



REVIEW

Using feature films as a teaching tool in medical schools



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Abstract Feature films can be powerful teaching tools. However, to ensure successful results, teachers should bear several principles in mind. In this review, we recommend some principles for using films in medical education. We discuss how to choose appropriate films and how to make the most of them in the course. To identify educational elements in the film, we recommend reading the literature and watching the film carefully. It is important to check that the material is appropriate for the students' current knowledge. Longer films can be difficult to use, but using important scenes is an option. The plausibility of the events depicted may sometimes be more important than their factual accuracy. Discussion of the film should be limited to a few questions previously identified by teachers. Medical issues are the only useful aspect in films; social and humanistic elements are also valuable. Adequate assessment of students' learning after the activity is critical to establish the legitimacy of using the film as a teaching activity.

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PALABRAS CLAVE

Docencia médica;
Películas
comerciales;
Instrumentos
docentes

El empleo de películas comerciales en las facultades de medicina

Resumen Las películas comerciales son instrumentos muy útiles para transmitir información. No obstante, es aconsejable que los profesores consideren la aplicación de algunos principios para conseguir los mejores resultados con su empleo. En el presente artículo se realizan algunas recomendaciones que pueden ayudar a aquellos que desean utilizarlas en su actividad docente. Para establecer los elementos educativos, se sugiere leer los artículos disponibles sobre la película así como visionar la película para comprobar que sus contenidos no se encuentran por debajo ni por encima de sus conocimientos actuales. Su duración puede ser un inconveniente y, en esta situación, puede ser más recomendable seleccionar algunas de sus escenas. La plausibilidad de los hechos presentados en la película puede ser de más utilidad que su exactitud. A fin de obtener un resultado adecuado, es recomendable que el debate se centre en un número reducido de preguntas que se han seleccionado previamente por el profesor. Los aspectos médicos constituyen habitualmente solo una parte del argumento, y los elementos

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sociales y humanísticos pueden ser de gran valor para contextualizar la situación tratada. Por último, una evaluación adecuada de los estudiantes tras la actividad es crítica para legitimar el empleo de las películas como actividad docente.

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Introduction

Since the first films were released more than a century ago, movies have shown a tremendous ability to engage people around the world. In recent years, technological advances have allowed almost everyone access to a vast resource of films, and cinema are no longer needed to enjoy them. The power of films is irresistible for anyone interested in true or fictional stories, and many films consider medical issues. Boon¹ summarized one reason for this interest as follows: "Medicine provides a fertile territory for studying relationships between lay publics and élite discourses in science and technology more broadly, in which all media of communication have had a role as the 'vehicles of communication' between science and the public."

The use of films in education and scientific teaching has a long tradition,²⁻⁹ but using films to teach medical students is a relatively recent application.¹⁰ However, some authors have described their extensive experience using trigger films in medical education¹¹⁻¹³; others have recently published their experience using television medical dramas.^{14,15} In the present paper, we consider only feature films, defined as films with plots based on fictional or true stories aimed at a general public. Thus, we exclude films used exclusively for professional purposes, videotaped encounters between patients and medical staff, and medical or scientific documentaries.

In 1979, Fritz and Poe¹⁶ published the first paper describing the use of films to teach psychiatry. Darbyshire and Baker¹⁰ list several reasons for using cinema in healthcare education. Films tell us a story, and we are always happy to hear good ones. Plots often consider topics that can easily initiate a discussion among learners. Learners' active roles make this discussion an important component of constructivist learning. Most teachers will find elements of interest in the available films. Topics considered include clinical microbiology,¹⁷ pharmacology,¹⁸ bioethics,¹⁹ medical ethics,²⁰ doctor-patient relationship,^{21,22} preclinical²³ and clinical research,²⁴ mental illness,²⁵ drug addiction,²⁶ palliative care,²⁷ effects of disease on patients,²⁸ medical professionalism,²⁹ and social conflicts in medical care.³⁰ Physicians are common characters in films and their depiction can help students see how the general public views the medical profession.³¹⁻³⁵

In the last few decades, many papers describing the use of popular films for teaching medical students have been published (see Darbyshire and Baker³⁶ for a systematic review). This innovative approach is becoming more common. This paper outlines some guidelines to help newcomers to this activity achieve the best results.

The most popular films are not always the most useful in medical schools

The characteristics that make a film popular for the general public differ from those that make it useful for medical education. Another problem with box office hits is that students can often already see them, and hence less popular films can pique students' curiosity and can increase motivation. Thus, we recommend that teachers try to find films that young medical students are unfamiliar with. Reviewing the literature may help teachers find films that can be useful for specific objectives. Some databases (e.g., those listed by New York University's Bobst Library) may help in finding lesser-known films that may be useful for particular educational objectives. The search should not be limited to films from English-speaking countries because other countries (e.g., France, Russia, Japan, and Spain) have also produced useful resources. Films that might be useful include *Doctor Arrowsmith*, *Ikiru*, *The Doctor*, *Mary Shelley's Frankenstein*, *La Maladía de Sachs*, *Wit*, or *My Life Without Me*, to name just a few. However, due to cultural differences among countries and medical schools, we strongly advise against choosing a film solely on the recommendations of other authors. The most reasonable approach is to use this information only as a 'guide of potential interest' to help make initial choices.

Reading how other teachers have used different films helps in making the right choice

We strongly recommend critically reading what other teachers have written on the use of particular films in education. Be aware that not all information is available in the PubMed database. Other information, e.g. Google Scholar, may be the only way to find valuable contributions about the films chosen for teaching. The field of cinema studies actually forms part of the humanities; articles and books from cinema studies can be invaluable in better understanding the messages contained in any film. Several good introductory books can help those interested in starting to use movies in medical education.^{25,37,38} Specific experiences and recommendations on using popular movies as a teaching tool for medical^{24,26,28-30,39,40} and nursing students⁴¹ are also available.

The film should be appropriate for students' knowledge

Some films are inappropriate for some students. For example, it may be difficult for students without clinical

experience to understand the complexities of the doctor–patient relationship. To understand some ethical conflicts, students need a certain degree of intellectual maturity. *Mary Shelley's Frankenstein* is a good film to use for discussing the ethical principles of biomedical research, but first-year students may only see the monster's wickedness and fail to see its creator's wrong decisions.⁴² The first scene of *Wit* is an unforgettable lesson in how not to give bad news to patients, but students without clinical experience may be unable to fully appreciate this. Viewers are horrified at the unethical behaviour depicted in *The Constant Gardener*, but those unfamiliar with the processes involved in drug research might also be unaware that pharmaceutical companies do not generally behave that way.⁴³ Certainly, these issues can be discussed after the film, but these misunderstandings can taint the ensuing debate and distract from the most interesting points. One way to avoid such problems is to prepare an introductory text for students to read before the film.

Viewing the films and taking notes before the teaching session improves planning

For educational purposes, teachers must watch the film beforehand to look for scenes that will help generate debate. Using a DVD of the movie to prepare the session has many advantages. First, it allows you to pause, rewind, and watch a scene as many times as necessary. This is crucial because a single viewing rarely enables you to fully analyze the potential impact of the dialogue and images. Teachers should note the exact time when the scene starts and finishes, so that they can advise students when they need to pay special attention or can choose to show students only specific scenes rather than the entire film. Taking notes also is essential for writing the educational objectives and questions to use in the discussion session if students are less participative than expected.

Criticizing mistakes is important, but plausibility may be more important than accuracy

In a useful paper, Rose⁵ outlined some recommendations for using films to teach biology based on his experience in cinema-based courses. He also discussed the importance of accuracy versus plausibility in films. In other words, he asks whether mistakes in science in some films preclude their usefulness for teaching purposes. He concludes that they do not, and we agree. Although the oversimplification of science and medicine may have detrimental effects on naïve audiences (e.g., the representation of the treatment of cardiac arrest in a TV series can give people an overoptimistic approach to a critical situation^{44–46}) and basic science has been affected by controversies due factual mistakes in some films,^{47–49} teachers should avoid rejecting a film automatically because of minor errors.

Moreover, what is considered factually accurate and plausible changes overtime. In Michael Crichton's 1978 film *Coma*, the murderous carbon monoxide intoxication in the operating theatre is nearly impossible nowadays, but this

was not the case when the film was shot.⁵⁰ So, although the scientific scenario in this film is not accurate today, it was plausible 40 years ago. The film can still arouse students' interest in carbon monoxide intoxication and serve as a useful starting part for a discussion of the different affinities of gases to haemoglobin. Mistakes themselves can also be used for educational purposes: if students are unable to spot them, they might not be paying adequate attention to the film or, even worse, they might not have learned the concept. Movies are also useful for showing public opinions about medical problems and for increasing students' awareness of prevalent myths regarding doctors,^{51,52} and this information is invaluable when dealing with patients and families.⁵³

The length and technical characteristics of each the film should be always considered in the selection

Films made in recent decades tend to be much longer than those made in the 1930s, 1940s, or 1950s, and it can be difficult to find films less than 2 h long. Thus, a modern full-length feature film would require at least 3 h for classroom teaching activities if the students were to watch the film in class and discuss it afterward. For this reason, some teachers prefer to use clips (i.e., specially selected scenes) to focus on the subject, to keep the session short, and to avoid distraction. Another option is to allow the students to view the film before the session, and so that class time can be devoted exclusively to discussion. There is probably no perfect option, and the best will depend on the characteristics of the subject and the amount of time available for the type of activity desired. Using clips has the disadvantage that it breaks the plot down into small pieces that can make it difficult to appreciate the film in its entirety. A viewing guide can help overcome this drawback. Enabling students to watch the film before class is a good option provided you are sure that students will actually watch it, so they can participate adequately in the discussion. Therefore, longer films may be difficult to use in a teaching settings; when limited time is available for the activity, alternatives to full viewing in the classroom are recommendable.

Certain technical issues must also be considered. Foreign languages films must be dubbed or subtitled to be useful for your students, unless all of them can understand the original version. Alternatively, subtitles in a known language may help. Most films are available in English, so this problem is less common in countries where English is widely understood. Style should also be considered, as a film that is too heterodox may confuse students and hinder their understanding of its messages.

Discussion of the film should focus on few questions

To maintain the audience's attention and interest, popular films often have complex plots and deal with many themes. The drawback to this complexity is that it can divert students from the really important questions. Therefore, films with complicated plots, many actors, or too

many themes might not be useful for teaching purposes. For example, the film *La maladie de Sachs* relates many, apparently unconnected, stories.⁵⁴ If students focus their attention on each story individually, they might fail to see them as parts of a whole that enables an understanding of the physician's disease. This possibility should not preclude the use of an otherwise excellent film, but it is advisable to make some preliminary remarks to avoid such risks. However, when a film deals with various themes, it can be used with different objectives in mind. For clinical pharmacologists, the story of *Awakenings* is clearly centred on Oliver Sacks' studies of L-DOPA in encephalitic patients—the method that he uses to study its effects, the dystonias and on-off phenomenon with the drug after repeated administrations^{24,39}—the patients' emotional problems are of collateral interest. Nevertheless, these could be the most interesting aspect of the film if the aim is to show problems that can arise after long hospital stays (e.g., in psychiatric patients). By contrast, *Extreme Measures* is a clear example of a tight plot with little or no deviation from the main theme.⁵⁵ Its central plot, using homeless people to research a new drug without their consent, exemplifies how bioethical principles can be subverted in clinical research even when scientific reasons justify the investigation, clearly showing why science and bioethics cannot be considered separately.⁵⁵

The film should be used to explore social and humanistic values in biomedicine

Popular films generally try to depict real scenarios from ordinary life. Unlike traditional medical discourse, which usually centres on one dimension of a disease, popular films consider many components of sickness within a realistic plot. As a consequence, viewers are exposed to the complexity of a disease from different points of view. In *The Doctor*, a prestigious surgeon is diagnosed with cancer, and he is transformed from a highly respected professional to a patient; he assumes a new, completely different role in the very hospital where he is still working. Every experience in the course of his illness appears to change him completely, and his way of treating patients, colleagues, and even students evolves.⁵⁴

Many films deal with bioethical dilemmas. In *Mary Shelley's Frankenstein*, the consequences of research misconduct for other people are clear.⁴² A few examples of the difficulties of separating scientific issues from ethical dilemmas in many medical activities include the question of what is or is not ethical in human research in *Extreme Measures*,^{55,56} the problem of organ donors in *Coma*,⁵⁰ or the interests of society over individuals in *Outbreak*.²³ Films can be a good way to expose students to such difficult choices early in their training. Teachers can also benefit from observing students' reactions over various stages of training. In the early years of study, students viewing conflicts between patients and physicians may identify more closely with patients, whereas later they may be more sympathetic to the physician's point of view. The teacher should help them to understand both viewpoints to gain a more complete picture of the conflict.

Teaching activities using films should be planned like all other activities included in the syllabus

Some readers might consider this recommendation unnecessary, but we believe that it is important to stress this point. Many students, especially first-year students, might consider the use of films in the classroom a form of entertainment, as opposed to traditional lectures or laboratory activities. It is important to eliminate this perspective from the outset to ensure concentration and interest in the film sessions. We recommend treating film sessions like any other, traditional teaching activity. This means including them in the syllabus and agenda, writing out the educational objectives and a clear description of how the activity will be carried out, and defining how students will be assessed and the weight of the activity in students' grade for the course. If students view the film outside class time, it is essential to instruct them how to find it. In this respect, several options are available. Teachers could arrange for the film to be shown once or twice in a classroom, for the DVD to be borrowed from the library, or for the film to be available online. However, some authors recommend teachers view the film with their students⁵⁷ to observe students' reactions, including facial and other nonverbal expressions and to reinforce students' opinion that the teacher considers the activity worthwhile, interesting, and important.

Some strategies are necessary to spark debate

Teachers may face complete silence after a film is shown. This situation can be even more awkward if the teacher tries to start a discussion, but nobody wants to be the first to contribute. Thus, it is a good idea to prepare a set of questions to prod students to discuss the main issues dealt with in the film. Here, the alternatives are endless. These questions can be put to the entire class or to a specific student. Another approach is to organize students into small groups; this will make it more likely to obtain a variety of answers, especially regarding controversial issues, such as those concerning ethical dilemmas, moral beliefs, or sociological options. Pausing the film to ask students what they think is going to happen is a good option if time permits. Another practice that can help prepare the way for a discussion after the film is to provide students with a viewing guide including some relevant questions to urge them to concentrate on particular parts of the film. Any activity that stimulates active viewing will have positive repercussions on discussions.

General introductions to the films are helpful

We recommend against showing students a film in the classroom without preparing them first. Students need to realize that this is a regular teaching activity, not a cinema session; thus, every effort should be made to avoid misunderstanding, especially with students just entering the university. Teachers should prepare a short introduction to the film. This might include comments about the technical characteristics of the film, a summary of the plot, the historical context

of the story or of the production, and whether it won any awards. This information can be included in the course syllabus and/or presented to students just before the viewing. As teachers can never be sure that every student has read the document, it is probably best to go through this material immediately before viewing. This brief introduction can also recommend students pay close attention to certain scenes, and this approach can be a good alternative to pausing the film various times during viewing.

Grading should be based on realistic assessments

The methods used to assess students need to be coherent with the activity. What to include in the assessment is often a difficult issue. When the group is small, the teacher can evaluate each student's participation during the session. However, when the group is large, it is more practical to ask students to write a short essay that considers the main aspects dealt with in the film and a discussion and/or a personal analysis of the most relevant aspects. In our experience, this approach is appropriate in most cases. Some teachers may prefer a more detailed analysis of the major sequences or events and the key points in each.⁵⁷ Another approach is to help students agree on the most relevant aspect of the film and then ask them to write a text outlining their opinion on this issue. In any case, we recommend that teachers avoid asking students to write lengthy texts, because this approach can be counterproductive, as students may be angry at devoting so much time to the activity and the stimulating effect of the film will be lost. Only one or two pages should be enough for teachers to know the effects of the film on students. Including questions about the film in regular exams gives more legitimacy to the use of films, but may curtail some aspects of the film that are not in line with the specific educational objectives of the course. For this reason, it may be better to assess the activity separately and establish its contribution to students' final grades rather than including it in the examination with material from regular teaching activities.

Conclusions

The use of popular films can help teachers introduce students to some medical scenarios that may be difficult to understand using traditional educational methods. To avoid common mistakes that may diminish the activity's educational value, teachers should choose films carefully, view them thoroughly and thoughtfully to identify the most relevant scenes for the educational objectives, plan the activity carefully taking into account the students' current knowledge, and use assessment measures that are appropriate for the activity. Common sense can help ensure success in this teaching activity.

Conflict of interest

The authors of this article declare no conflict of interest.

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