FILMS IN COMPUTING CLASSES

Alan O'Donohoe argues that watching a movie can be more than an end-of-term activity, and shares suggestions for how to incorporate films into lessons

Join me in a little game for a moment. I want you to imagine you are planning a trip to the cinema for yourself and a group of your students. You have been asked to select a film for screening related to technology, computing, or computer science. What film would you choose?

If you were allowed only seconds to respond, you might come up with one. When I ask others this question, the most popular answers have been *Hidden Figures*, *The Imitation Game*, and *WarGames* — and I explain the various merits of these suggestions further on. I suspect, however, that the more time and thought you give this question, the more difficult the selection becomes, so that narrowing it down to one single title becomes increasingly difficult.

There used to be a culture in schools, where at the end of term or in exceptional circumstances, the teacher in charge would stick on a DVD. I remember, when covering some classes for a colleague who taught history, I saw that colossal beach scene from *Saving Private Ryan* five times in the same day! One school I taught in instructed teachers to refrain from showing films at the end of term because they felt "teachers were abusing it", and that "pupils preferred to be taught right up until the last lesson of the term, in spite of their protests".

Yes, of course, there is the potential for exhausted teachers to fall back on a DVD at the end of term or in emergencies, but that doesn't mean we should give up on ever watching any films in lessons. We should be encouraging our students to be reflective reviewers, not just passive consumers of media, and creating opportunities for them to critically evaluate the portrayal of computing and technology in films and on TV. Our students will be exposed to many more hours of film, drama, and documentaries than we teach them for. So there's a real opportunity for us to equip them with the skills and expertise not only to enjoy a wide selection of film and documentary titles, but to know which ones are worth watching, and why.

Occasionally I hear other computing teachers complain that, compared to other school subjects, there really aren't many films, dramas, and documentaries that are relevant to computing education and computer science. **While true** (CS joke!), those that are available are very accessible. Your history teaching colleagues will probably be the last to complain about the limited number of film titles to choose from — but we can afford them some sympathy, as they can't get anywhere near as enthusiastic about exciting new developments in their subject area. Yes, there is a comparatively narrow choice of computing-related titles to choose from. However, we do have some fantastic films that we can use to add more excitement, depth, and interest to our teaching.

In this guide, I plan to highlight the opportunities that film, drama, and documentaries offer us as a teaching resource. I'll also suggest practical approaches that you might readily use to develop critical media literacy in your students, while fostering an interest in computing technology development.

Films can add more excitement and depth to computing lessons

How can film help teachers?

Of course, it's prudent to start by asking ourselves, "Why are we doing this?" in relation to any activity we embark upon. However, I would strongly caution you to prepare your argument more strongly in the case of showing a film. This is particularly important if you sense any risk that your plans to use film to enrich the curriculum may be misinterpreted or misrepresented by colleagues, parents, or students as an attempt to look for an easy activity to plan.

To help strengthen your case, here are some compelling arguments to convince you and others:

- **Engaging and inspiring learners:** While writing this guide, we're in yet another lockdown and teachers have been reporting that they are burning out, while their students are losing interest in 'stale' lessons. I tend to go on at length about the need for enrichment in our subject area, with real justification. Without enjoyable and interesting activities, students and teachers can perceive our subject as being very dry. Reviewing a film can add a very different dimension to learning.
- **Increasing exposure to computing:** In many schools, computing is timetabled for 45–60 minutes each week up to the age of 14. Post-14, that may increase to two or three hours a week for those who choose it as an option. Suggesting that students watch a two-hour film at home one week substantially increases that amount of time.
- **Discussing difficult matters:** Films like *Hidden Figures* and *The Imitation Game* help to contextualise topics like prejudice, diversity, and inclusion, and provide examples that students may relate to more easily during a discussion in lesson.
- **Application of computing:** Developments within computing have led to huge advances in fields such as CGI, scripting, editing, VFX, and SFX. Computing has increased production capabilities and reduced budgets.
- **Accessibility:** Unfortunately, some of our favourite learning resources in computing can be inaccessible to students due to software licensing restrictions, hardware availability, or connectivity. On the other hand, many classrooms and households can access film through the medium of broadcast TV, video-sharing platforms, streaming media, and on-demand services. Many recommended computing films can be purchased on DVD for £1–3 from online auction sites, discount stores, and charity shops.

> "WE SHOULD BE ENCOURAGING STUDENTS TO BE REFLECTIVE REVIEWERS, NOT JUST PASSIVE CONSUMERS OF MEDIA

- **Rewarding students:** At certain times of the year, it's helpful to reward groups of students with a trip or a treat as recognition; a carefully selected film such as *WarGames* or *Ralph Breaks the Internet* could provide such a reward when a trip out of the classroom is not practical.
- **Plan B:** Computing teachers know only too well how important it is to have a contingency plan in place for those times when there is no teacher, no heating, no computer, no network, no timetable, or most of the class missing. Having a couple of DVDs to hand can be a valuable lifeline, providing they're not used too often, and you remembered to put the disc back in the case!

Many themes explored in *WarGames* still hold true today

Spotlight on three films

Here are three films that every computing teacher should have watched at some point or other. If you haven't seen all three of these, set yourself some homework to plan how and when you will make the time for them:

- ***Hidden Figures* (PG, 2017)** This film has broad appeal, making it suitable for non-computing audiences too. It lends itself very well to other themes, like space and STEM, but particularly to diversity and inclusion themes, such as Black History Month, Black Lives Matter, and Ada Lovelace Day. Clips from the film would be suitable for use in an assembly. The film is based on the excellent book by Margot Lee Shetterly and presents inspiring stories of four Black women 'human computers' who had to counter prejudice in their work at NASA, and celebrates their achievements. Like any film, some scenes and dialogue are fictionalised — but the film does not stray too far from facts and actual events. The film is rated PG, and I have used extracts of the film with children as young as ten years old.
- ***The Imitation Game* (12A, 2014)** Regrettably, this film probably receives far more praise and viewings than it ought to — to the extent that some codebreaking experts jokingly refer to it as *The Irritation Game*. Without doubt, Benedict Cumberbatch's portrayal of Alan Turing is beyond brilliant, but aspects of the Bletchley Park story deviate from historical fact. I think we just have to learn to love this film, accepting the fact that many of the children we teach will be exposed to the film at some point. Our best strategy is to embrace that as an opportunity and ensure that our students are well informed enough to appreciate the film critically. It's also a useful entry point to introduce a potential visit to Bletchley Park and/or The National Museum of Computing.

#exaflicks is an online film club for computing enthusiasts

- ***WarGames* (PG, 1983)** This film is an incredibly popular title among teachers and enthusiasts of a certain age — many have revealed the extent to which the film helped inspire them into their chosen career. I'll admit that I, myself, wasn't convinced it would be as warmly received by students — but I have been proved wrong. The film has dated exceptionally well and has a certain 1980s nostalgic feel to it. There are many themes in the film that still hold true today, and it would serve well as a light reward reserved for end-of-term lessons. Some computing classrooms I have visited feature *WarGames* posters as well as quotes and scenes from the film.

Carefully selected films can be used as rewards

A case study: Hidden Figures

Working with computing teacher Nic Highes, we planned to show the *Hidden Figures* film to Year 6 (ages 10–11) classes over two 45-minute lessons for each class. We decided, rather than to simply play the film from start to finish, we would instead play selected clips from the film to facilitate discussion in class. We designed activities for the children to raise the issues around prejudice, diversity, and inclusion.

In the first lesson, we shared some still photos from historic space missions and asked children to name as many astronauts or space scientists as they could. As we predicted, the names children provided were almost entirely all white men — this provided a good opportunity to introduce the film title *Hidden Figures*, which tells the tale of a group of Black female scientists who are less well known. Then we explained that we were about to watch a scene from the film at the Langley Research Center, but we wanted the children first to imagine they were working there. We asked them to describe what they might see around them, what noises and voices they might hear, and how people might be dressed. The scene is the one where Al Harrison asks his assistant, "Ruth, what's the status on that computer?" to which Ruth responds, "She's right behind you, Mr Harrison." He turns around to see Katherine Johnson for the first time – the new 'computer' – and his face shows a mixture of emotions. We asked the children what his thoughts might be, and why. This then seemed an opportune moment to link to the civil rights movement in the US, as well as themes of segregation and prejudice.

In each of the two lessons, the activity followed similar patterns: we asked students to make predictions, explain the deeper meanings of scenes, explore why this was so, and look at how things were changing for the better. We also read some abstracts from the Margot Lee Shetterly picture book of the same name. We set the children an assignment and asked them to design motivational postcards that might summarise the film's message, celebrate the scientists featured in the story, or inspire others to counter prejudice.

THINGS TO CONSIDER

- **Accessibility:** Many of the popular titles have trailers and clips available online that lend themselves more easily to use in class.
- **Copyright:** As teachers, we're constantly reminded that it's not enough for us to simply observe legislation: we must be actively seen to uphold the law. This is where, in the UK, an ERA licence can help. Excepting independent schools and 16-19 schools and colleges, local authority and maintained schools will almost certainly have an ERA licence in place, but don't just assume so - a colleague will be able to confirm this for you. In my last school, the certificates were on display in the admin offices and annually refreshed. More guidance via the Department for Education here: **helloworld.cc/copy**.

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> "WE ASKED PUPILS TO DESIGN POSTCARDS THAT CELEBRATE THE FILM'S SCIENTISTS, OR HELP TO COUNTER PREJUDICE

#exaflicks – a monthly film club

Have you considered hosting a regular film club or festival for your students, colleagues, or friends? You might find the whole idea daunting right now, but why not start with a popular title first and

take it from there? You could be pleasantly surprised at how positive the response is from everyone.

When we experienced the first nationwide lockdown in March 2020, I was looking for positive ways to help keep teachers talking to each other, to help support teacher well-being, but also as a distraction from the news and the discussions about heavy workload. I decided to try hosting a monthly watch party online, which we called #exaflicks. We started with some of the obvious titles, like *The Imitation Game* and *Hidden Figures*, but we've also included some less obvious choices, like *Ring of Spies*.

Each month I invite a panel of five special guests to join us as we first watch, then discuss the film. Due to copyright restrictions, it's more typical for guests and audience participants to watch the selected title in advance, but we meet online to discuss the title together. You can learn how well this works by watching recordings from these panel discussions on the exa.foundation YouTube channel (**exa.is/channel**) — the recordings are really intended for teachers or other adults, but you might choose to play part of one to a class, and perhaps ask them why they think a particular guest made a certain comment, or whether the class would agree with that comment.

Do you have a computing-related film to recommend? Are you looking for more ideas of activities you might use to enrich the curriculum? Would you like to join a future #exaflicks panel discussion? If so, please contact Alan O'Donohoe at exa.foundation for more information: alan@exa.foundation. (HW)

TEACHERS' FAVOURITE COMPUTING FILMS

Beverly Clarke, CAS Community Manager, explains the value she finds in film as a teaching resource:

"During my teaching days, I found that some pupils were disengaged with computing lessons, so I decided to look for ways to engage them that they were already connecting with. The after-school cinema and film club I set up was one such way.

"I would recommend *Coding* from the *Explained* docuseries on Netflix. The film is narrated by supermodel Karlie Kloss, who many pupils may be aware of, so immediately there is a relatable figure in the real world with an interest in this topic. It starts off with an example of how a coding mistake affected an emergency call system in real life. This then opens debate on ethical responsibilities. Within the same series, logic gates and their function are discussed, and computational thinking and algorithms are explained too. The film also provides lots of points to discuss the importance of testing products and the moral and ethical implications of poorly tested products. It takes us right up to the present day with machine learning and image recognition."

Martin Sexton, a computing teacher, told me about his favourite computing film, *The Social Network*: "It offers a lot of potential for use with students. There's lots of close links to the curriculum, particularly ethics and legislation."

Dean Wild, a computing teacher, said, "Recently I watched the docuseries on Disney+ of the making of *Frozen II*. It was fascinating watching how all the departments work together during production, from writers and animators, through to effects and lighting. Well worth a watch - I've recommended my students to watch it if they have a Disney+ subscription."

Computing teacher Theresa Russell recommended her students watched *WarGames* when it was broadcast on TV recently: "Lots of my students watched it with their parents too - it was great. One of my GCSE students, Jessica, wrote a really good review exploring the laws and ethics of how it happened."

ALAN O'DONOHOE

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