

Chapter 3

The Value of Cinemeducation in Health Sciences Education



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The Complex Scenario in Health Sciences Education: How to Prepare Students for the Future

In 1910, supported by the Carnegie Foundation, Abraham Flexner published a study on medical education in the United States and Canada. The “Flexner report” promoted the systematisation and homogenisation of curricula grounded in medical sciences without the inclusion of humanistic subjects [1]. This paper had an enormous impact, and its recommendations formed the basis of education in health sciences during the twentieth century. In parallel, scientific and technological advances tipped the scales further toward scientific medicine, and medical training became increasingly remote from its ancient humanistic foundations [2].

One century after the Flexner report, the need to reincorporate the humanities into health sciences became evident [3–5]. One general line of approach to meeting this need, the acquiescence model, uses elements of history, literature, art, or cinema to complement teaching activities to improve students’ understanding about patients and the complexity that surrounds them [5]. This model can be framed in the new teaching innovation strategies—defined as a set of relatively intentional and systematised interventions, decisions, and processes employed with the aim to analyse, modify, and improve attitudes, ideas, cultures, contents, models, and practices.

Among the artistic resources used for teaching in the health sciences, cinema has been an important tool from its beginning [6–9]. Cinema has been used all over the world to teach subjects such as medical diagnostics [10], nursing [11, 12], pharmacology [13, 14], psychiatry [15–17], psychology [18–20], and bioethics [21–26], among others. Moreover, many authors have reported their experiences in using commercial cinema to help health sciences students acquire transversal professional skills such as communication [27, 28], understanding disease [29, 30], or solving bioethical conflicts [31, 32].

In the last decade, television (TV) series, especially in English-speaking countries, have reached levels of such high quality that many critics consider that the best stories are currently told on the small screen, in platforms such as Netflix, HBO, or Amazon Prime [33–36]. The new generation of TV series presents stories with highly complex dramatic structures, with innovative treatments of myriad themes. The multiplicity of supports and means to access TV series has reconfigured the audience for these products. Viewers nowadays constitute differentiated audiences willing to allocate the necessary time to address deep content and long-lasting messages, thus enabling them to identify strongly with characters.

In particular, medical series attract millions of viewers, including many medical students and health science professionals [37–40]. These series allow viewers not only to delve into biomedical issues, but also to enter characters’ psychosocial spheres and submerge themselves in their personal and emotional contexts. This situation sparks interest in the object of study and favours the assimilation of complex concepts [41]. TV series can also help students understand situations from the points of view of different characters (i.e., doctors, patients, and others) in multiple contexts: professional, personal, and social [42–45].

The series’ visual language facilitates students’ understanding while engaging them emotionally [46–49]. These audiovisual resources can transport students to

specific situations and complex scenarios that represent a reality that is difficult to grasp through other methodologies.

Our Proposal: A Systematic Approach to Cinemeducation

In the extensive and varied landscape of the use of TV and movies in medical education [32], pedagogical proposals include many activities such as discussion groups and problem-based learning; however, there is a lack of systematisation in the description and development of these activities.

We have undertaken an investigative process to analyse the methodology and measure the efficacy of different teaching activities. Our theoretical-methodological approach to using films for teaching health sciences students does not stem from film criticism or scholarly studies of art or communication. Rather, it is grounded in *Cinemeducation*; in other words, it is based on the application of entire films, fragments of films, or TV series for specific purposes in medical education [50–53].

Cinemeducation goes much further than simply presenting a film in class. It is based on a rigorous methodology that requires a sequence of steps to be followed before, during, and after the class based on the activity [54].

A crucial step before the activity involves selecting appropriate audiovisual material and defining learning objectives that are coherent within the curriculum. Another step, the classroom activity, involves viewing and discussing the material. Assessment is important both before and after the activity (Table 3.1). Discussion

Table 3.1 Typical organisation of a 2-h cinemeducation teaching activity

Stage and duration	Objectives and development
Introduction (20 min)	To introduce the learning objectives of the session, the content and approach, and the limitations of the activities included
Preintervention assessment (10 min)	To assess students' prior knowledge and preparation through a 10-question multiple-choice test
Film viewing (20–30 min)	To critically view the episode/film, focusing on the learning objectives
Timeline debriefing (5 min)	To centre the discussion, summarising and reviewing relevant aspects of the plot
Discussion (30 min)	To deliberate on the material viewed, focusing on the learning objectives
Open-essay questions (10 min)	Qualitative approach (optional)
Postintervention assessment (10 min)	To assess students' knowledge through a 10-question multiple-choice test (the same one used in the preintervention assessment)
Learning achievement survey (5 min)	To gather information about students' opinions regarding their learning through a structured questionnaire. The items consist of rating statements on Likert scale ranging from 1 (totally disagree) to 5 (totally agree)

and assessment should be focused on the learning objectives. Rather than discussing everything that happens in the audiovisual material presented, teachers should guide the discussion to focus on the educational content defined by the learning objectives of the session within the course syllabus. The ultimate aim is to promote the transference of knowledge and skills gained in the activity to future professional performance.

These stages and durations are orientative; the activity should be adapted to the circumstances of the class (i.e. time constraints, teachers' experience and skills, students' situations within the trajectory of their studies, etc.). When it is impossible to dispose of two hours for this teaching activity, the qualitative questionnaires can be eliminated, and/or the length of the videoclip or the debate can be reduced.

To encourage discussion among students, we recommend that groups have no more than 20 students. When this is not possible, students can be divided into sub-groups for an initial discussion and then share what was discussed through group spokespersons.

Our Cinemeducation Experiences

In this section, we will share some details of the experiences carried out at the Universitat de Vic—Universitat Central de Catalunya by the cinemeducation methodological group CINESIM (this stands for the words CINE from cinema and SIM from simulation). We developed the activities in these experiences to meet students' needs in different subjects involving complex topics (i.e., patient safety, bioethics, gender issues, or interprofessionalism), considering students' prior level of competency and the level they needed to acquire, as well as the characteristics of the subject being taught. Cinemeducation experiences were designed maintaining the initial methodological scheme and adapting some details of form and content. In all cases, both ethical approval and informed consent of the students who participated were obtained.

Patient Safety in Medicine

Patient safety is a complex subject that is essential in healthcare because errors are inevitable in tasks performed by human beings. Some aspects of patient safety can be taught with simulation techniques [55], but other aspects can be difficult to learn through simulation because they involve complex concepts in very specific situations. In particular, it can be difficult for ordinary simulation resources to represent the complexity of error management in the hospital environment.

We chose the TV medical series *The Resident* (season 1, episode 5—*None the wiser*) because it provides a complex problem scenario that fit our learning objectives. In this episode, poor organisation of the operating rooms and the chief of

surgery's abusive behaviour results in four patients undergoing surgery simultaneously and inexperienced residents being left in charge of coordinating some of these operations. When an emergency arises in one of the operating rooms, the staff fail to correctly identify a patient waiting for a routine surgery, resulting in the wrong testicle being removed. We edited the episode to create a 30-min clip containing the relevant scenes that would facilitate a discussion about the organisational structure of a surgical team, the notion of priority in complex situations, the notion of system error (organisation-centered versus person-centered), and the institutional treatment of an adverse event.

In February 2020, we used this activity for the first time with 70 second-year medical students. We repeated the activity in February 2021 with 85 second-year students. To improve the activity, in the second experience we added a printed Ishikawa diagram [56] on the wall to provide visual support for the root cause analysis. We also inverted the sequence of the debate. Whereas in the first experience, the students “fit” scenes they remembered into the factors in the diagram, in the second the students directly recalled the factors that were represented in the series, and the teacher organised them into the diagram [57].

In 2021, we assessed long-term learning with 59 third-year medical students who had participated in the cinemeducation activity the previous year. Not only did most students remember the key events and situations in the video clip, but they had also learned the concepts elicited during the subsequent debate the previous year and were able to transfer the knowledge to a challenging new patient-safety situation.

Professional Responsibility in Physiotherapy

In the 2021–2022 academic year, we did a cinemeducation activity about professional responsibility in a bioethics course for second-year physiotherapy students. Students had expressed difficulties in applying theoretical concepts in professional practice, especially those related to biolaw and professional responsibility.

Again, we chose to use *The Resident* (season 1, episode 5—*None the wiser*) because it facilitated debate about health professionals' professional responsibility and the roles of professionals in different positions in a hospital in dealing with an adverse event. In the debate, we worked on notions of professional, civil, and criminal liability of health professionals; the risks of inexperience, recklessness, and negligence; and what to do when the rules are broken.

A group of 25 students participated in the activity in October 2021, and another group of 16 students participated in the same activity in March 2022. These experiences were interesting because they helped us learn how to help students identify with the roles of other professionals. The protagonists in medical dramas are usually doctors, and an interprofessional perspective that includes protagonists from nursing, physiotherapy, or mental health, among others, may be lacking. Thus, the discussion focused mainly on examples of how the fragment could be related to the role of physiotherapists.

Multiprofessional Approach

In 2020, during the COVID-19 pandemic, we designed our first online cinemeducation activity. This activity aimed to improve decision-making among health sciences professionals to benefit patients. We proposed a special session in which undergraduate students of health sciences (i.e. medicine, nursing, physiotherapy, speech therapy, and nutrition) and their professors could become acquainted with the cinemeducation methodology.

A total of 13 people (8 students and 5 teachers) participated in the experience. We chose the TV medical series *The Good Doctor* (season 1, episode 6—*Not fake*) because it tells the story of complex decision-making in an emergency situation. The episode starts with residents in the emergency room receiving two dozen patients from a massive car accident. Dr. Shaun Murphy attends to a young patient whose leg was seriously injured in the accident while he was on his way to his wedding with his family. After consulting with the chief of surgery, the residents discuss amputating the injured leg with the family. Dr. Murphy explains an innovative idea: the femur could be replaced with a titanium femur made with a three-dimensional (3D) printer. The patient's parents want to go ahead with the amputation, but his bride wants to replace the femur. The patient's parents file a lawsuit and a judge comes to help resolve the issue. To favour an open debate on the different clinical, rehabilitation, psychological, and legal viewpoints, the videoclip was interrupted before the final decision is known. In the discussion, we worked with the students and teachers from the perspectives of each of the study disciplines, analysing what each specialty contributes and the limits of professional skills. The session benefited from the participation of experts and professors.

Telehealth in Physiotherapy

The COVID-19 pandemic has led to a growth in virtual teaching and virtual interactions in education as well as in the remote provision of healthcare [58, 59], underlining the importance of clear guidelines for professional behaviour in these environments [60]. Learning to care for patients remotely has become a necessity, despite the gradual return to the pre-pandemic “normality”. With the aim of fostering the acquisition of the competences necessary for telehealth, we designed an online activity about care and/or follow-up processes that do not require patients and professionals to be present in the same physical space.

For this activity, we chose the TV medical series *New Amsterdam* (season 3, episode 3—*Safe enough*), in which the hospital psychiatrist, Dr. Iggy Frome, attends a young immunocompromised woman whose parents will not let her leave her room to “protect her” from coronavirus infection. The psychiatrist's sessions with the patient are held virtually; this enables him to focus his gaze on his patient's environment, her gestures and expressions, and even on some wounds on her hands. The

selected fragment ends with the therapist himself joining an online therapy group to treat his eating disorder.

This activity was developed in the context of a course that works on clinical reasoning for fourth-year physiotherapy students. The activity took place online, and 65 students participated. To encourage participation, students were divided into subgroups for the initial 25-min discussion of the series, focused on the strengths and weaknesses of telehealth and the competences needed for virtual interactions. This was followed by a debate involving the entire group, based on feedback from each of the subgroups. Most students stated that the session allowed them to identify factors that will help them act in similar situations in the future and to gain insight into the competences needed for telehealth.

Complex Decisions in Medicine

In May 2021, during the COVID-19 pandemic, we designed a virtual activity to teach communication skills within a course for second-year medical students. The activity had two main teaching objectives: to demonstrate communication skills at an interprofessional level (i.e. sharing professional opinions in a context where other professionals might reason differently) and to show how to identify the three dimensions of complexity (i.e. clinical complexity, social or contextual complexity, and system complexity). Eighteen students participated in the activity.

We chose the TV medical series *New Amsterdam* (season 1, episode 2—*Rituals*), where a boy is attended by a psychiatrist and a neurologist. The boy seems to be overmedicated, but his school refuses to decrease his medication because he has been involved in episodes of violence. The two doctors sue the school district, demonstrating the need to coordinate interprofessional work not only among different disciplines—and not only among health sciences disciplines—but also with the courts, school, and family. In the discussion, we worked on the concept of complexity, which is represented in the series through the involvement of different agents, including social workers and healthcare professionals, lawyers, and judges, as well as the young patient and his family. The activity highlighted the importance of coordination among the different people involved in making urgent decisions and the different, seemingly disconnected organisational levels in complex cases.

Medical Residents

Our first experience in using cinemeducation at the postgraduate level was a training course for fourth-year medical residents in the specialty of family medicine in Girona, Spain. The course we designed aimed to promote the development of transversal competencies through reflection and feedback among professionals, with special emphasis on complex situations and multiprofessional decisions necessary

in current medical practice. The program comprised of six two-hour sessions. The teacher in charge worked with a variable number of participants (8–15, depending on learners' availability, which depended on their clinical responsibilities).

In the first session, we framed the course, explaining the methodology for the activity, the importance of critical thinking, and the role of the medical humanities in scientific discourse. We chose the movie *Mary Shelley's Frankenstein* (Brannagh, 1994) to introduce the sessions and initiate reflections on the role of the humanities in the acquisition of soft skills. We selected various fragments of the film (i.e. total duration of 24 min) that provided a panoramic view of the skills that students would work on in the following sessions.

In the second session, we worked on interprofessional teamwork, particularly on professions and new professional roles, interprofessional communication, and shared decision-making. For this purpose, we used the TV medical series *The Good Doctor* (season 1, episode 6—*Not fake*), as in the activity about the multiprofessional approach described above (see [Multiprofessional Approach](#) section). The main difference with the previous experience was the composition of the group, which in this case included only doctors, so the teachers encouraged learners to reflect from other professional perspectives in the discussion.

In the third session, dedicated to bioethics, we worked on the importance of ethical reflection, on the values and attitudes involved, and on the ethical criteria for decision-making. For this purpose, we chose the TV medical series *The Good Doctor* (season 2, episode 14—*Faces*), selecting a 24-min fragment in which the doctors connect a young girl who desperately needs a face transplant with a grieving mother who must decide whether to donate her daughter's organs after a car accident. The bioethical issues involved in organ transplantation (i.e. anonymity, solidarity, and the decision-making process) are further complicated by the fact that the patients are minors.

In the fourth session, we addressed gender issues. For this purpose, we chose *The Good Doctor* (season 1, episode 14—*She*), selecting a 20-min fragment in which the surgical team attends a young, biologically male cancer patient who identifies as a girl. This fragment shows the learning process through which Dr. Murphy, at first only able to consider the patient in biological terms, comes to an understanding of transsexuality. This material allows us to work on the difference between sex and gender, care for transsexual people in the health system, and the relationships between medicine and gender.

In the fifth session, about leadership, we worked with the TV series *New Amsterdam* (season 2, episode 15—*Double blind*). We selected a 12-min fragment telling a story from the opioid crisis in the United States and proposing different ways to control the growing epidemic of addiction. With the hospital board's agreement, Dr. Max Goodwin first attempts to authoritatively control the prescriptions issued by hospital doctors. He then proposes an alliance with the directors of other hospitals in the county, and when that fails, he finally proposes to modify the terms of the contract with the pharmaceutical company. This material allowed us to work

on issues related to leadership: types of leadership, shared leadership, and some keys to successful leadership.

The sixth and final session was about communication. We chose a 16-minute fragment from *The Good Doctor* (season 1, episode 17—*Smile*) that shows how Dr. Shaun Murphy interjects his views in a meeting with a patient to obtain informed consent prior to elective surgery to restore facial expression. Dr. Murphy, with his usual style of asking directly without knowing some social codes, wants to make sure that the patient is aware of the risks and benefits of this surgery. The information he provides is correct in professional terms, but his communication style could be considered inappropriate. We see, however, that it is not only Dr. Murphy who has obvious communication problems, and it soon becomes apparent that the team as a whole is not speaking clearly with the patient and her family. We specifically worked on interprofessional communication and communication with patients and families, linking elements related to complexity from the clinical field, context, and health system with the decision-making process.

Conclusions

All these experiences attest to the usefulness of cinemeducation methodology in teaching undergraduates, residents, and specialists complex and interactive aspects that are difficult to convey with other approaches. The audiovisual language of medical series offers an excellent opportunity to learn from complex scenes. Cinemeducation requires few resources; easily accessible TV series or movies can be used to achieve specific teaching objectives. Moreover, this approach can also be used in online teaching, making it invaluable during the COVID-19 pandemic.

Cinemeducation is a way to integrate perspectives from the humanities in education for the health sciences. It fosters emotional engagement, as students identify with the characters in the story, seeing situations from the viewpoints of different professionals, patients, and relatives. Cinema and TV series are rich in situations related to health sciences and adept at recreating the complexity of social environments, making it relatively easy to identify fragments that can be applied to specific objectives of training programs for health sciences students and professionals.

We approach working with these audiovisual resources (especially medical dramas) as a scientific investigation in which we test basic hypotheses (e.g. about the pedagogical efficacy of different activities with different material for a particular health sciences subject) during class. This approach requires us to design a rigorous protocol for the entire sequence of the activity, from the choice of the audiovisual resource to the evaluation of the activity's effectiveness. Only in this way can we compare the usefulness of this approach against other educational methodologies.

In summary, cinemeducation methodology can be adapted to actual teaching needs: it allows teaching to be approached in a way that can be multimodal (i.e. hybrid learning, face-to-face, immersive, asynchronous, and/or synchronous), multidisciplinary, multi-experiential, multidimensional, multicultural,

multiorganisational, multistage, and multi-institutional. Importantly, cinemeducation can help students develop not only in the intellectual dimension, but also in the emotional, occupational, physical, and social dimension. To face the challenge of addressing complexity in a changing world, teaching requires us to innovate with agile, dynamic, flexible methodologies.

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