

**PLANET
SCICAST**



**SHORTFILMS
REALSCIENCE**

HANDBOOK FOR PRODUCERS







WELCOME

SciCast is about:
...short
...entertaining
...useful
...science films

Participants make a short film about practical science – a demonstration, or explanation, or observation – which we collect on our website as a shared resource, open to all.

Get involved, and help us build the world's most entertaining science resource.
www.planet-scicast.com

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Ah!



WHY MAKE FILMS?

To explain something well, you have to understand it. Making a short film focuses your attention on detail and clarity – you have to decide what to put in or leave out, and how to approach a topic to make the most sense of it.

Ah!

Ah!

Ah.

Taking part in SciCast, you'll:

- Encourage teamwork, problem solving, and creative thinking, within a science context.
- Contribute to a growing resource of free, high-quality, entertaining and informative films.
- Use digital technology in the lab, classroom... or outside in the sun.
- Explore collaborations between different disciplines.
- Learn about and use copyright laws and publication licenses.
- Make a permanent record of achievement.
- Help inspire the next generation of scientists and film-makers.
- Maybe win a coveted SciCast Award and £250 in Amazon vouchers.

Warning – be careful, there is a side effect to all this serious stuff. You may find that you are having lots of fun.

Here's the sort of thing Planet SciCast film-makers say. We promise we did not pay someone or make this up:

"We all agree that we couldn't have had a better time, or spent our final few weeks more productively than by working on the SciCast project. So thanks so much for getting the very best out of us - some of us are even keen film makers now!"

Michael Corcoran, Year 9 Student



WHO THIS

HANDBOOK IS FOR

Behind every successful team there's somebody responsible, helping them out. Pulling equipment together, arranging times for filming, making sure everyone's safe, standing back and offering a few comments and words of guidance. Following the terminology of film-making, we

call these people 'Producers.'

But, in some cases, you'll be part of the team yourself, getting your hands dirty and helping make the film directly.

How you organise yourselves is up to you, but this handbook is intended for the person doing the organising. It aims to give practical advice to help you through the process.

You'll usually be a teacher in a school, or a youth group leader, or a parent.



TEAMS AND

PRODUCERS

Making a film all on your own is too much like hard work. Share the challenge between a small team, but let them worry about the details of the film itself.

As the producer, your job is to manage and facilitate – and this handbook will help you get everything straight. It'll help you help your team with:

Equipment – cameras, microphones, editing software... Overwhelmed? The **Gear** section will help guide you through the maze.

A subject for the film – films need to be about something. Classroom demonstrations or 'kitchen table' experiments are perfect: quick, dynamic, and familiar, they keep things simple, particularly if this is your first film. Section **Demonstrations and Experiments** goes into more detail.



Post-production – your team will need editing equipment to put their film together, but they'll also need help and advice on what extra clips and music they can and can't use. Also, a little guidance about what makes sense and what doesn't can help tremendously. Sections **Using Photos, Music and Video** and **Practicalities – Does Your Film Make Sense?** will help you here.

The grammar of film-making and editing, and the technical skills to make it all happen, are already programmed into young minds. So the producer – that's you – doesn't need to worry too much about the messy stuff. Give a team a challenge and a deadline, and they'll supply the creativity and technical savvy.

The producer's job is to notice, suggest, and coach. Stand back, and try to think like the audience, watching the film for the first time. The producer's job may be the responsible one, but it's the easy one.

Relieved? Good!



PLANNING

How many in a team?

We've found teams of four or five are about right. Larger teams need to allocate jobs and coordinate who does what, but a small team will solve all that stuff themselves.

Sometimes they'll rope in other people as extras, and of course it's fine to involve the whole class or even school if you want to. If in doubt, keep it small and simple.

How long does it take to make a film?

The flippant answer is "a little longer than you've got!" – and that's part of the challenge.

However, it can be very quick – say you stumble across an odd rock formation. You point a mobile phone camera at it, wonder out loud why it's like it is... and you're all done.



But if you aim for a western genre costume extravaganza about friction, sliding glasses across a saloon bar top... that might take a while to pull together.

Somewhere in between, the answer is: a few hours.

Could you finish up in a lesson?

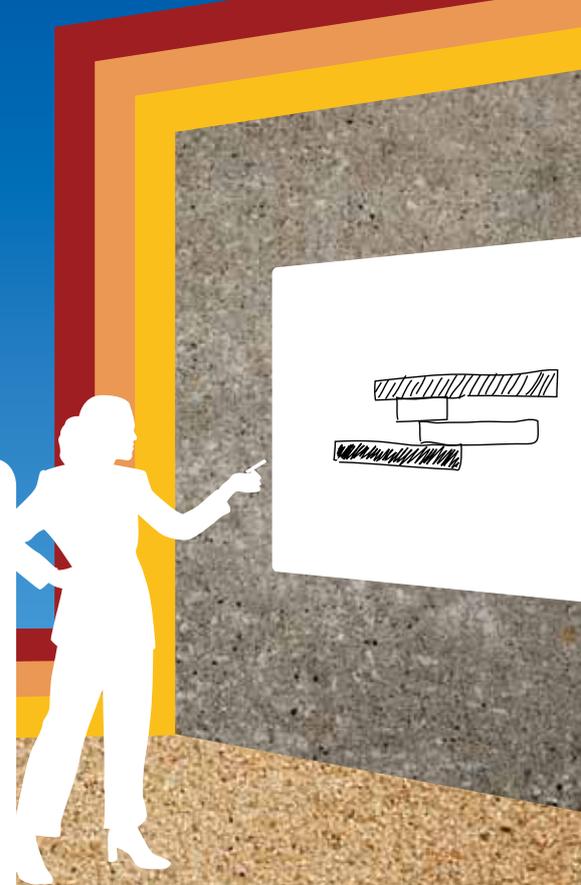
Not for your first film – it would be too much of a mad scramble!

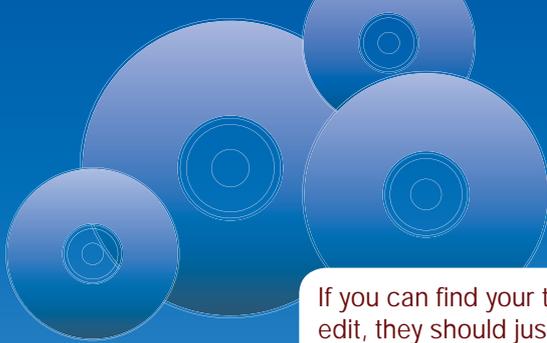
In a half day off timetable?

Just about, yes.

Over a few sessions of an after-school club?

Absolutely!





If you can find your team an hour to plan, an hour to film, and an hour to edit, they should just about be able to work to those deadlines. If they've more time, they'll fill it!

Our other recommendation is: don't assume you'll stop at one film. Most SciCast teams have been so excited by it all, they've made three or four. So be canny, and keep your first film simple. Save the ambition for the next one!

How much can I do at once?

This depends how much equipment you have to use. Apologies for stating the obvious, but with one set of equipment, you can only make one film at a time!

It's hard to produce more than four teams' efforts at once, but unless you're blessed with four sets of cameras and edit systems, you won't be faced with that situation anyway.





SCICAST RULES

To be of the greatest overall value, your team's films should be:

- **Entertaining**, not boring
- **Interesting**, not boring.
- **Imaginative**, not boring.
- Not so entertaining, interesting, or imaginative that the science gets completely lost.

Your films must:

- Include an explanation of the science, if entered as SciCast Physics films (see Notes overleaf).
- Be no more than two and a half minutes long.



This 2:30 rule causes some concern. “Surely”, producers cry, “that can’t be long enough to say anything useful!” Well, take a look at the website. There are plenty of films that contain heaps of information. If they can do it, so can you.

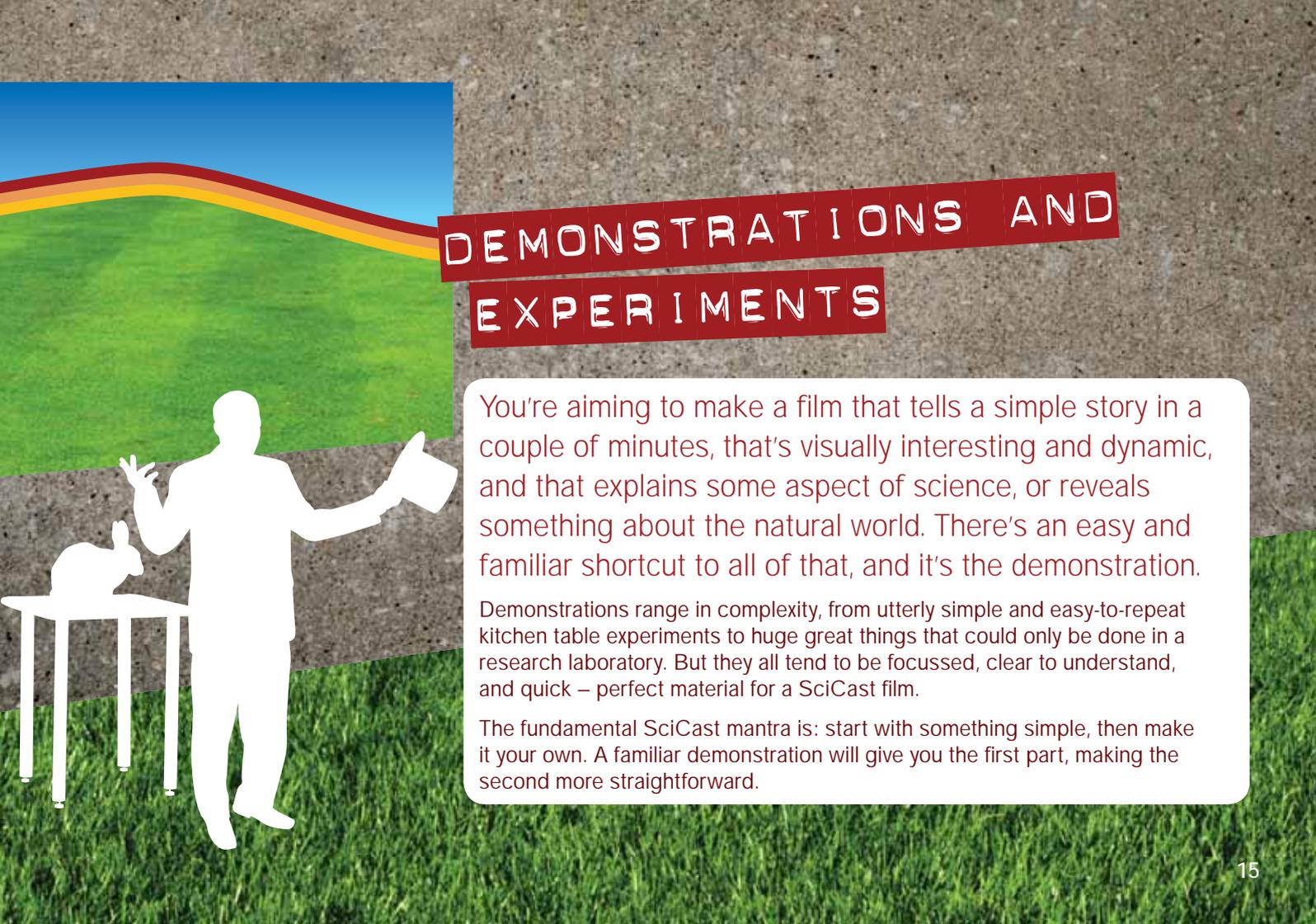
Note, be careful, the 2:30 timing includes any of **your** end credits, out-takes, or whatever your team adds. We’ll add a copyright notice (see **Production Staff – Licensing**) and a SciCast logo – you do not need to leave time for these.

Notes

SciCast Physics: The SciCast Physics Award, supported by the Institute of Physics, will be judged in part on its quality of explanation. A film without an explanation will not be eligible for the SciCast Physics Award (though it may still be considered for other Award categories).

Explanations: Other than for physics, explanations are encouraged, but not required. In all cases, do take particular care that any explanation given is accurate – your film is less useful to others if you get the science wrong!

Science Communicators: It wouldn’t be fair for you to waltz in with your fancy video skills and demos would it? Your films are still welcome, but please own up to being a professional. Thanks. And yes, we’ll be checking!



DEMONSTRATIONS AND EXPERIMENTS

You're aiming to make a film that tells a simple story in a couple of minutes, that's visually interesting and dynamic, and that explains some aspect of science, or reveals something about the natural world. There's an easy and familiar shortcut to all of that, and it's the demonstration.

Demonstrations range in complexity, from utterly simple and easy-to-repeat kitchen table experiments to huge great things that could only be done in a research laboratory. But they all tend to be focussed, clear to understand, and quick – perfect material for a SciCast film.

The fundamental SciCast mantra is: start with something simple, then make it your own. A familiar demonstration will give you the first part, making the second more straightforward.



Sources

You might pick a demonstration you already do in the classroom, or alternatively use your film-making as an excuse to scour books and websites for inspiration. The Little Book of Experiments at www.planet-science.com/experiment is a good place to start, and you'll find a list of useful links and books at www.planet-scicast.com/inspiration.cfm.

Coming up with something wholly original would be terrific, but if that's too taxing don't worry about revisiting familiar material – we're quite happy to receive several versions of the same demonstration, and your team will add their own unique style.

Experiments

One word of warning: genuine investigative experiments can make excellent subjects, but if you don't know where the film is going it's hard to tell a coherent story. Our advice is to stick with demonstrations for your first few films.

Explanations

See last section **SciCast Rules** to find out about when you need explanations.

ouch!

SAFETY

It's only video: it's not worth getting injured for. That applies not just to your film-makers, but also to your audience. If you're in a school, lab, youth group or similar, you'll probably want to complete a proper risk assessment before you start filming.

For filming, you must consider things like trip hazards, clumsy camera handling and making sure your teams stay aware of what's going on around them.

Once you're safe, make sure your viewers are too, even if they're young children watching at home. Make sure the safety precautions you take are clear in your film, and that you don't inadvertently encourage anyone to do anything that would put them in danger.

Think particularly carefully about sharp edges (including scissors), naked flames, hygiene issues, and the setting and tone of your film.

For additional safety advice please go to:
www.planet-scicast.com/film_school/safety.cfm

GEAR

(Also see Gear Appendix)



To make a film, you need a video camera, right? Actually, no, technically. We've had some lovely animations done with either a stills camera or entirely in the computer.

But in general, yes, you need a camera.

The best type of camera is... whatever you've already got. Most schools have a camera of some sort kicking around, or perhaps you can borrow something from your local authority.

Otherwise, ranges and models change so quickly it's hard to give solid recommendations. You may also like to know about editing software, and accessories that may be useful.



We don't want to bog you down now with loads of gear detail, but if you'd like to know more, it's all at the end of this handbook in the **Gear Appendix**.

The main thing is you need to be able to get what you have recorded from your camera to your editing software. Once you have that sorted out, you're laughing, and it could well be that there's someone in your school or group who is already an expert in this kind of gear wrangling.

If you'd like to get in touch, even after you've read the more comprehensive **Gear Appendix**, please do drop us a line: scicast@nesta.org.uk.



PRACTICALITIES TYPES OF FILMS

We've nothing against films that feature a presenter or teacher with a lab bench or whiteboard, showing and talking. It's a useful standby, and it allows you to get a film done quickly – but do be aware that lots of films end up looking like that. Remember the first rule of SciCast: don't be boring!



If your team are heading in that direction see if you can get them to think more creatively. Start simple, use spare time to personalise it. Some things you all might consider:

- **Music sequences** – piece together images to music. It's perfectly possible to make a SciCast film without needing to record sound.
- **Interview** – stand beside the camera and lead somebody through the material. A great way of helping a nervous performer.
- **Think about genre** – would your film benefit from being shot in black and white? As a spoof horror? As a Western? In the style of cheesy 80s Saturday evening American TV shows? Like a pop video?
- **Keep it simple** – grainy video from your mobile phone might add atmosphere and immediacy, without being too complex to handle.
- **Play with time** – speed up shots, slow them down, or go all the way and take time-lapse sequences.
- **Animation** – Stop-motion animation can be time-consuming, but is also easier than you might think. Worth exploring.
- **Stills** – carefully-chosen stills can add enormously to a film, and are often easier to capture than video.
- **Voice-over** – most software allows you to record voice-over (narration) after you've finished editing your film. This is a great way of avoiding the trickier bits of editing, and allows you to write a careful script.

There are more hints and suggestions at the SciCast Film School.
http://www.planet-scicast.com/film_school.cfm



PRACTICALITIES

FILMING TIPS



Team never filmed anything before? Here are our top tips for them:

- **Keep the camera still!**

We've all seen wobblycam home video, and we've all felt vaguely ill from it. Some traditions shouldn't be upheld! A tripod will help anchor you solidly to the floor.

- **Leave the zoom control alone!**

The zoom lever is there to help you compose shots, but as a rule-of-thumb, don't touch it when the camera's recording. Zooming in and out makes your audience's eyes go funny. If you feel like you need to zoom in to see detail, you really need to stop, set up another shot, record that, then go back to where you were.

- **The audience sees exactly what you show them.**

If you show two people in the middle of the picture with lots of wasted space around them – that's what they'll see. If you show lots of detail of the demonstration – that's what they'll see.



- The general rule, then, is: **work out what's important, and fill the frame with that. Choose carefully.**
- Make sure your viewer knows what they're looking at. **Show context, then detail;** a wide 'establishing shot' followed by a close-up.
- **Shoot what you might want, not just what you think you need.** Once you've packed up, going back for the thing you missed will take twice as long. So film everything you can think of. However...
- **...Don't go nuts.**
For a two-and-a-half minute film, you'll probably shoot between 10 and 15 minutes of material. If you fill tape after tape it'll take forever to sift through to find the good bits. It's a tricky balance.
- **If you're not sure you got it, film it again.**
Looking back at stuff in the camera is a waste of time, and it's risky – you might tape over something crucial. If you think you missed something it's always quicker to go straight back and do it again.
- **Remember to press record!**
Start recording before anything happens. Obviously. Less obvious is that you should stop recording well after the action's finished – give it a good five seconds. You never know what might happen, and it's tragic to miss something important or funny because you hit 'stop' too early.

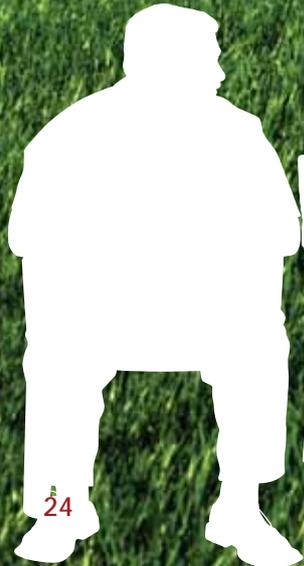


PRACTICALITIES

DOES YOUR FILM MAKE

SENSE?

eh?



eh?



Few SciCast films are entirely 'sensible', but nevertheless – it's important that it should make sense to the viewer. During the editing process you need to put yourself in the audience's shoes, and ask if it makes any sense at all. If you've seen it so many times you can no longer tell, you need to ask someone else.



The basic questions to ask are:

- Can you follow the story?
- Can you see what's going on?
- Can you tell what people are saying?
- Does anything make you say "What was that... oh, right, I see now."?

Fix this sort of stuff, and you're most of the way there.
These are the big, easy wins.

Of course, it's easier to make your film make sense if you have bits of spare material you can add or take away – that's why filming around your idea is important, rather than just filming what you think you need.



PRODUCTION STUFF

PAPERWORK

If you're showing people on screen and publishing to the world (which you are!), you need to make sure you have appropriate permissions. For under 16s, this means permission from parents or guardians too.

Schools probably have their own procedures for securing permission, and may already have blanket consent in place. Do check, though. For everyone else we've sample paperwork on the SciCast website, here: www.planet-scicast.com/guide/permissions.cfm.

Child protection

We go to great lengths to keep things like your email address secure. For obvious reasons, we prefer not to identify children clearly. Our preference is that your film should use a team name only. We strongly recommend you avoid identifying individuals by full name. We also recommend not identifying the school or organisation, but understand that many schools wish to be recognised in credits, for example. Check the policy of your school or youth group, and talk to us if you've any queries or concerns. scicast@nesta.org.uk

PRODUCTION STUFF

LICENSING



We're trying to do licensing 'right,' so that you retain ownership of your films. In order for us to publish them, we need you to grant us a publication license. We're using international, off-the-shelf licenses from the Creative Commons project, because they're as simple as this stuff gets, but there are other benefits too. First, the license...



We're asking people to grant Attribution/Non-Commercial/Share-Alike licenses:

- England & Wales: <http://creativecommons.org/licenses/by-nc-sa/2.0/uk/>
- Scotland: <http://creativecommons.org/licenses/by-nc-sa/2.5/scotland/>
- Northern Ireland/Republic of Ireland:
<http://creativecommons.org/licenses/by-nc-sa/3.0/>

Here's what the different parts mean:

- b Attribution:** Whatever happens to your film, it must be credited to your team.
- nc Non-Commercial:** Nobody else can make money from your film.
- a Share-Alike:** People are allowed to use excerpts of your film, or to modify it, but if the resulting work is published it must use the same license.

The last provision is, ironically, so we can put the copyright caption on the end of the film!

All the normal protections of UK (or Irish) copyright law apply – so you have recourse if your film is used to bring you into disrepute, for example. We can't quite see how that would happen, but there you go.



Benefits of Creative Commons licensing

We're insisting on proper licenses partly so we're on firm legal ground, but also because, these days, almost all of us are publishers. In a typical classroom around half the students will have a Bebo or Myspace page, or a blog, or publish their photos or videos. It's increasingly important that we understand our rights and responsibilities, and getting SciCast licensing right is a small contribution towards that.

Creative Commons is also a widespread global movement that's collectively building publicly-available, reusable resources. That sounds like a good idea to us, and we're proud to be contributing so much high-quality science video.

Finally, because these  resources are reusable, you get to use other peoples'  work in yours, which helps solve another problem...



USING PHOTOS, MUSIC, AND VIDEO

Tempting, isn't it? There's lots of good stuff out there, and in a classroom we're used to claiming 'educational use' and ignoring legal issues.

As a result, lots of otherwise great films made for SciCast 2007 included material we can't publish. Some examples:

- Music ripped from chart CDs, films, or TV shows.
- Video clips taken from the BBC.
- Videos taken from YouTube.
- Illustrations scanned from textbooks.
- Professional photographs taken from websites.

If your film uses any of these, we won't be able to publish it. As a general rule:

If you didn't make it, you can't use it.



We'll ask you to declare the source of things like music and photographs when you submit your film, so we can check you have appropriate permissions. **Sounds complex or awkward? Read on.**

Exceptions

Creative Commons to the rescue! On the SciCast website we've a page of links www.planet-sci-cast.com/guide/cclinks to other sites where generous people, like yourselves, have made their work available under Creative Commons licenses. With a few caveats, you can freely use this material – and there's lots of it. Music, video clips, and huge numbers of photographs on Flickr. Check our website for details.

A special note about music

Many of you have noticed that your Local Authority has a blanket license with a 'production music' library, typically the excellent Audio Networks. Bad news, I'm afraid – the blanket license only covers classroom use, not publication, and the licensing costs and paperwork are prohibitive for us.

To be clear: library music is not 'copyright-free,' and we can't publish it.

Of course there's yet another exception here: the music loops that come with Garageband, Steinberg Sequel, eJay and so on can be used, once they're compiled into your own compositions.

Talk to us

Think you've found an exception, or want to query something? Please talk to us – preferably before you include someone else's material in your film. scicast@nesta.org.uk

SUBMITTING YOUR FILM

Film all done? Knotty copyright issues resolved?
Everything makes sense? Everyone happy?
Excellent. Time to send us your film.

Why can't you just upload it, like YouTube?

You've seen the quality of films on YouTube, right? We're trying to produce a resource that's of lasting value, so sending us the highest-quality video you can is important. High-quality video files are large, however, and the easiest way of moving them around is... to bung them on a CD or DVD, and post them. "Never underestimate the bandwidth of the Royal Mail," as the old saying goes.

Besides, we need you to post us signed paperwork, so you might as well put the film in the same package.

Export your film

We've compiled instructions – on how to export your film – for all the major editing software: www.planet-scicast.com/film_school/exporting.cfm. The result should just fit on a CD, if you're within the 2:30 time limit.

Please please check the disc works, preferably in another computer. It's surprising how many fail.



Fill in the entry form

Visit www.planet-scicast.com/entry.cfm to fill in the form online. You'll find a checklist of the information you'll need before you start, so you can collect everything together.

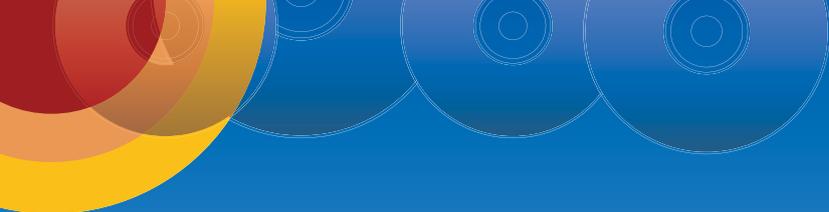
After you've submitted your entry form you'll get a unique reference number, please take careful note of this, and quote the reference in all correspondence. If you don't, we may not be able to match you up with your film ever again!

Sign the publication license

The entry form will point you to the Creative Commons publication license. We'll need you to print this out and get team members to sign it. If you're under 16 you'll need a parent or guardian to sign too, but please note that **your** signature is what really matters! You made the film, so it's you that's granting the license.

Label the disc

Write your film's title, the team name, and the reference number on the disc. Use a CD marker pen if you can, and please don't put rectangular stickers on the disc – they make it wobble!



Postal address:

If you received this in a SciCast pack, you should have a freepost address sticker and instructions for turning the packaging into a protective DVD envelope. Put your signed licence(s) and disc(s) in the package, fold, seal and stick address label on, then send.

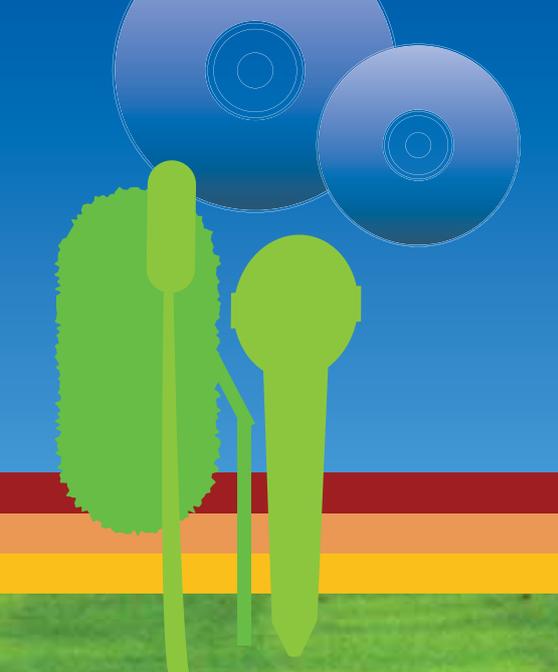
Otherwise – or if you're sending more films, hurray! – make sure your disc(s) is/are carefully packaged, parcel up with your licence(s) form, and post to:

Freepost RRUE-KBEG-KJGE
Planet SciCast
NESTA
1 Plough Place
London EC4A 1DE.
(no stamp needed)

What happens next:

We'll check your film for copyright issues and technical quality, and get back to you with any queries – so please check your email! Once we're happy, we'll get your film on the website as soon as we can, but be patient as it can take a while.

In particular, if you submit close to the deadline it may take a good long while to see your film visible to the world – so submit early!



DEADLINE

ANY QUESTIONS?

The deadline for films to be considered for the SciCast Awards 2009 is:

9th January 2009

...but please don't leave it to the last minute!

Do get in touch if you have any questions:

scicast@nesta.org.uk



GEAR APPENDIX

Want to know more huh? Please read on, we hope we've been succinct yet thorough, but if you have any questions do get in touch: scicast@nesta.org.uk.

CAMERAS

SD-card cameras

These new-fangled things have suddenly appeared in the wake of YouTube, and they might be the perfect thing for SciCast. Small, light, and from around £100/£150, their main advantage is that getting your video out of them is dead easy. You yank out the memory card and bung it in a card reader, just like a stills camera. Recent versions of editing software should handle the result just fine. Even some mobile phones work like this – notably Nokia's N95, which includes an excellent video camera.

Their drawbacks? Sound tends to be poor, and only the top-of-the-range models have a microphone input. Cameras like these also tend to be spectacularly poor in low light – which typically means in a lab, after school in winter. Nevertheless, you can't beat the convenience.

miniDV cameras

Tape! Now there's a blast from the past. But tape is robust, reliable, and cheap, so miniDV (or just 'DV') cameras are still used professionally. As a result, you can spend thousands of pounds on a broadcast-quality DV camera... or a couple of hundred quid on something more domestic.

You get what you pay for, more-or-less. Starting from £200 you'll get something pretty basic, but choose carefully and you might find a microphone input – look particularly at Canon and JVC models. From about £400 you'll start seeing '3CCD' models that offer better picture quality, particularly indoors – Panasonic have some excellent 3CCD models.

Getting pictures out of miniDV cameras involves FireWire, which, confusingly, is also called 'iLink' and 'IEEE1394' (snappy!). You'll need a FireWire cable and a computer with a FireWire socket. Mac users are sorted – almost all Macs have appropriate sockets, so you just need the cable. Many laptop PCs do, too, especially Sony and HP models. For other laptops or desktop PCs, you'll need an expansion card, which shouldn't cost more than about £30.

Once you've got a physical connection sorted, transferring miniDV over FireWire is extremely reliable.

DVD cameras

Lots of people already have these, and there are some good models. But if you're buying new, go with miniDV or SD-card. The convenience of recording onto DVD sounds attractive, but the compromises are severe, and the video format on DVD discs isn't easy to edit. The discs are fragile and expensive, and the cameras tend to be cheap, with very poor low-light performance.

You can still get good results out of them, but there are much better options.

HDD cameras

These are a bit like miniDV cameras, but they record onto a tiny hard drive, embedded in the camera. You then pull the video off using a USB cable. More convenient than miniDV, perhaps, but you either need huge hard drives to archive your video, or you throw one film away to make room for the next.

Interesting, but it's probably better value to get FireWire working and go with miniDV.

High-definition cameras

There are several 'high-def' formats, from the miniDV-derived 'HDV' to hard-drive or DVD-based 'AVCHD' cameras. All will tax your computer more – there's typically four times as much processing required for everything – and you'll barely notice the difference when you see your film on the website.

If you're tempted anyway, be aware that you'll need very recent software to edit AVCHD. HDV is easier to work with, and is often used for broadcast work so the range of cameras heads up to stratospheric prices. It still uses FireWire for transferring video, though.

CAMERA ACCESSORIES

You don't need anything other than a camera, but this stuff will help you achieve better results:

Tripods

Saying 'hold the camera still' to an eleven year-old is like trying to train custard to flow uphill. It's best to attach a weighty boat anchor of a tripod to the camera in the hopes they'll get the hint. A few notes on things to look for:

- If you're buying a tripod, make sure you're buying a **video** tripod, which you can pan and tilt smoothly, and not a **stills** tripod, which locks off solidly.
- 'Lightweight' is not a phrase you want to hear. But don't buy something so heavy teenagers can't lift it.
- A decent tripod will cost you between £50 and £100; more expensive ones are designed for heavier semi-professional cameras.
- Be aware of safety issues: tripods are significant trip hazards, and there are manual handling worries too. They're awkward things to carry, and offer lots of painful finger-traps.

Microphones

Built-in microphones only get you so far but if your camera has a 3.5mm jack microphone input, you can do much better:

- **Wired lapel** – ‘Lavalier’ – mics cost around £30 and give excellent quality. Search www.canford.co.uk for ‘EM110’. We often use one of these taped to a broom handle as a boom microphone. It looks ridiculous, but works amazingly well. Great quality, and just two issues: be careful of tripping over the trailing wire, and if you’re outdoors you’ll struggle with wind noise.
- **Wireless lapel**. If you already have a set of these for school performances, they should have the right sort of jack cable. All the same benefits and problems of wired lapel mics, except for the trip hazard. Make sure you have lots of spare batteries.
- **Shotgun mics**. These are the professional mics you see dangling from long booms. There’s one model you can attach to a domestic camera, and it’s amazing – but be warned that all the bits will set you back £250 or so. Contact us for a shopping list if you’re keen.

Headphones

If you’re using a proper mic, you ought to listen to the sound to make sure it’s working. Traditionally, the sound recordist is a different person to the camera operator, and it’s worth following that pattern – it’s a responsible job. You also start to notice the world in a different way, and that’s an experience worth sharing.

Any old headphones will get you started: iPod earbuds are as good as anything, though the cable's a bit short. If you're buying, Sennheiser PX100s (£30 on the high street) are brilliant value, though again the cable's a bit short.

Wide-angle adaptors

A common flaw of cheap domestic cameras is that the lens doesn't zoom out wide enough. To include both a person and the experiment they're doing on a table, you have to stand far enough away that the camera's microphone doesn't pick anything up.

As an alternative to an external microphone, you may be able to fit a wide-angle adaptor to your camera. These tend to be optically rather poor, but the convenience and versatility you gain is hard to ignore.

Ask around in camera shops to see what might fit your specific camera, and be sure to try it out first. Look for the picture distorting, the corners of the frame going dark, and the focus going blurry. There's always some compromise, so pick the best option you can.

Spare batteries

Cameras eat batteries. On the other hand, SciCast films are short, and you'll typically shoot around ten minutes of material for them. So unless your battery's really past its prime, you should be OK.

Having shot your raw material, you need to assemble it into a film – the first time you make a video, you'll be surprised how many of the decisions can be left until this final stage, if you have the right software.

EDITING GEAR

Mac users

You have it easy, since Apple's iMovie will have come with your Mac. It's a terrific piece of software, but there are limitations – if you find yourself outgrowing it, look at Apple's Final Cut Express (£130, education discounts available). It's more complex, but much more capable.

For handling sound and music, you'll also have GarageBand, which is excellent. With recent versions you can drag your edited film in and use the included loops to write a musical score, then export the whole thing directly. Genius.

Windows users

Microsoft's free Windows Movie Maker will at least get you started – it has a reputation for being slow and crashy, but we've found it quite workable.

Other options include Corel/Ulead Video Studio (from around £45), Pinnacle Studio (from £35) and Sony Vegas Movie Studio (from £55). Our pick is probably Adobe Premiere Elements (£70, education discounts available).

For music, your options are the eJay series (cheap!), Sony's Acid Music Studio (£35), and Steinberg's Sequel (£75). The latter can produce excellent results, but it's very taxing on your computer.

Linux users

Video on Linux isn't as mature as on Macs or Windows, but your best bet is probably the Dynebolic distribution (www.dynebolic.org), which includes the Kino and Cinelerra editing software. Let us know how you get on!

Words of warning

The most important aspect is that your camera and editing software work together. Before you try to make a film, spend a little time making sure you know how to get pictures from one to the other, reliably. Bear in mind that teenagers are excellent IT troubleshooters, but do make sure any technical issues are solved before you start making a film. Otherwise the gremlins will bite at the most frustrating moment.

A common problem with editing is where you want to keep the sound from one clip running while you cut to showing the video from a second. While you can work around it, this is surprisingly hard to achieve in simple editing software – iMovie is particularly bad for it. Our advice is to work within the strengths and limitations of your software, rather than to fight against it. If it's really annoying you, it's probably time to upgrade to more capable software.

Happy SciCasting!

THAT'S A WRAP



IOP Institute of Physics

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