet SciCast users, who have made their own films but do not use others. For non-users, a further 75 percent see the ephemeral nature of online material, generally, as a disincentive for making use of this resource:

*'You cannot write online films into schemes of work since they can disappear from the web from one year to the next.'*

The fact that some schools block access to generic film websites is a reason given by 67 percent of non-users not to include short films in their teaching. Planet SciCast could make use of this in its forward planning. Further exploration with teachers and stakeholders showed that using the site to post other science education short films would enhance it, increasing traffic and possibly promoting a wider range of schools to make their own films. Planet SciCast may wish to pursue this idea by exploring opportunities arising as a result of major educational initiatives, such as the National STEM Centre in York.



**How important were the following in your decision to use Planet SciCast films in your teaching?**

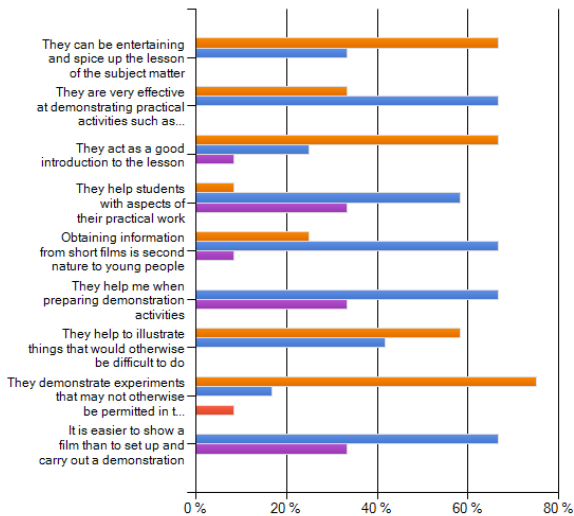


**Categories:**

- They can be entertaining and spice up the lesson and subject matter
- They are very effective at demonstrating practical activities such as experimental demonstrations
- They act as good introductions to lessons
- They help students with aspects of their practical work
- Obtaining information from short films is second nature to young people
- They help me in the preparation of demonstration activities
- The support material provided makes it easy to structure the film production
- They help to illustrate things that would otherwise be difficult to do
- They demonstrate experiments that may not otherwise be permitted in

Fig. 4

**To what extent do you agree with the following statements about the use of short films (such as those posted on YouTube, Vimeo or similar sites) in science lessons?**



**Categories:**

- They can be entertaining and spice up the lesson and subject matter
- They are very effective at demonstrating practical activities such as experimental demonstrations
- They act as good introductions to lessons
- They help students with aspects of their practical work
- Obtaining information from short films is second nature to young people
- They help me in the preparation of demonstration activities
- They help to illustrate things that would otherwise be difficult to do
- They demonstrate experiments that may not otherwise be permitted in the circumstances in which I teach
- It is easier to show a film than to set up and carry out a demonstration

Fig. 5

Figures 4 and 5 show responses to questions about factors that influenced decisions by teachers to use Planet SciCast films and the more generic use of short films in science lessons.

## The quality issue

Planet SciCast has a built-in reviewing process intended to ensure that the films' content is scientifically correct and safe. Respondents from all groups did, however, share a concern that the two ambitions (to develop filmmaking skills and to provide films for use in class) created a degree of tension for the project. Managing expectations and providing clarity could go some way to reducing this perceived tension:

*"They have to make a decision about whether it is a competition to make films, or whether they're trying to make quality educational programmes. If the latter, only the winning films should be uploaded. And to win, they would need to be scientifically accurate as well as well-made and enjoyable"*

(Stakeholder respondent)

Others felt that Planet SciCast could make better use of inaccuracies to promote a critical approach to presentation of science on film, through captioning or highlighting errors and encouraging teachers to draw attention to misconceptions as part of the learning experience, though all agree that students watching other students' work is highly valuable:

*"...since they have been developed in schools involving young people, it's easier for classes to analyse the approaches to explanations presented [i.e. what was explained well, what was right etc]."*

Many teachers felt that the educational value of encouraging students to make films far outweighs any risk of reinforcing misconceptions, but highlighted the role of teachers professional judgement in making use of film or any other material:

*"...it's really nice that it is work carried out by students"*

We feel that some of the views expressing criticism have arisen because the entry to the website does not currently manage expectations about the scheme. A clearer home page stating unambiguously that it is a film-making project for young people, and that the films produced can also be used in the classroom by teachers. We also feel that it may be worth exploring how teachers perceive film in general, as an educational medium - as a finished product, as opposed to work in progress.

## What encourages teachers to make Planet SciCast films?

Eighteen of the 30 users of Planet SciCast had produced a film with their students or in some other context. Of these, the key factors in encouraging them to pursue the activity were: student motivation, promoting teamwork and providing a lasting record of achievement (all at 100 percent). Planet SciCast film-making is also thought to encourage students to understand what they are doing in science (94 percent), to promote skills and success amongst students who do not usually succeed in science (88 percent), and to provide an additional teaching technique to add to teachers' repertoires (71 percent). Other high scoring reasons given were that film production promotes better communication of ideas (94 percent). The challenges to making films identified by teachers centred around finding the time in the school calendar and how to fit the content into the two minute and 30 seconds limit. It would appear that the time required for editing was universally underestimated.

## Student film-makers' perspective on what it was like to take part

Three groups of students gave their views on six aspects of producing a film:

- How they worked as a team
- The creative ideas used
- The problems they faced
- How they overcame these problems
- What they achieved
- What they would do differently

One of these groups were from an award-winning primary school, the others from secondary and post-16, who had also won awards.

Students suggested that working together as a team helped to make the production easier and better. In the case of a group of physics students, they stated that they were excited by the subject matter, which they believe also contributed to a cooperative approach. The students also identified the value in having a strong director within the group with the authority to make decisions, as contributing to a sense of teamwork. The primary students highlighted how they listened to one each other's ideas and then tested these ideas.

Creative ideas cited by the sample of SciCast students included the use of drama, rap, stop motion animation and composing music. One group produced a film in a silent movie style to overcome difficulties related to sound recording. The primary school students presented their insight into the progression of ideas within the team, how they went from a 'singing project' to making a connection with an X-Factor theme, resulting in the writing songs about the planets.

Some of the problems that students had to overcome included forming the initial idea and having to make compromises based on time (duration of the films and how much they could commit to the project) and other resource limitations. The same students identified flexibility and commitment as the essential features to address these problems. Managing people for rehearsal and filming was seen as problematic by another group, though again, having a good director was seen as a solution.

Students identified their achievements both in tangible outputs, such as the production of a film, presence at the 'Big Bang' science event, films uploaded onto the website and formal awards. One individual described one of the achievements as 'stronger friendships'. An older student, now aged twenty summarised his group's achievement as:

*"Making relatively simple content look finessed and refined"*

If they had a chance to produce the films again, students said they would spend more time on the development of the storyline, take greater care over production and make the thing more polished. One student would take on more elaborate content to challenge their film-making abilities.

## What prevents teachers from making films with their students?

Some 58 percent of teachers who have used Planet SciCast films were discouraged from having their students make them by their own technical abilities. When responding to a similar question, the non-users overwhelmingly saw technical knowledge as an obstacle with 83 percent indicating that this would be an important or very important consideration. This group also scored more highly in the view that their school or college did not have the right or reliable equipment (83 percent), as against 55 percent in the SciCast users group who had not made a film.

The pressure of the curriculum appeared to play out differently amongst the 'users' and 'non-users' with only quarter of the users seeing 'time spent away from core science' as a rationale for not developing a film. However, 58 percent of non-users saw competition with curricular time as reason not to produce films.

Administrative factors are often cited as an obstacle to participating in curriculum enhancement and enrichment activity. However the administrative aspects of submitting a film was not seen as such by non-filmmaking users, with the submission process seen as off-putting by only 18 percent.

One of the funders suggested that a significant factor was teacher confidence:

*"We have had a lot of feedback from teachers liking the idea but lacking the confidence and/or time to take part. They are unsure what is really involved."*

Planet SciCast users who have not made a film

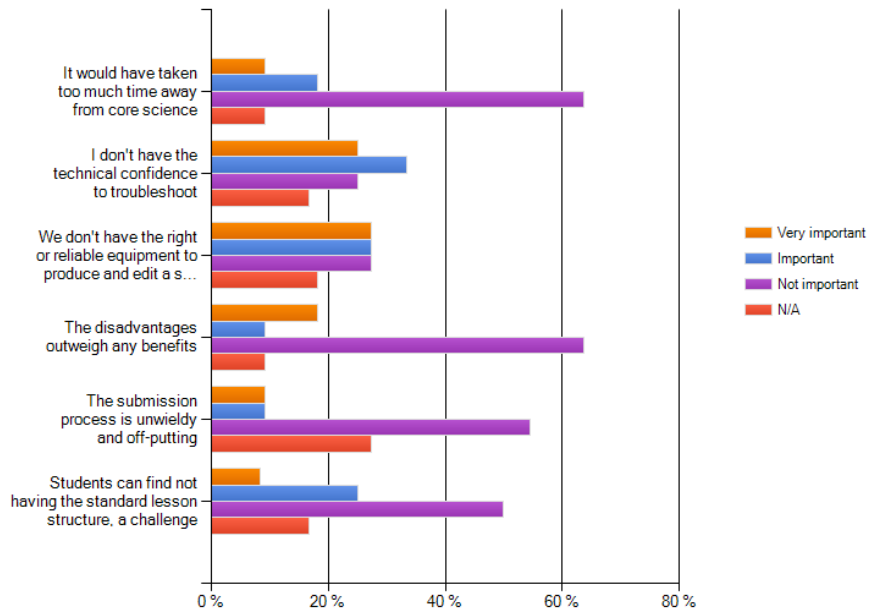


Fig. 6

Non-users

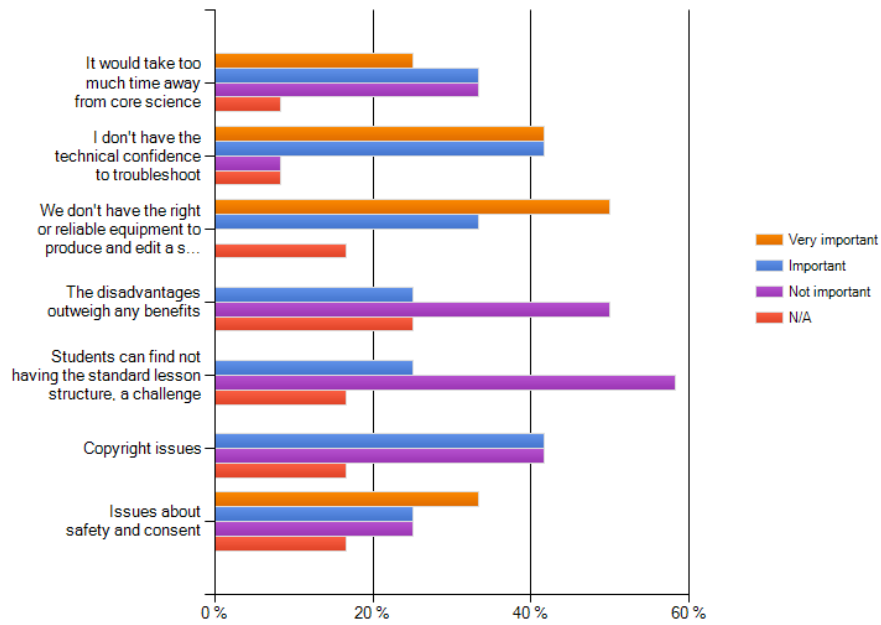


Fig. 7

Figures 6 and 7 show responses to similar questions about not making short films with students, by the two groups of teachers.<sup>1</sup>

<sup>1</sup> The non-users were asked about copyright here, whereas the users' views on film rights issues were considered in a dedicated separate question.

## Learning about copyright

One of the stated aims of Planet SciCast is to promote an appreciation of copyright amongst teachers and their students. A significant number of the films produced could not be used on the website as they were in breach of copyright. Some 87 percent of teachers presiding over film-making now know much more about what can be included in a film to be uploaded to a website and 52 percent now understand what is meant by 'Creative Commons', with half of that number suggesting that their students now understand it too. Copyright issues were seen as a hindrance by 42 percent of filmmakers and a potentially important obstacle to making a short science film by 46 percent of non-users of Planet SciCast teachers whose students had produced films did express concerns that the copyright infringement issues related to use of music were difficult to avoid despite various efforts to 'warn' their classes. Some explicit guidance on how to find copyright-free music may be of value for the future.

## Planet SciCast Awards Ceremony

Planet SciCast has an expressed aim of "trying to build the world's most entertaining science resource, by collecting contributions that are exciting, dynamic, repeatable, and plain fun". As a symbol of this ambition and in recognition of students' work Planet SciCast has run two annual SciCast Film Award ceremonies, honouring the makers of its best films at a glittering awards ceremony. The shortlisted nominees compete in a range of categories, with judges deciding who walks away with the SciCast trophy and other awards and prizes.

The impact of attending the Awards Ceremony was high, with 45 percent of user respondents having been present on at least one occasion. Nearly all agreed that the event was well organised, made students and teachers alike feel important and a great opportunity to really appreciate others' work. Some expressed slight disappointment that the same teams won more than one prize and that the primary schools were disadvantaged by being "*up against secondary*" in some of the categories. The ceremony was cited as being more important than the prizes.

## How did teachers find out about Planet SciCast?

The majority of user-respondents had discovered Planet SciCast through the Planet Science website (57 percent). One-fifth initially came into contact with the scheme through Institute of Physics communications. Further routes into SciCast included 'word of mouth from a teaching colleague', the National Physical Laboratory - through the Scientific Edge initiative, contact with the Planet SciCast team, by way of Films for Learning and through STEMNET.

Publicity and marketing are areas that the Planet SciCast team will need to consider if they are to reach a critical mass of users to ensure the project is sustainable.

## Stakeholder views

The sample of stakeholders comprised funders, partners and key individuals in science education innovation. Three respondents were from funders of the scheme, with a further two individuals having provided other support.<sup>2</sup> Two funders felt that Planet SciCast has met its expectations to date, with a further respondent stating that the scheme had exceeded them. However despite having achieved a high quality of engagement, one funder felt that the scheme had not yet had the degree of impact that they had originally hoped for:

*“The project has met expectations in terms of quality of engagement with participants and the enthusiasm that it's generated. However there haven't been as many participants as we had originally envisaged and it has yet to get to the point where it has a truly national reach.”*

One suggestion on how the films could be made more valuable to teachers and their students was through the provision of curriculum and cross-curricular links. Also through highlighting how they might, for instance, support a school's wider agenda - for example its specialist status, community links or Every Child Matters work. Equally the Planet SciCast team could suggest how the production of films could qualify for other schemes and awards - examples given being the Crest Awards and National Science and Engineering Competition.

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<sup>2</sup> Stakeholder respondents comprised representatives from: The British Science Association, Simon Langton Grammar School for Boys, The National STEM Centre, The Wellcome Trust, The Centre for Science Education at Sheffield Hallam University, SCORE (The Science Community Representing Education), the Institute of Physics, Science Made Simple, NESTA, The Science Council

## What is Planet SciCast's future potential?

Looking to the next stage of development, we asked how each group saw the project's potential to affect four aspects of future science education:

- Raising the profile of practical science
- Embedding digital technology in science lessons
- Demonstrating the creative potential of science
- Making science a more attractive prospect

Overall, users appear also to be great enthusiasts for the initiative and its potential to influence the science educational landscape. Non-users and stakeholders appeared more sceptical about the prospect of Planet SciCast making science a more attractive prospect for further study or career choice, with 27 percent rating the potential as low amongst the former and 44 percent amongst the latter. However, all agreed that Planet SciCast can be used to demonstrate the creative potential of science lessons.

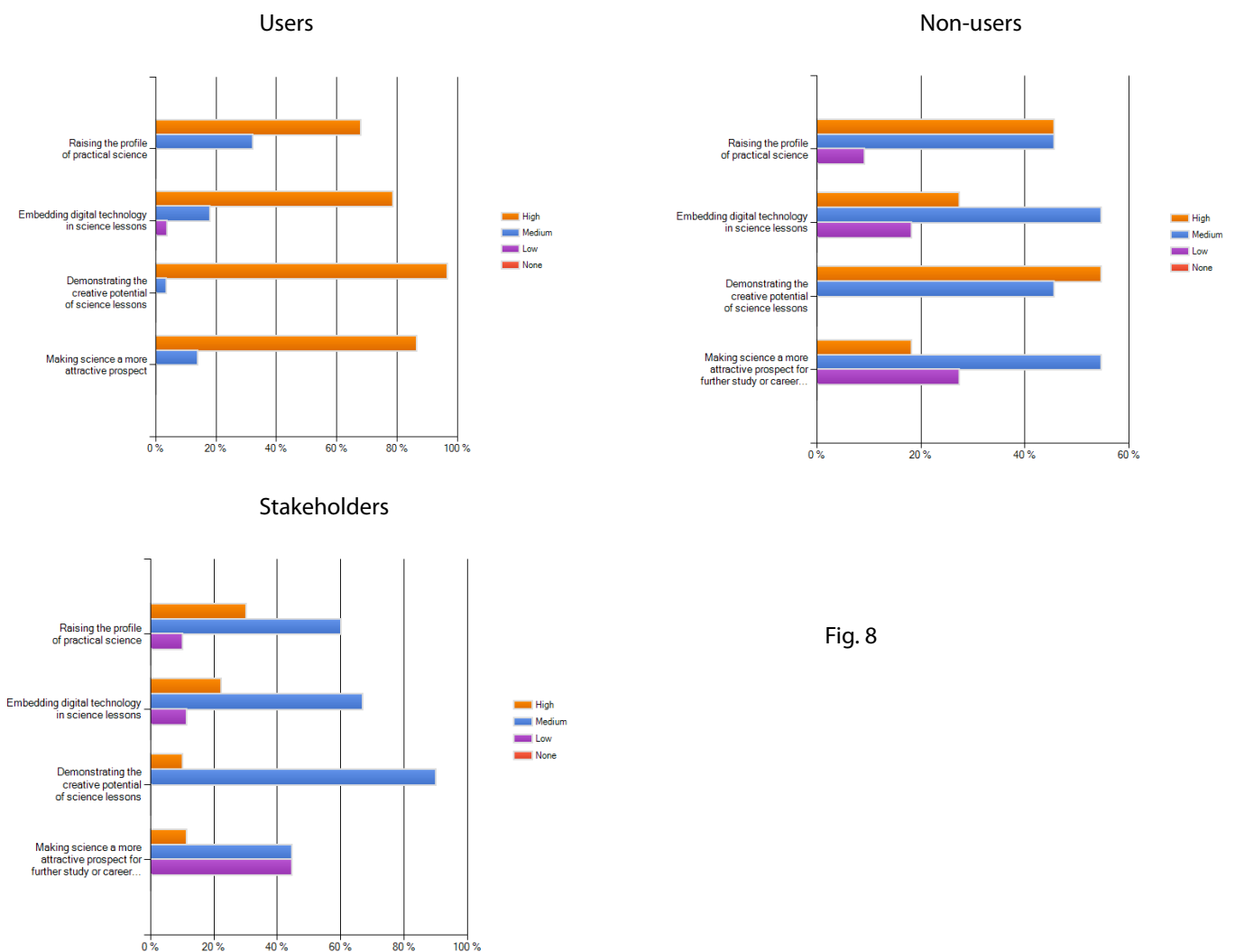


Fig. 8



It was felt that for its longer term sustainability, Planet SciCast could extend the breadth of its film themes, which were (understandably) considered to focus on physics in particular. Linked to this was a suggestion that there should be tighter categories for particular curriculum topics, fitting closely with teachers' priorities, but without undermining creativity. One stakeholder stated that there should be greater representation from other areas of STEM (science, technology, engineering and mathematics) to emphasise that:

*"It's not just science".*

The same respondent suggested that the scheme could encourage the development of films related to the newer qualifications such as Diplomas. This would extend the repertoire of SciCast films to include, for example, work experience visits and interviews with people working in STEM. Another commented that the scheme will only survive if it gets financial and other support across the STEM community, with a suggestion to draw on projects like the National Higher Education STEM programme to take a lead in:

*"...encouraging their partners to run local heats or similar and so give local support to teachers and schools".*

(Stakeholder respondent)

A further suggestion was for showing how the Planet SciCast approach can become a more intrinsic part of a range of new qualifications, hence aiding teachers in the delivery of these courses.

With the establishment of the National STEM Centre in York as the "UK's largest collection of resources for teachers and lecturers of science, technology, engineering and mathematics", it would be a logical step for Planet SciCast to enter into discussion about areas of overlap between the two initiatives and what is the potential to exploit the success of work to date. Could SciCast, for example, have a distinct category for STEM films?

And what of the continuing professional development opportunities? A number of teachers, technicians and scientists have already produced films. Would there be some merit in working through and with the appropriate agencies to provide short 'tricks of the trade' films that could be used solely by teachers as part of their CPD?

## Conclusions

Teachers and their students, assistants, technicians and others who have made use of Planet SciCast have benefited greatly from the experience. At a time where communication using multimedia is commonplace and within the grasp of many schools and students, it makes sense for young people to be presented with opportunities to understand the rudiments of film-making as part of their education. Organisations with a medium-to-long term view about science (technology, engineering and mathematics) education, and the resources to support this view, could take advantage of the pioneering work carried out by the Planet SciCast team – through embedding film-making and the use of student-generated films in the learning experiences of young people. Teacher confidence will play a major role in determining how widespread the use of the Planet SciCast approach becomes and professional development opportunities for more educators will help to build a critical mass of confident practitioners and ambassadors for the scheme. In the meantime Planet SciCast should continue to promote its work and successes, but with a clearer message about the extent to which the scheme can serve a number of different aims.

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