“From Cinema to the Classroom”

Literacy through Moving Images*

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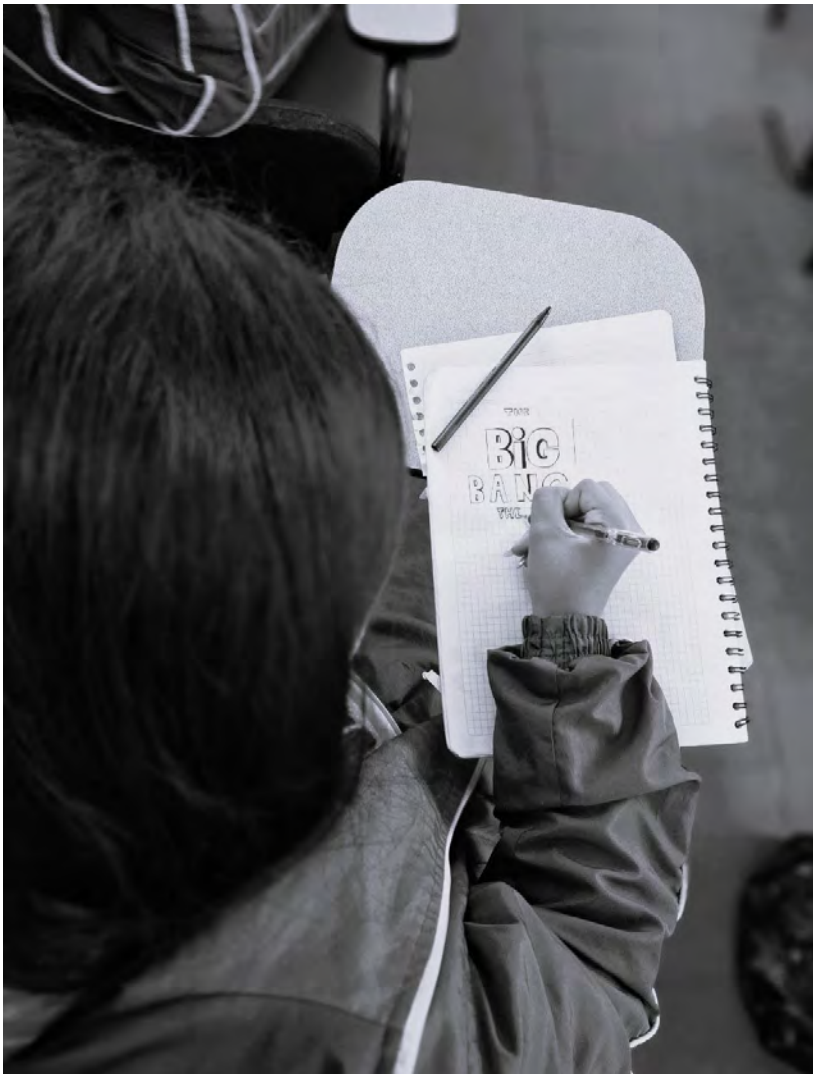

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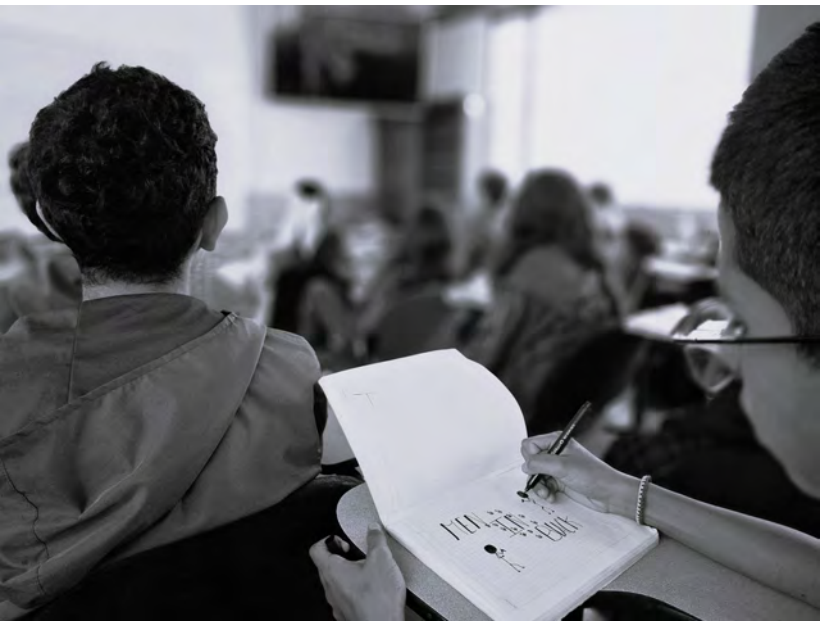

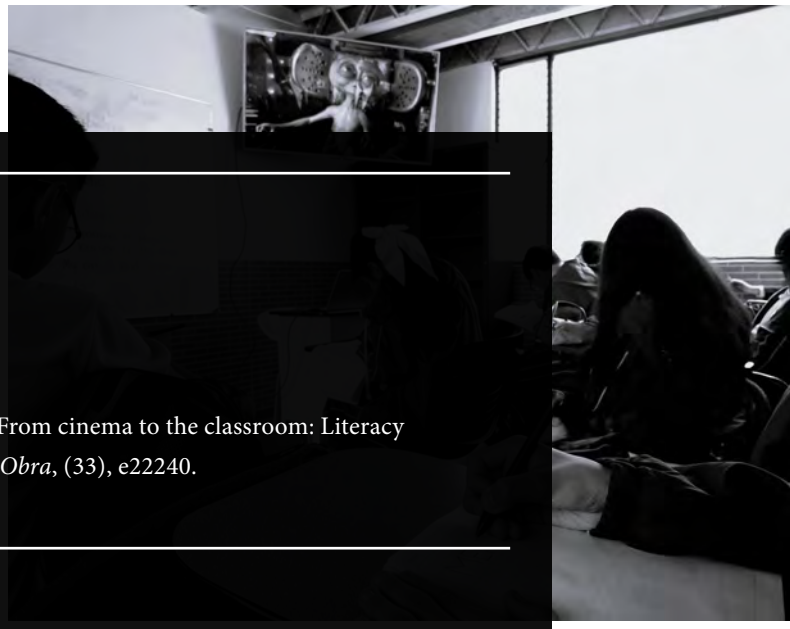

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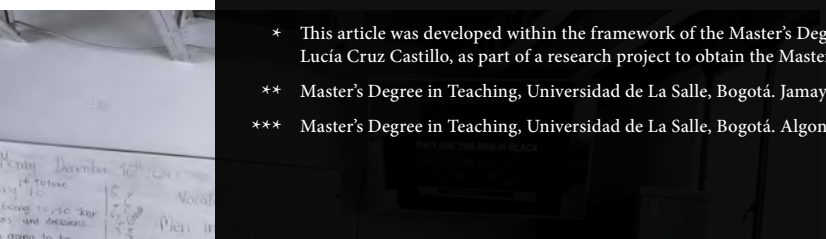

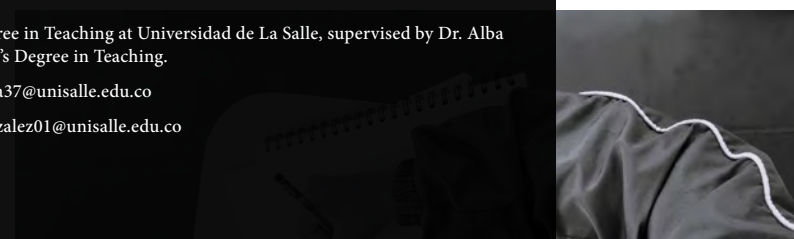

Abstract

This article explores the potential of cinema as a powerful tool to enhance literacy in Colombia. By analyzing the current state of education and the limitations of traditional teaching methods, the study highlights the need for innovative approaches to engage students and foster a deeper understanding of various subjects, such as natural sciences and foreign language learning, specifically English.

The research delves into the intersection of cinema, scientific literacy, technological literacy, and cultural literacy. It examines how films can be used to spark curiosity, stimulate critical thinking, and promote a more comprehensive learning experience across different fields of knowledge. Through surveys and case studies, the article presents evidence of the positive impact of cinema on student engagement and learning outcomes. Furthermore, the study identifies challenges and opportunities for integrating cinema into the Colombian education system. It concludes that while cinema offers significant benefits, there is a need for curricular adaptations and teacher training to fully harness its potential. By fostering a culture of cinematic literacy, educators can empower students to become more informed, engaged, and critical citizens.

Keywords: cinema; scientific literacy; technological literacy; cultural literacy; science fiction; foreign language

“Do cinema à sala de aula”: alfabetização através das imagens em movimento

Resumo

Este artigo explora o potencial do cinema como uma poderosa ferramenta para melhorar a alfabetização na Colômbia. Ao analisar o estado atual da educação e as limitações dos métodos de ensino tradicionais, o estudo destaca a necessidade de abordagens inovadoras para envolver os estudantes e fomentar uma compreensão mais profunda de diversas matérias, como ciências naturais e o ensino de línguas estrangeiras, especificamente o inglês.

A pesquisa aprofunda a interseção entre cinema, alfabetização científica, alfabetização tecnológica e alfabetização cultural. Examina como os filmes podem ser usados para despertar a curiosidade, estimular o pensamento crítico e promover uma experiência de aprendizado mais abrangente em diferentes áreas do conhecimento. Através de pesquisas e estudos de caso, o artigo apresenta evidências do impacto positivo do cinema no engajamento e nos resultados de aprendizado dos estudantes. Além disso, o estudo identifica desafios e oportunidades para integrar o cinema no sistema educacional colombiano. Conclui que, embora o cinema ofereça benefícios significativos, existe a necessidade de adaptações curriculares e formação de professores para aproveitar plenamente seu potencial. Ao fomentar uma cultura de alfabetização cinematográfica, os educadores podem capacitar os alunos a se tornarem cidadãos mais informados, engajados e críticos.

Palavras-chave: cinema; alfabetização científica; alfabetização tecnológica; alfabetização cultural; ficção científica; língua estrangeira

“Del cine al aula”: alfabetización desde las imágenes en movimiento

Resumen

Este artículo de reflexión científica explora el potencial del cine como una poderosa herramienta para mejorar la alfabetización en Colombia. Al analizar el estado actual de la educación y las limitaciones de los métodos de enseñanza tradicionales, el estudio cualitativo destaca la necesidad de enfoques innovadores para involucrar a los estudiantes y fomentar una comprensión más profunda de diversas materias, como lo son las ciencias naturales y la lengua extranjera: inglés.

La investigación profundiza en la intersección del cine, la alfabetización científica, la alfabetización tecnológica y la alfabetización cultural. Examina cómo las películas pueden utilizarse para despertar la curiosidad, estimular el pensamiento crítico y promover una experiencia de aprendizaje más completa desde diferentes áreas de conocimiento. A través de encuestas y estudios de caso, el artículo presenta evidencia del impacto positivo del cine en el compromiso y los resultados de aprendizaje de los estudiantes. Además, el estudio cualitativo identifica desafíos y oportunidades para integrar el cine en el sistema educativo colombiano. Se concluye que, si bien el cine ofrece beneficios significativos, existe la necesidad de adaptaciones curriculares y capacitación docente para aprovechar plenamente su potencial. Al fomentar una cultura de alfabetización cinematográfica, los educadores pueden capacitar a los estudiantes para que se conviertan en ciudadanos más informados, comprometidos y críticos.

Palabras clave: cine; alfabetización científica; alfabetización tecnológica; alfabetización cultural; ciencia ficción; lengua extranjera

Introduction

Advancing education and literacy has become an urgent priority in a world undergoing constant change. Traditional teaching methods are no longer sufficient to foster curiosity and deep understanding among students across different fields of knowledge.

Year after year, teaching practice has revealed a steady decline in students' interest in scientific disciplines. Classrooms are often filled with lecture-based instruction and analytical interventions, in which students frequently show a lack of motivation or avoid theoretical explanations—mainly because they miss the necessary tools to grasp key scientific and linguistic concepts.

As Elías (2008) notes, today's children and adolescents have exchanged the science fiction books of Jules Verne or Isaac Asimov for *Harry Potter* by J.K. Rowling and similar works. While problems in the former were solved through scientific and technological methods, they are now resolved with the wave of a magic wand, defying all natural laws. This shift also contributes to increased disinterest, lack of motivation, and the perception among students that science is "just another subject they have to study but that is ultimately useless" (Elías, 2008, as cited in Fontana Gebara, 2018).

Students often perceive science as boring and disconnected from the real world. This lack of interest may stem from difficulties in understanding scientific concepts, from an inability to connect them with content they frequently encounter in their personal activities, or even from barriers in the original language of the media they consume. Many young people express a negative perception of scientific activity, which they view as difficult, dull, and reserved for a few who are regarded as geniuses (Solbes & Traver, 2001).

Martín Díaz (2002) and Acevedo Díaz (2004) specifically summarize the goals that science education at the upper secondary level should pursue: scientific literacy and education for citizenship. Orienting science teaching toward these goals entails developing critical, responsible, and engaged individuals who are concerned with the world and its challenges. It involves promoting a vision of science that is relevant to everyday life and therefore meaningful (Martín Díaz, 2002). Helping students become critical viewers of films is also part of citizenship education.

According to Pérez Gómez (2012), educational institutions face significant challenges in generating practical knowledge—that is, knowledge capable of influencing how individuals feel, think, and behave. One of the main weaknesses of schooling is the difficulty in fostering learning that can be transferred

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to real-life contexts, everyday situations, and common problems (Dede, 2007; Robinson, 2011).

Based on the exploration of related research, there is a growing need to renew educational approaches considered essential for improving learning effectiveness in the classroom. In this context, the inclusion of media, particularly cinema, emerges as a strategy to address current educational needs. This article therefore seeks to establish how cinema can be used to promote scientific, technological, and cultural literacy in the Colombian context. Consequently, it explores institutions that promote new technologies in education and support cinema as a pedagogical alternative, which will be described in this article.

As a form of art and entertainment, cinema holds a unique power to convey ideas about what is considered knowledge. It is particularly known as a constant source of wonder, fascination, and a means to reflect on the reality in which we live, allowing the exploration of academic concepts in creative and speculative ways. For this reason, the following article offers an analysis of cinema in the educational context, examining literacy through film and its contributions from the perspectives of the exact sciences and foreign language education.

In this regard, the article discusses various experiences and approaches to scientific, technological, and cultural literacy through cinema. Throughout the text, insights and survey findings presented reveal perceptions and the impact of cinematic productions on the understanding of scientific and technological concepts. Additionally, specific cases will be examined to show how cinema serves as an effective tool for fostering interest and curiosity in these areas of knowledge.

Context

In Colombia, several programs promote scientific, technological, and cultural literacy through cinema, with initiatives focused on education and the development of critical thinking. Three main venues exemplify this approach.

First, school and university film clubs provide spaces where students can debate scientific and technological topics depicted in films, fostering critical analysis and curiosity toward science. These initiatives aim to bring science and culture closer to young audiences through film analysis.

Second, *Ciencia en Bicicleta* – by Parque Explora. This program combines lectures and documentary screenings to promote science in school settings by offering tools for science communication through audiovisual media, thereby fostering scientific and technological literacy. This initiative was active until August 10, 2023.

Third, *Cinemática* – Medellín Scientific Film Festival, which aims to engage students and teachers with cinema as an educational tool in the sciences. It features workshops and film screenings that blend cinema with scientific thinking. The event took place from September 5 to 14, 2024, and included monthly content updates and continuous programming.

Furthermore, in the search for entities that promote cinema as a means of fostering scientific, technological, and cultural literacy, the following programs, identified in the Colombian context, were found in this study:

Table 1. *Film-related Programs in the Colombian context*

Program/ Institution	Contribution	Objective	National implementation programs	Details
Red de Escuelas de Cine y Audiovisuales (RECA) (Network of Film and Audiovisual Schools)	Cultural and Technological.	To foster the development of critical thinking and creativity through film and audiovisual media production.	Workshops and courses in schools and communities, as well as support for students' projects.	RECA offers both practical and theoretical workshops on film and audiovisual media in schools and community settings, with an emphasis on student-created content.
Fundación Patrimonio Fílmico Colombiano (Colombian Film Heritage Foundation)	Cultural and Scientific.	To preserve and promote Colombia's cinematic heritage, including educational activities in schools.	Educational projects on the history of Colombian cinema and school-based workshops.	The Foundation organizes screenings of historical films and educational workshops to teach about Colombia's cinematic heritage.
Cine en la Escuela (Cinema in Schools) – **Fundación Cine en Colombia** (Colombia Film Foundation)	Cultural and Technological.	To integrate film into education to develop students' critical and creative thinking skills.	Educational film screenings and audiovisual production workshops in schools.	They offer curated screening series and hands-on production workshops, providing students with tools and knowledge for audiovisual analysis and creative development.
Programa de Alfabetización Audiovisual (PAA) — (*Audiovisual Literacy Program)*	Cultural and Technological.	To teach students to analyze and produce audiovisual content in order to improve their critical and technical skills.	Courses in video production and film analysis in educational institutions.	They offer courses on audiovisual production, editing, and analysis in schools, fostering both technical and critical skills.
Proyecto Cinemática (Universidad Nacional de Colombia) *Cinemática Project (National University of Colombia)*	Scientific and cultural	Its goal is to use film as an educational tool to explore scientific and cultural topics and foster interdisciplinary learning.	Activities include school screenings and discussions, as well as the development of educational materials focused on science and culture.	They organize film screenings on scientific and cultural topics, followed by classroom discussions and complementary educational activities.
Programa Nacional de Estímulos del Ministerio de Cultura (National Grant Program of the Ministry of Culture)	Cultural and Technological.	Supports and promotes educational and cultural projects related to film and audiovisual culture in schools.	Issues calls for school film project proposals, providing financial and logistical support.	Provides funding and logistical assistance for educational film initiatives in schools, encouraging the integration of cinema into the school curriculum.

Note. This research consolidates information about various entities, their objectives, and the programs implemented within the Colombian context, including details of each initiative. Authors' own elaboration (Amaya & González, 2024).

According to Table 1 (Amaya & González, 2024), it is clear that the promotion of institutions and programs that integrate cinema as an educational tool in schools is essential for fostering scientific, technological, and cultural literacy. Initiatives such as school film clubs, scientific film festivals, and outreach programs like *Ciencia en Bicicleta* encourage critical thinking, curiosity, and interdisciplinary analysis, making complex topics more accessible and engaging for young learners.

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These activities not only enrich the learning process but also help to develop essential skills to address the challenges of today's world, linking education to the social and cultural contexts in which students operate.

Scientific Literacy

Scientific literacy is a key concept in contemporary education. It refers to the ability to understand, analyze, and critically evaluate scientific information. In the context of film and science fiction, scientific literacy takes on a unique dimension, as films often explore scientific concepts and advances speculatively. This provides a valuable opportunity to enhance students' understanding and engagement.

For the present article, a preliminary analysis was conducted regarding the concept of scientific literacy. It was found to have been developed with the aim of addressing the deficit of scientific knowledge in society.

The term "scientific literacy" was coined by Hurd (1958) in his publication *Science Literacy: Its Meaning for American Schools* and arose from American concerns about outpacing the Russians in the space race after the launch of the first Sputnik on October 4, 1957. This led citizens to worry about the kind of education their children were receiving to face a society of increasing scientific and technological sophistication (Hurd, 1958).

Historically, numerous interpretations have been identified, each reflecting different approaches and purposes of scientific literacy. All of them are related to the idea of developing knowledge, skills, and values appropriate for a scientifically literate citizen.

During the 1980s, various research findings emerged that introduced different nuances to the concept of literacy, which had generally been understood as the ability to read and write. These studies shifted the focus toward a functional level of reading and writing aimed at understanding and expressing opinions on scientific matters (Miller, 1983). Just as cultural immersion is essential for learning a second language (Bybee, 1997), there is a need for immersion in scientific culture in order to achieve scientific literacy (Vilches Peña *et al.*, 2004).

The following decade was marked by sustained efforts to legitimize the term through collective initiatives, under the motto "science for all." However, no clear implementation framework was identified (Laugksch, 1999) to clarify the goals of science education in schools (Roberts, 1983).

Thus, in conjunction with the need for reform in science education, literacy became a curricular orientation (Membiela, 2002). From that point forward, proposals were consolidated to define the term "literacy" as the need to establish training processes for adults with predominantly social purposes—what came to be known as "science with specific social purposes," which explored the meanings and social uses of science among the adult population (Durant, 1994; Laugksch, 1999; Layton et al., 1993, 1994; Miller, 1983; Ziman, 1991). In line with different theoretical approaches, scientific literacy became a model for science education, representing what the general public should know about science. This included an appreciation of its nature, goals, and general limitations, along with a basic understanding of important scientific concepts (Durant, 1994; Jenkins, 1994; Gil & Vilches, 2001).

In this same vein, DeBoer (2000) stated that "we must accept the fact that scientific literacy is simply synonymous with the public understanding of science, and this is necessarily a broad concept" (p. 594). Godin and Gingras (2000) likewise argued that the terms scientific literacy and public understanding of science are regarded as synonymous in a specific context, stating that

> The term used to express the notion of scientific culture varies across countries, groups, and individuals. In the United States and the United Kingdom, for instance, the commonly used term is *public understanding of science*, although the term *scientific literacy* is also frequently used. (p. 43)

For this reason and building on theoretical contributions from authors such as Ambrós (2014) and Manghi & Crespo (2016), this article aims to explore and underscore the importance of understanding the multiple dimensions and perspectives that shape the concept of literacy, as well as its impact on teacher education and pedagogical practices. The diversity of approaches and theories analyzed offers a broad and in-depth view of this fundamental phenomenon in contemporary education.

As DeBoer (2000) points out, one of the core aspects of scientific literacy should be that citizens are able to

understand scientific discussions presented in the media. To achieve this, it is essential that they grasp some key scientific ideas and, above all, understand how science, technology, and language function.

It is important to note, however, that the current generation of adolescents and young people are exposed to a kind of information pollution (Fontana Gebara, 2018), due to the excessive flow of content delivered through audiovisual media, social networks, and other sources.

Film within the broader framework of education

Cinema has had a significant impact on education by serving as a powerful tool for both teaching and learning. According to Mayer (2009), the use of audiovisual media, such as films, can facilitate the understanding of complex concepts by combining visual and auditory stimuli, thereby enhancing information retention. Moreover, educational films can promote critical thinking and classroom discussion, allowing students to explore topics from multiple perspectives (Klein, 2011). Cinematic representations can also be valuable in illustrating historical and cultural contexts, offering an immersive and accessible way to understand past events and social realities (Lüdtke & Davis, 2020a). Integrating film into the curriculum not only enriches the educational experience but also fosters a stronger emotional and cognitive connection with the content, as highlighted by various studies in the field (Gee, 2013).

The following table summarizes key aspects of using film as a teaching tool in the classroom. [

Table 2. *Key Aspects of Using Film as a Teaching Tool*

Aspect	Description	Benefits
Historical Contextualization	Films can provide visual representations of historical events, periods, and cultures.	Facilitates understanding of historical and cultural contexts; enriches learning.
Multisensory Stimulation	Combines visual and auditory stimuli, which can enhance information retention.	Improves memory and understanding through a multisensory experience.
Promotion of Critical Thinking	Provides material for analysis and discussion, fostering critical thinking and reflection.	Encourages debate and in-depth analysis of complex topics.
Visualization of Abstract Concepts	Allows students to visualize concepts that may be abstract or difficult to understand.	It facilitates the understanding of complex concepts through visual representations.
Diversification of Teaching Methods	Introduces an alternative educational resource that can engage diverse learning styles.	Increases students' motivation and engagement.
Empathy and Emotional Connection	Stories and characters can help students connect emotionally with the content.	Fosters a personal and emotional connection to the learning material.
Stimulation of Debate and Reflection	Films can serve as a springboard for debates and reflections on relevant topics.	Encourages development of critical and reflective thinking.
Accessibility and Adaptability	Films can be adapted to different educational levels and subject areas.	Allows tailoring of content to the specific needs of students.

Source: Author's own elaboration (Amaya & González, 2024).

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Contributions from disciplinary fields

Cinema in the teaching of the hard sciences

As mentioned in the introduction, this article highlights the growing disinterest among students in science, as reflected in the classroom by a lack of motivation and engagement with the contents, often due to conceptual and language barriers. According to Elías (2008), while classic science fiction works used to encourage scientific thinking, today's youth tend to prefer fantasy stories that disregard natural laws, reinforcing the perception that science is boring and of little practical relevance. Solbes and Traver (2001) observe that this negative image links science with difficulty and exclusivity. Martín Díaz (2002) and Acevedo Díaz (2004) argue that science education should prioritize scientific literacy and education for citizenship, making science more relevant and connected to everyday life. Similarly, Pérez Gómez (2012) emphasizes that schools must foster practical and transferable learning by addressing real-world issues, thus overcoming one of the major shortcomings of the current education system.

> As a physics teacher at Colegio Agustiniano Salitre, I have worked for several years with tenth-grade students. It has been noted that some students tend to ask for watching films related to the class topics when they lose interest in traditional teaching methods. They often regard these films as non-educational or expect them to exempt them from the rigor of academic content. However, such attitudes can lead them to underestimate the educational potential of cinematic entertainment, failing to consider it as a legitimate alternative to theoretical instruction and overlooking the reasons why scientific disciplines are included in Colombia's[1] upper-secondary curricula. Unpublished reflective work on my own pedagogical practice. (Amaya, 2024)

Martín Díaz (2002) and Acevedo Díaz (2004) outline the primary goals of science education at the upper secondary level: scientific literacy and citizenship education. Steering science teaching toward these aims involves nurturing individuals who are critical, responsible, and engaged with the world and its challenges. It also means presenting science as something relevant to everyday life, and therefore, functional (Martín Díaz, 2002). Encouraging critical viewing of cinematic productions is an essential component of civic education.

According to Pérez Gómez (2012), educational institutions face major challenges in generating practical knowledge—that is, knowledge that influences how individuals feel, think, and act. One of the school system's main weaknesses lies in promoting learning that is transferable to real-life contexts and everyday situations (Dede, 2007; Robinson, 2011).

This research arises from that very need. By using excerpts from science fiction films and documentaries as pedagogical tools, educators can foster meaningful, contextualized learning. This strategy allows students to explore complex scientific topics in an accessible and stimulating way. Furthermore, science fiction cinema can serve as a springboard for enriching discussions on ethics, scientific responsibility, and the role of science in society.

In the context of scientific literacy through cinema, it is essential to develop innovative pedagogical strategies that tap into the educational potential of science fiction films. These may include developing film analysis guides, designing interactive classroom activities, and incorporating critical discussions on the scientific topics featured in the films.

According to Fontana Gebara (2018), there are four ways to employ this methodological resource:

1. Use of fallacies as a critique of cinema: These are films that violate fundamental principles, which are later addressed as scientific concepts. (Example: *Topic – Waves; Fallacy – Presence of sound in outer space*).
2. Aid in teaching complex and difficult-to-visualize concepts: Many science fiction films present science grounded in reality and based on meaningful concepts,

1 According to the Ministry of National Education, basic education "shall be structured around a common curriculum, made up of the fundamental areas of knowledge and human activity" (Article 19 of Law 115 of 1994). Upper secondary education consists of two academic or technical school years and "aims to foster an understanding of universal ideas and values, as well as to prepare students for entry into higher education and the workforce" (Article 27 of Law 115 of 1994). Upon graduation, students are awarded the Bachiller diploma, which qualifies them to access higher education in any level or field of study (Article 28 of Law 115 of 1994).

making them plausible to the audience. (Example: *Topic – Special and General Theory of Relativity; Resource – Interstellar).*

3. Discussion and reflection on ethical, moral, and environmental issues: Films depicting dystopian futures are used as a resource to explore the history and philosophy of science.
4. Courses focused on the use of science fiction films: The literature review revealed that some university courses are centered around this approach. Notable examples include *Physics of Science Fiction* (Palacios, 2007) at the University of Oviedo, Spain, and *Physics in Film* (Quirantes Sierra, 2011), a course taught at the University of Granada.

Cinema in Foreign Language Teaching

The use of cinema in foreign language teaching, particularly English, has seen notable growth in our country. This trend has led to the widespread popularity of language academies such as Smart, American School Way, Ula Idiomas, and Blendex, among others. As Aguilar (2019) points out, foreign languages have increasingly been incorporated over the years and have become a key component of competitiveness and the shaping of Colombian cultural identity.

> As an English teacher at Gimnasio Real Americano School, I have witnessed the growing interest in foreign language learning and the constant need to update teaching tools that help students maintain their motivation for language acquisition. In today's globalized world, languages often provide opportunities for personal and professional growth, stability, and more. The flexibility inherent in language learning, together with the cultural dimension introduced through cinema, is an aspect worth highlighting as will be explored in this section given its many benefits. Unpublished reflection on pedagogical practice. (González, 2024)

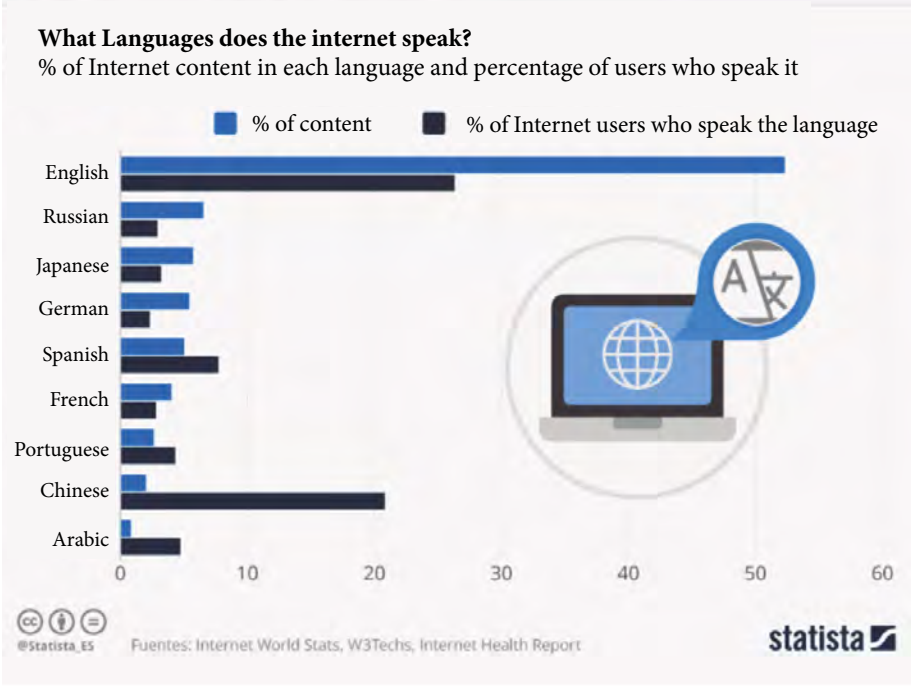
According to López Gallardo (2014), cinema is an especially valuable tool in the classroom, particularly in foreign language education. Its ever-evolving content helps enhance key competencies within the cultural dimension, including linguistic, sociolinguistic, and sociocultural skills—essential elements in the teaching of English and other languages.

> as it makes it possible to understand the similarities and differences between one's own culture and the one portrayed in the film. The latter depicts everyday elements of daily life, including typical items (such as clothing, housing, and food), as well as customs, habits, and celebrations. (López Gallardo, 2014)

This directly contributes to the cultural component addressed later in this article. Literacy, beyond encompassing scientific and technological aspects, also involves a social dimension, highlighting how cinema shapes our understanding of society through its representations. It cultivates the sensitivity needed to internalize—or at least more easily recall—what is portrayed, thus reinforcing students' socio-affective competence.

It is important to note that cinema also offers elements that support the development of communicative skills such as reading, writing, listening, and speaking. Among the direct benefits of using film in the classroom is the acquisition of new vocabulary and the reinforcement of pronunciation. Using cinema in foreign language education—particularly English—requires the creation of a connection that engages with cultural identity, allowing students to more easily relate through audiovisual content and thus develop their language skills more effectively.

For this reason, it becomes necessary to define the concept of scientific, technological, and cultural literacy. Although Hurd (1958) initially spoke of scientific and technological literacy, global changes have demonstrated the need to include the cultural dimension as a means to foster civic education, in connection with everyday life, and to discuss the social history of science (Gallego *et al.,* 2009).



Sources: Internet World Stats, W3Techs, Internet Health Report

Figure 1. *Percentage of Internet content by language and percentage of users by language.*

Note. Adapted from "Half of Internet Content Is in English. Languages on the Web," by Guadalupe Moreno, 2017, Statista. https://es.statista.com/grafico/7736/la-mitad-del-contenido-de-internet-esta-en-ingles/

According to Figure 1, half of the content available on the web is in English, as reported by the German company Statista GmbH, which conducts statistical surveys and market research. The figure also shows that approximately 26.2% of internet users had proficiency in English in 2017.

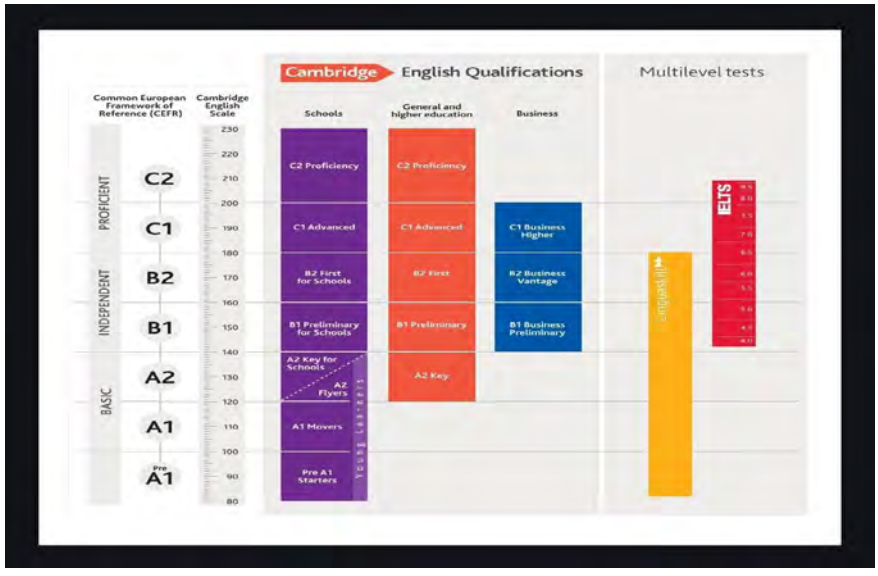


Figure 2. *Cambridge English Level Classification.*

Note. English Qualifications. Cambridge classifies language skills according to the Common European Framework of Reference. Cambridge English Scale.

https://www.cambridgeenglish.org/latinamerica/exams-and-tests/cambridge-english-scale/

Based on the above, and in accordance with the Common European Framework of Reference (Figure 2), abbreviated as CEFR, which serves as the international standard for defining language proficiency, these competencies are presented in the following table by Cambridge English (Table 3).

Starting at A1, the most basic level where foundational language skills are developed, up to C2, where learners demonstrate a high level of proficiency or near-native command of the language.

Table 3. *Classification Table According to the Colombian Ministry of Education*

Common european framework of reference for languages (cefr) level	Common level name in colombia	Expected educational level	Educational sector goals (by 2019)
A1	Beginner	Grades 1 to 3	
A2	Basic	Grades 4 to 7	
B1	Pre-intermediate	Grades 8 to 11	• Minimum level for 100% of high school graduates.
B2	Intermediate	Higher Education	• Minimum required for English teachers. • Minimum for professionals in other fields.
C1	Upper-intermediate		• Minimum level for new graduates of language teaching programs.
C2	Advanced		

Note. Table 3 shows how the Ministry of Education has adopted these levels as specific targets for different segments of the educational population. Basic Standards of Foreign Language Proficiency: English. In a country like Colombia, foreign language education has become increasingly important. Programs such as Foreign Language Immersion Centers have been implemented, benefiting more than 5,000 students and 400 teachers in various educational institutions nationwide, according to Colombia's Ministry of Education (MEN, 2023).

https://www.mineducacion.gov.co/1780/articles-115174_archivo_pdf.pdf

This aligns with the goals set out in the National Bilingualism Plan, which has gone through various phases such as Colombia Bilingüe and the current Intercultural Bilingual Education Program. These programs are based on CEFR standards and define specific objectives and conditions to be achieved at each educational level in Colombia:

However, although there is a growing need to develop skills and improve English proficiency in Colombia, the use of film in the classroom is not always appreciated, and as a result, its potential benefits are often overlooked. In Colombia, there are few documented experiences that directly address the use of cinema for foreign language learning. Nevertheless, some notable models and initiatives stand out, such as the 3D *Black Box* rooms promoted by Blendex Academy in Medellín. These immersive 3D environments follow a structured schedule and offer, among other benefits, language learning through real-world contexts and in-depth vocabulary development, regardless of the language studied.

Methodology

The methodology for this article was based on a qualitative study that aimed to analyze teachers' perceptions of using film in the classroom. As the authors were engaged in teaching practice at the time of the study, they were able to incorporate reflections drawn from autoethnographic inquiry.

As Restrepo (2018) states, ethnography is defined by its descriptive and empirically grounded approach, seeking to understand social life from the participants' perspectives. It pays close attention to detail, going beyond anecdotal accounts to explore the subtleties of social practices and interactions. Moreover, it integrates the voices of those involved—through transcribed interviews or local expressions—to capture the richness and diversity of meaning.

> Its purpose is more modest, yet perhaps more realistic: this book might be better seen as a modest contribution to developing ethnographic sensibilities that will inevitably, at some point, lead emerging ethnographers to reflect critically on the kinds of representations they construct in both their ethnographic practice and their writing." (Restrepo, 2018, p. 21)

In this regard, the objective was not only to collect qualitative data, but also to create a space for critical reflection in which teachers could share their experiences and perspectives on the use of film as an educational tool. Through this methodological approach, the study aimed to contribute to a body of knowledge that reflects current dynamics in the use of cinema in education and provides practical recommendations for its effective integration into the school curriculum—thereby promoting a more robust scientific, technological, and cultural literacy among students.

As part of the literature review conducted for this research, practical examples were identified within the field of science education. One notable pedagogical strategy is the Física de Película (FdP), method, implemented as a Teaching Innovation Project at the University of Granada during the 2009/10 and 2010/11 academic years.

This method employs short clips from films—regardless of genre or topic—as instructional materials in physics classes. Although it does not constitute a standalone course, it is effectively integrated into teaching practices. Following a rigorous selection process based on criteria such as clip length, thematic relevance, and ethical considerations, a database of approximately 150 video clips was compiled, ranging from 10 to 190 seconds. These clips serve as a resource for illustrating complex concepts, fostering critical thinking, and increasing student engagement in learning physics. Table 4 presents a sample of selected scenes and segments that exemplify scientific concepts and support the educational use of cinema.

Table 4. *Selected scenes used in Física de Película (FdP). Taken from Quirantes Sierra (2011), who developed the Física de Película (FdP) method as a pedagogical tool for teaching university-level physics.*

Film	Scene	Concepts Illustrated
The Andromeda Strain	Investigation of the pathogenic organism	Scientific method: observation, experimentation, hypothesis, and verification
Speed 2	Ship braking before collision	Average acceleration
Spider-Man	Green Goblin holds a cable car	Dynamics: force decomposition; Newton's Second Law
The Simpsons – Bart vs. Australia	Drains spinning in opposite directions	Fictitious forces; Coriolis effect
GoldenEye	James Bond bungee jumps	Kinetic and potential energy
The World Is Not Enough	007's boat spins in the air	Torque; angular velocity
The Spy Who Loved Me	Submarine car	Buoyancy; Archimedes' principle
Volcano	Temperature rise in MacArthur Park pond	Calorimetry; specific heat
Enemy of the State	Entry into the "cage"	Electrostatics; Faraday cage
Tango & Cash	Escape using an electric cable	Electric potential and current
Avatar	Presentation of unobtanium	Magnetism; diamagnetism
Rear Window	James Stewart looks through the telephoto lens	Optics; reflection on spherical surfaces
Master and Commander: The Far Side of the World	Observation through a spyglass	Geometrical optics; optical aberrations
Contact	Dr. Arroway in front of the VLA	Wave optics; interference
Enemy of the State	Satellite observation	Wave optics; resolution (Rayleigh criterion)

Source: Quirantes Sierra (2011).

For this reason, the following section outlines the process undertaken during the research and the qualitative study conducted to date. First, a comprehensive literature review was carried out on scientific, technological, and cultural literacy in relation to cinema, along with contributions from various fields of knowledge such as natural sciences and foreign language education, drawing on the theoretical perspectives of the authors previously referenced in this document.

Subsequently, data were collected through surveys administered to forty teachers, followed by a results analysis. These methods aimed to gather detailed information about the use of cinema in the classroom and teachers' perceptions of its contributions to pedagogical practice, particularly concerning scientific literacy and the educational application of film.

These surveys were conducted in two settings: Colegio Agustiniano Ciudad Salitre and Colegio Gimnasio Real Americano, focusing on the areas of natural sciences and foreign language. The goal was to collect information on the didactic strategies previously used in relation to scientific literacy and the use of films in the classroom. The surveys were carried out with informed consent and prior authorization for academic purposes related to the dissemination of this study.

Data Analysis

As part of the analysis of the responses collected through a shared survey form, this qualitative study was conducted with a focus group of forty teachers from the areas of natural sciences and English, working at Colegio Agustiniano Ciudad Salitre and Gimnasio Real Americano in Bogotá.

The surveys focused on identifying general trends and shared perspectives among the teachers. Based on the qualitative context of the study and the nature of the questions, the following results were obtained:

Films are perceived as a valuable tool for motivating and enriching student learning. Regarding whether audiovisual materials help engage students, 56.5% of the teachers confirmed that such resources capture students' attention and foster participation. Some educators who have not yet used them expressed interest in exploring this strategy.

Regarding the teaching of complex scientific concepts, 52.2% of the teachers agreed that films can be very helpful, especially when addressing abstract content. However, 43.5% noted that while cinema can support understanding, it is not sufficient on its own to foster deep comprehension.

Regarding its usefulness in foreign language instruction, 65.2% of teachers who use film frequently viewed it positively, as it helps students to understand cultural and linguistic aspects in context. An additional 34.8% use it occasionally, acknowledging that it promotes skills such as pronunciation and vocabulary, although some mentioned limited access to suitable materials.

In the realm of scientific ethics and the impact of science on society, 52.2% of teachers stated that science fiction films frequently facilitate discussions on these topics, while 43.5% also noted this occasionally. Those who expressed reservations indicated that such films, due to their unrealistic nature, may divert attention from more rigorous debates.

Regarding the use of cinema for scientific or linguistic literacy, responses were divided. Those who already use this resource emphasized its effectiveness in supporting learning, while others acknowledged their interest in implementing it but face barriers such as a lack of resources and training.

Conclusions from the open-ended questions

- Contributions of cinema: Teachers indicated that cinema enriches learning by facilitating the understanding of complex concepts, fostering critical thinking, and connecting knowledge with everyday situations. They also valued it as a resource that broadens access to diverse contexts and promotes public engagement with knowledge.
- Classroom experiences: The responses showed that cinema motivates students, generates interest, and sparks curiosity. However, teachers emphasized the importance of selecting appropriate materials, considering students' interests, accessibility, and alignment with the curriculum. They stressed that successful implementation requires careful planning and overcoming challenges related to the duration of materials and students' attention span.

According to the results obtained from the surveys, cinema is clearly recognized by teachers as an important educational tool, as a significant number of respondents indicated that it holds pedagogical and illustrative potential. They reported that audiovisual materials can be used in the classroom to foster and enhance cognitive, socio-emotional, and communicative skills. Among the most successful outcomes of using cinema in academic settings are the comprehension of complex concepts, the development of critical thinking, the strengthening of communicative abilities, and increased classroom participation, in addition to its engaging and appealing nature. However, based on their teaching experience, the respondents emphasized the importance of addressing the challenges that arise when incorporating this tool into lesson planning. They stressed the need to strike a balance between planning and the advantages cited by teachers in the surveys and throughout the text, such as adaptability, connection, and empathy.

Conclusions

Cinema, as an educational tool, offers significant potential to enrich teaching and learning processes and to address the limitations of traditional methods in areas such as natural sciences and foreign languages, as discussed in various sections of this paper. This qualitative study shows that using audiovisual materials not only captures students' attention but also facilitates the understanding of abstract concepts by combining visual and auditory stimuli (Mayer, 2009). Additionally, it fosters critical thinking and ethical reflection by placing students in contexts that challenge their preconceived ideas (Lüdtke & Davis, 2020b).

The results of the surveys administered to teachers revealed a positive perception of cinema as a pedagogical resource. More than 50% of respondents highlighted its effectiveness in teaching complex concepts and fostering student engagement. However, this impact does not automatically translate into deep understanding, highlighting the need to complement audiovisual resources with solid pedagogical strategies (Pérez Gómez, 2012). Additionally, the use of cinema in the classroom faces logistical challenges such as selecting appropriate materials, the shortage of technological resources in educational institutions, and the lack of specialized teacher training—issues also reported in similar studies (Petit & Solbes, 2015).

In the context of scientific literacy, this article emphasizes how cinema can act as a bridge between science and society, helping students relate scientific concepts to ethical, social, and technological issues. As Gil and Vilches (2001) argue, achieving scientific literacy involves not only understanding scientific knowledge but also using it critically in everyday contexts. Cinema—particularly science fiction—offers scenarios that can demystify science and encourage meaningful classroom discussions.

Regarding foreign language teaching, cinema has proven to be an effective vehicle for acquiring linguistic and sociocultural competencies, strengthening vocabulary, pronunciation, and intercultural understanding (López Gallardo, 2014). However, in the Colombian context, its implementation remains limited, underscoring the need for educational policies that promote its systematic integration into national curricula.

It is essential to continue developing the qualitative study presented here by expanding the sample of teachers and students, exploring new educational settings, and comparing interdisciplinary approaches for effectively integrating cinema into the classroom. Therefore, this work leaves open the invitation for a possible continuation focused on creating practical guides based on successful experiences, aimed at helping educators to implement audiovisual strategies aligned with their curricula. These guides could include standardized criteria for film selection, critical analysis activities that connect cinematic themes to academic content, and specific assessment tools to evaluate the impact of these strategies on student learning.

Furthermore, conducting a longitudinal study to examine the long-term effects of cinema on students' literacy—particularly in areas such as critical thinking, creativity, and civic engagement—would be highly valuable. Such an approach would help to identify sustained trends and provide a deeper understanding of cinema's transformative potential in contemporary education.

To conclude this qualitative study, it is reaffirmed that, when strategically integrated, cinema can significantly contribute to students' holistic development, preparing them to become critical and engaged citizens in an increasingly interconnected and complex society (DeBoer, 2000). However, maximizing its impact requires not only overcoming structural barriers, but also fostering an educational culture that recognizes cinema as an essential pedagogical tool, supported by teacher training and access to appropriate technologies. In doing so, multiple literacies can be strengthened, and educational inequality can be reduced in contexts such as Colombia.

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