

Cinema and Biology: A teaching experience carried out by students

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Received 13 November 2012; accepted 29 November 2012.

Summary

The paper recounts the experience of a cycle of film showings organized by the students themselves, which was also recognized as being an activity whereby elective credits could be obtained. The activity was carried out during the 2009-10 academic year in the Biology degree at the Pompeu Fabra University (UPF) in Barcelona.

The organization of the activity and the assessment of the students enrolled were undertaken by the Student Organizers under the supervision of the Dean of the Faculty of Health and Life Sciences.

The experience was deemed to be highly successful for the following reasons: the number of students enrolled on it, the notable participation and the result of the assessment of the reports handed in by the students. The activity could be considered a good example of students' involvement in their own training, both technical and human.

Keywords: Popular movies, Teaching tools, Biocinema, Health science students.

Resumen

El artículo narra una experiencia de un ciclo de cine organizada por los propios estudiantes susceptible de ser reconocida para obtener créditos de libre elección. La actividad fue realizada durante el curso 2009-10 en los estudios de Biología de la Universidad Pompeu Fabra (UPF) de Barcelona.

La organización de la actividad y la evaluación de los alumnos matriculados fueron llevadas a cabo por los estudiantes organizadores bajo la supervisión del decano de la facultad.

La experiencia fue evaluada positivamente por el alto número de matriculados, por la participación de los mismos y por el resultado de la evaluación de las memorias que tenían que realizar los matriculados. La actividad podría considerarse como un buen ejemplo de implicación de los propios estudiantes en su formación, tanto técnica como humana.

Palabras clave: cine comercial, métodos docentes, biocine, estudiantes de ciencias de la salud.

The authors state that this article is original and that it has not been previously published.

Introduction

The Faculty of Health and Life Sciences (FCSV) at Pompeu Fabra University (UPF) began its activity with a degree course in Biology. Since the 2007-08 academic year, bachelor degrees in Human Biology and Medicine have been taught and since 2010-11, the Biomedical Engineering degree has also been taught jointly with the Polytechnic School of the UPF.

Since its inception, the FCSV has run an innovative educational project which has encouraged the involvement of students in their own learning. Also, films have been frequently used as a teaching tool and some of these experiences have been published in *The Journal of Medicine and Movies*¹⁻⁵.

During the first trimester of the 2009-10 academic year, the Student Council presented to the Board of Directors of the Faculty an activity on Biology and Cinema that could be counted as eligible for academic recognition for elective credits. The Faculty Board appreciated the proposal as a good opportunity to involve students in their own teaching and academic assessment.

In this paper we aim to narrate the experience and its results.

The experience

The activity took place during the 2009-10 academic year and was called "Cinema CECS" in recognition of the involvement of the Student Council of Health Sciences (CECS in Catalan language). It was recognized as a teaching activity for undergraduate students of the Biology degree course to obtain three elective credits.

The experience consisted of seven sessions of cinema where films were projected which were of valid teaching interest related to biomedicine. Four sessions were scheduled in the second trimester and three in the third. To facilitate student attendance, the sessions were projected on Mondays at a non-teaching time (7pm) in the Main Auditorium of the Center. Table 1 presents the films from this cycle that were screened in original version with subtitles in Spanish by decision of the student enrollees.

As in any other subject, the students enrolled on the course had the syllabus at their disposal, as well as the datasheets of the films and the questions to be answered after each session for later evaluation.

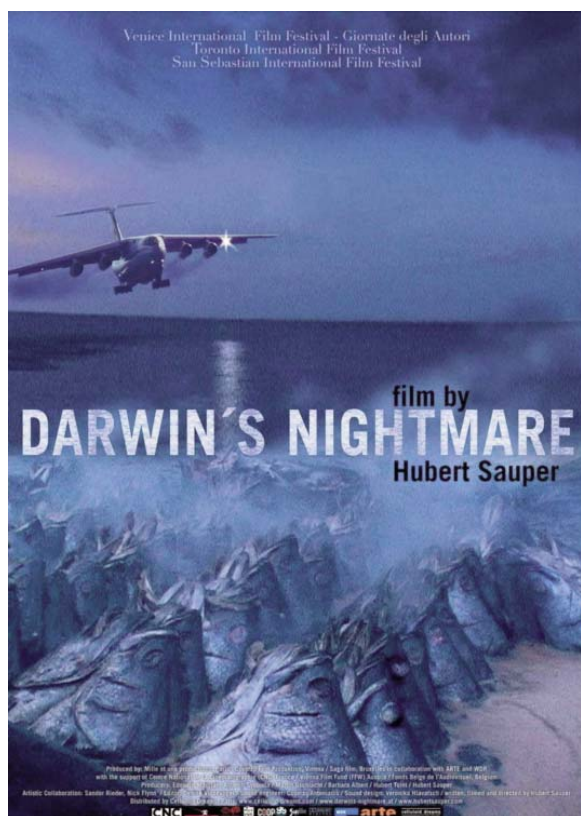
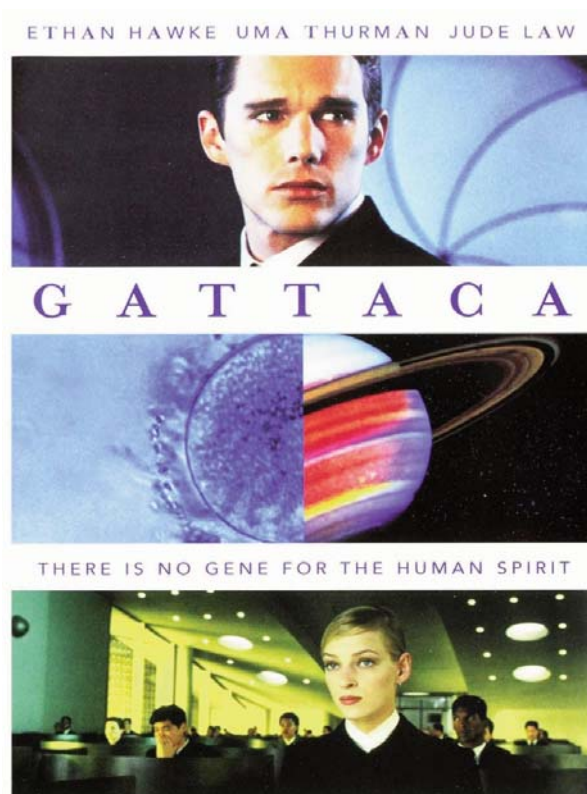
Only students in the third and fourth year of the Biology degree could take part in the activity as those in the fifth year were involved in professional practical sessions during this period.

The coordination of the experience was undertaken by five third-year students, belonging to the CECS, under the direction of the former Dean of the Faculty. The Organizers also obtained the recognition of three credits. All of these six people are listed as authors of this paper.

The assessment was conducted by the members of the organizing committee under the supervision of the dean. To this aim, two areas were taken into account: attendance at the sessions, where there was a very strict control, and the presentation of an academic report. Regarding attendance, it was compulsory to attend 6 of the 7 sessions. Only one other absence was accepted provided it was for a relevant cause and justified with an obligatory document. For more than two

Table 1. List of films projected.

| Film | Director | Year |
|------------------------------|------------------|------|
| 1. <i>Gattaca</i> | Andrew Niccol | 1997 |
| 2. <i>Memento</i> | Cristopher Nolan | 2000 |
| 3. <i>Darwin's Nightmare</i> | Huber Saupert | 2004 |
| 4. <i>Medicine Man</i> | John McTiernan | 1992 |
| 5. <i>The Island</i> | Michael Bay | 2005 |
| 6. <i>Lorenzo's Oil</i> | George Miller | 1992 |
| 7. <i>Twelve Monkeys</i> | Terry William | 1995 |



absences, even though they were justified, the credits would not be recognized.

The academic report was to be delivered on paper to the secretary's Office of the Center by the end of the academic year and had to include one page per session with the answers to the questions (Table 2) and an overall opinion of the film. Also, the report had to include another page with a general evaluation of the activity where the students could make suggestions for improvement (Table 3).

Evaluation of the activity

As noted, the Organizer Students assessed the activity themselves, first by checking the attendance and subsequently by evaluating the dossiers. Each organizing member had prepared specific questions about a movie that participants were required to answer in the written report. Of the five students of the Organizing Committee, two asked questions about two films and three about one. Each member of the Organizing Committee evaluated the written work only on the films for which they had generated questions.

Thus, from their responses, each student enrolled got a mark for each film. The final score was the average of the marks of the responses on six films. For those who attended all 7 sessions, the top 6 scores were considered.

The results

Sixty-two students were enrolled in the activity, of whom 37 were in their third-year and 25 in their fourth-year of their Biology degree. All the students passed the course by meeting the criteria for attendance and by fulfilling requirements for the dossier assessment.

At the start, the organizers carried out a survey on the preferences of the language of the films to be shown. The vast majority (79%) opted for the original version with subtitles in Spanish while a minority preferred the dubbed version (21%). Hence, the projections were in the original language with subtitles in Spanish.

Referring to attendance, 9 students attended all sessions (14.5%), 51 did not attend one of the sessions (82.2%) and 2 students had two absences, one of which was always justified (3.3 %).

All the written reports received a positive evaluation on the usual decimal score in Spain (0 to 10).

Table 2. Examples of questions that students had to answer in the report.

Gattaca

- Do you think it is ethically acceptable to discriminate for reasons of genetics?
- Do you think genetics determines us completely?

Memento

- Do you think he's right when Teddy tells Leonard that he does not know who he is?
- According to the film, Memory would be a faithful reproduction of the facts, an interpretation or manipulation?

Darwin's Nightmare

- What impact has the introduction of the Nile perch in the lake ecosystem and in the life of the local population?
- Explains another example where the introduction of a species (intentionally or not) has had dire consequences for native biodiversity.

Medicine Man

- What disadvantages involves the rapid pass of animal research to human research?
- The intention of saving the boy indicates emotional involvement on the part of researchers. Do you think this subjectivity brings benefits to research?

The island

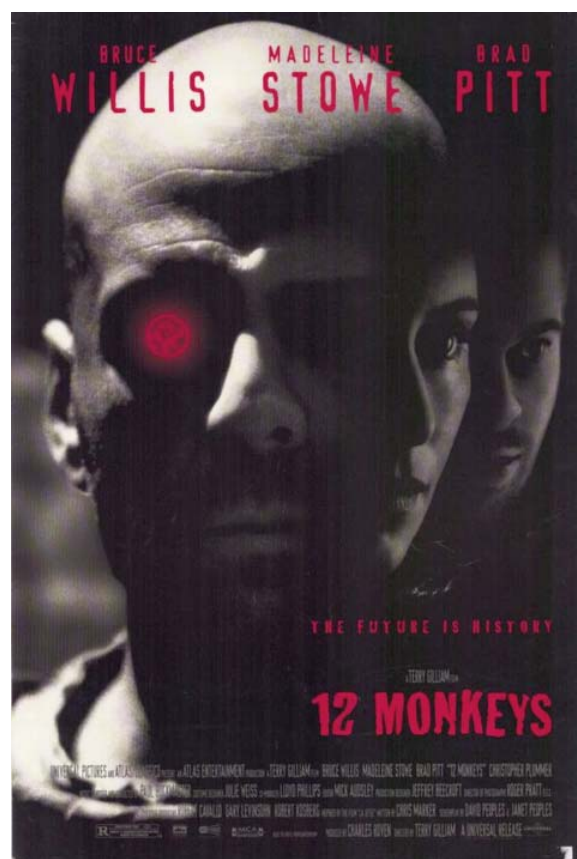
- From the biological point of view, do you think it possible that Lincoln 6 Echo could have memories that belong to your sponsor Tom Lincoln?
- What do you think of the idea of the film where it is said that the organs need experience as the humans?

Lorenzo's oil

- What is the relation between loss of myelin and the symptoms that you can see in the film?
- Describe the mechanism of the treatment of the parents

Twelve Monkeys

- Reflecting on the characteristics of the virus (mode of infection, replication, etc.) and the factors that influenced the development of viral pandemics, do you think the virus could affect the humans as shown in the film?



No significant differences were found between the results of students in third-year and fourth-year (chi square = 3.68, df = 3, p = 0.29).

The perception of those involved in the experience

In the report, the students had to write a page on the overall evaluation of the activity where they could make suggestions for improvement. Furthermore, the organizers made a final assessment.

Referring to the students' evaluation, 226 comments were categorized highlighting positive aspects of the experience on both the organizational and the formative side. 38 negative comments were also received, in this case all focused on logistical aspects. Table 3 shows the three most frequent comments, both positive and negative.

From the comments of the participants and their own reflections, the Student Organizers valued the experience as clearly positive. However, they also took on some of the negative aspects making suggestions for improvements in the future (Table 3).

Thirty-two students (18 from third year and 14 from fourth) obtained a score between 8 and 8.9, 25 (14 from third year and 11 from fourth) between 7 and 7.9, 4 (all from third year) between 6 and 6.9 and 1 (from third) between 5 and 5.9.

Overall evaluation

We believe that the experience recounted was very positive for different reasons. Firstly, we want to highlight the important acceptance of the initiative as shown by the fact that 62 students enrolled (the 62% of the third-year students and the 42% of the fourth-year students). This enabled them to increase their chances to obtain elective credits required for the degree. We would also like to emphasize that in addition to the students enrolled, the movie sessions were attended by many students of the new degree courses. The activity was mandatory for those enrolled but freely accessible to the rest of the students of the Faculty.

It is worth pointing out that the vast majority of students wanted the films to be shown in the original language, a fact that would indicate their interest in cultural aspects other than the purely technical.

Table 3. Positive and negative aspects more frequent in the comments*.

Students Enrolled

Positive

- Suitable Movies(36)
- Enjoyable activity (26)
- Promotes reflection (13)

Negative

- Some movies in disrepair (9)
- "Darwin's Nightmare" inadequate (7)
- Tardiness (6)

Student organizers

Positive

- Use of new technologies (electronic mail as a means of communication).
- Support of the entire university community.
- Very suitable Auditorium (the noblest of the Faculty).
- Good feedback from students and high participation.
- Screening of films in original version.
- Overall evaluation very positive.

For improvement

- The organizers must see all films.
- Check the material condition of the films to ensure a good projection.
- Make it clear that the only system of communication is e-mail and intranet of the Faculty.
- Insist on the necessary criteria of assistance.
- Ensure timeliness of projections and be more intransigent with tardy students.
- Clarify the separation between the organizers and the rest of their course mates.

*In brackets the number of students who made the comment.



In addition, we consider it extremely positive that all students passed the activity and that most of them achieved high marks. This was proof of the interest shown by attendees in the activity.

Likewise, and possibly the most important fact, we believe that the experience was a clear example of students' involvement in their own learning. We recall that the idea came from the Student Council of the Faculty and was managed by members of the same under the supervision of the Dean. The authorities of the Faculty stressed the seriousness to the Student Organizers of assessing their peers. Although all students passed the activity, there was a very wide range of grades and a clear sense of agreement amongst the assessors. We are currently interested in a further study to determine the degree of relationship between the scores of students in this activity with their final records.

The experience was very well received and appreciated by the Dean's team of the Faculty as a pilot plan of students' involvement in their training, both on the technical and human fronts, and in the processes of learning assessment. It was also an activity that reinforced the

tradition of the Center of using commercial films as a teaching tool to promote the learning of their students.

Finally, the authors hope that similar activities may be continued in the new degrees in Human Biology and Medicine at the UPF or that they may be implemented in other university studies.

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