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Movies, ethics and accounting: a teaching experience

P. Merello^a , A. Barberá^a, L. Porcuna-Enguix^b, R. Porcuna-Enguix^a and A. Zorio-Grima^a 

^aDepartment of Accounting, University of Valencia, Valencia, Spain; ^bCentre for Research in Business Management (CEGEA), Universitat Politècnica de València, Valencia, Spain

ABSTRACT

This research presents an innovative learning experience undertaken in three groups of a financial accounting course at the University of Valencia (Spain). After watching three accounting-related movies, students answered a test based on each movie with questions about the ethical and accounting issues described in them and their satisfaction with the learning technique. Nonparametric tests and a multivariate analysis showed that the students who participated in this experience obtained a higher exam mark than those who did not. Our results evidence a significant effect on the final exam mark for more questions only in one of the movies. Our results are valuable because they show that students engage in this methodological approach, which can be helpful for them to improve their exam performance.

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1. Introduction

Nowadays, the knowledge gap between students and teachers is often noticeable and challenging (Carrasco-Gallego, 2017; Morreale & Staley, 2016). More than ever, students show different concerns and interests, and seek visual and immediate stimuli, as a result of them coming from a digital-native generation. In this way, learning methodologies must adapt to new possibilities and the new teaching environment (Serva & Fuller, 2004). Technological media are revealed as a didactic tool that helps retention and metacognition. Different authors emphasize the need to include new and more appealing methodologies in classrooms to promote critical thinking (Díaz-Vidal et al., 2020), and to enhance and increase student participation (Al-Bahrani et al., 2016).

Previous literature in the economics and business administration field backs the use of visual clips from videos and movies in both the classroom and online (Acchiardo & Vachris, 2018; Mateer et al., 2011, 2016; Mateer & Stephenson, 2011; Sexton, 2006), as well as the versatility, convenience and speed of digital platforms

CONTACT P. Merello  paloma.merello@uv.es

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(YouTube, HBO Netflix, Amazon Prime Video). These tools help to avoid students' general boredom with such classes as they are typically based on complicated theoretical and economic concepts (Colander, 2006), and mostly taught by somewhat traditional learning methods that are not student-centered (Lombardi et al., 2004).

Despite the existing literature in the Economics and Business field and using movie-based teaching tools, existing studies on this approach applied to accounting classes (Bay & Felton, 2012; Biktimirov & Cyr, 2013; Werner, 2014) only analyze characters' behavior in ethics and corporate governance terms, but focus on neither the specific link of the content of movies and some accounting issues nor assess the possible impact on students' knowledge acquisition.

Accounting is an information system whose general function is to provide useful information to improve decision making and, thus, acquiring a good accounting basis becomes crucial for students as future professionals (Zorio-Grima & Merello, 2020a, 2020b). The teaching methodology applied to accounting subjects can condition students' perceptions of transparency, the communicative style of information and other relevant aspects for users of information. In line with this, and in the European Higher Education Area (EHEA), European universities must contribute to ethical development (Scott, 2006) to promote cognitive, functional and personal development (EC, 2006).

The objective of our teaching experience was to study, analyze and implement a new teaching methodology and formative assessment adapted to the hybrid teaching requirements and particularities in the accounting field at the University of Valencia using movies as tools for students' autonomous work. We particularly examine students' ethical sensitivity, their engagement in the teaching experience and the contribution of the latter to students' performance. Our study brings students closer to situations in which the concepts taught in class are used. The learning experience was implemented in the first semester of academic year 2020–2021 in three groups taught in different languages (English, Spanish and Valencian). The results of this study show that students feel very satisfied with the methodology and this activity had a positive effect on their final exam performance.

The paper is organized as follows. After this introduction, the motivation and specific objectives of the experience are presented. The third section deals with the sample and the applied methodology. Section 4 presents the main results, organized as univariate and multivariate analyses. Finally, the main remarks are concluded.

2. Theoretical framework and hypotheses development

The EHEA offers us an excellent opportunity to learn more about other university institutions that invest a very high level of resources in teaching and ethical development (Solbrekke & Karseth, 2006). Students will benefit from a more direct professional approach from universities if they acquire ethical skills to, for instance, encourage students to face ethical dilemmas exactly as they would in the workplace, and to raise their confidence in their ethical development (Callender, 2008). In the present-day, all the curricula in the Faculty of Economics at the University of Valencia form part of the Ethics Project 'Training professionals with ethics'. This

project was launched in academic year 2016–2017 and was submitted to a 3-year strategic plan in which training sessions were proposed for trainers, as well as training activities for students. The objective of this Ethics Project is to raise awareness about the importance of the ethical dimension in the Economics and Business field as it is considered a transversal competence in all the subjects and degrees taught in the Faculty of Economics at the University of Valencia.

The forced adaptation to hybrid, and even to 100% online teaching, in the COVID-19 health crisis context involved having to design and implement appropriate teaching strategies and methodologies. Redesigning the assessment system was necessary, and more importance was attached to continuous assessments. This impacted both teachers and students in terms of the innovation, workload and modification of study habits.

The teaching-learning model is considerably limited by the institutional context; that is, available resources, administrative limitations, the flexible (or not) curricular design of the subject or group and student characteristics, among others.

The online teaching is context comes over as an opportunity to modify the predominant study pattern of first-year accounting students, which is often characterized by postponing study hours (study effort procrastination) and a rather low engagement level. Hence innovative and active teaching methodologies that can be adapted to the Information and Communications Technologies (ICT) available to the teacher and students, as well as modifications to the evaluation system and attaching more importance to continuous assessment, can be very useful in a non 100% face-to-face teaching context when managing many students.

According to Andrews et al. (2011), many learning difficulties of students in undergraduate courses can be attributed to the passive role adopted in classes. The flipped classroom active learning methodology is based on the design of activities that favor knowledge acquisition outside the classroom and during face-to-face class activities that are carried out to activate previously acquired knowledge (Mesa et al., 2016). This type of active methodologies can be especially useful in an online teaching context with a short synchronous teacher-student interaction time.

The objective of our teaching experience was to study, analyze and implement a new teaching methodology and a continuous assessment system adapted to the hybrid teaching requirements and particularities (combining face-to-face and online teaching) in the accounting field at the University of Valencia. Another of its intentions is that the achieved methodologies and results can be extended to a face-to-face teaching context. We propose a methodology to support the flipped classroom system using audiovisual resources, such as movies, to introduce or review theoretical contents, and to also serve as a basis for assessing and increasing students' ethical sensitivity.

The methodology aims to reinforce some of the so-called 'basic competencies' (BC) disclosed in the Degree's Verification Report approved by the Spanish National Accreditation Authority- e.g. 'the ability to collect and interpret relevant data to make judgments that include reflections on relevant issues of a social, scientific or ethical nature' (which is coded as BC3) or 'transmitting information, ideas, problems and solutions to both specialized and nonspecialized audiences' (BC4). In this way, our

teaching experience falls in line with the Ethics Project in the Faculty of Economics at the University of Valencia, and contributes to enrich students' knowledge and formal language by also introducing student to the most basic notions of business transactions with daily business reality examples and requiring theoretical concepts in complex situations to be explored in the business environment, and vice versa.

2.1. Interest in ethics

Education in ethics has drawn considerable attention and interest given past corporate failures and scandals, and also their relation to lack of accountability and the timely oversight by the accounting profession. Indeed teaching ethics in the classroom by constantly asking, identifying and evaluating moral problems may enhance students' moral insight (Bok, 1976). From the psychological perspective, some students may possess a strong ethical mind set, which involves the consistent practice of ethical principles *per se* (Gardner, 2007), but others may take an ethical orientation that might be influenced by external factors like peers, standards, or even the inadequate (illegal) behavior of business actors. Having an ethical orientation can also be developed by being trained to confront unethical attitudes or pressures (O'Leary, 2009)

The conceptual framework for this study is based on Bandura's Self-Efficacy Theory and the broader Social Cognitive Theory (Bandura, 2012). These theories are built on four sources: (i) reflection, i.e. assessing results from past events in similar actions; (ii) observing others' experiences; (iii) persuasion, i.e. to what extent students' perceptions and predisposition to a given scenario make them act in a similar way; (iv) stimulation. Beyond the importance of the three first sources, stimulation is closely linked with the higher education arena. Students voluntarily enroll at the University and normally demonstrate their interest in learning and boosting their job opportunities.

However, such interest also lies in lecturers' behavior. Features like positivism, enthusiasm, commitment and promoting proactive tools facilitate learning; for instance, the more marked the perception of ethics education as being decisive and integral to the profession by academics (positive ethic attitude), the greater their belief in conveying the relevance of ethical values in the classroom (Marzlin et al., 2017).

2.2. Ethics of the accounting discipline

Ethics education has substantially prevailed in auditing courses, which has focused mainly on the code of ethics and issues related to auditors' independence threats, incompatibilities, etc. (Cohen & Pant, 1989). Nevertheless, ethical attitudes are not restricted only to the auditing arena, but spread out to the accounting profession and the society as a whole. Therefore, self-regulation in any profession must be built under the umbrella of a code of ethics.

The accounting profession has ethical implications that should be considered, which have evolved over many years. It is still developing in line with the continuous changes in business and managers' behaviors. We can all remember plenty of examples of corporate collapses, scandals, corruption and audit failures that have negatively

impacted accountants' reputation and have damaged their ethical commitment to public interest (e.g. Bankers Trust or Bond Corporation in the late 1980s; Cendant in the 1990s; Enron and Arthur Andersen, the Ponzi or Pyramid scheme of Bernard Madoff, or MF Global in the 21st century). This huge wave of scandals has provoked: (i) the response of regulators and the profession by promulgating principles and guidelines on governance and ethics in codes of conduct; (ii) a growing interest of the literature on accounting ethics [52 published articles in the 1980s, 142 from 2000 to 2009, and 248 spanning from 2010 to 2018 in all, as indicated by Nguyen and Dellaportas (2020)]; (iii) an intense call for ethics education interventions in university accounting education and professional development programs, such as the Ethics Project called *Training professionals with ethics*, launched by the Faculty of Economics at the University of Valencia 5 years ago. It was implemented as a strategic plan of the University of Valencia. Either from the local perspective of Universities or an international one like the standards issued by the IFAC (International Federation of Accountants), these calls are built on the premise that there is no alternative to avoid ethics education in the accounting curricula. In other words, accounting ethics education programs are developed to address changes in social values by accounting profession's concerns and to reestablish its members' integrity. In addition, ethics education must be consistently integrated as a crucial part of education, especially for accounting students.

According to the extant research analysis by Nguyen and Dellaportas (2020) in accounting ethics education, we find a clear tendency. Early research into this topic highlighted *the need for ethics education in the accounting curriculum*, while the latter part moved toward understanding *the impact of ethics education on students' cognitive moral development and decision making*.

Nowadays, professional opportunities and alternatives available for acquiring a professional career are quite extensive and students are aware of that. However, the accounting profession image has not really evolved with time and students perceive it as a rather outdated, stereotyped, boring and normative-oriented profession (Arquero & Polvillo, 2019). Therefore, the gap between actual accountants' accountability and knowledge students learn triggers an *expectation performance gap* (Webb & Chaffer, 2016) and a *skills expectation gap* (Hassall et al., 2013). Several studies confirm the widening of this gap (e.g. Chaffer & Webb, 2017; Howcroft, 2017). Therefore, new teaching techniques must be employed to approach students to today's accounting profession. Here movies are one of the best ways to meet this goal because they allow us to somehow observe the dilemmas and performance of an accountant in practice. In turn, taking into account ethics in knowledge acquisition is crucial in the learning design for business, financial and accounting areas because it increases moral development (Shawver, 2009). Therefore, contributing to ethical development in acquiring competences to be a *good professional* provides students with an opportunity to disentangle the decision-making process so they can base their acts on ethical judgment (Guillen, 2021). Hence we posit the following hypothesis:

H1: Accounting students show positive ethical sensitivity and welcome the specific application of ethics concepts in business and accounting.

2.3. Success or failure in applying movies to the accounting discipline?

Teaching methods are usually reactionary; that is, classic academics teach students in an attempt to maintain traditional, political, social and moral values, and often stand against reforms or changes that represent society's potential progress. In particular, ethics teaching methodologies are often applied following case studies and recognizing short-term ethical dilemmas. This approach refers to rule-based methods that have been generally condemned as being inappropriate and not student-centered (Lombardi et al., 2004) so as to contribute to students' ethical judgment (Michael, 2006). To do so, more dynamic and visual strategies are needed.

The previous economics and business administration literature promotes using visual clips (videos and movies) in both classrooms and online (Acchiardo & Vachris, 2018; Mateer et al., 2011, 2016; Mateer & Stephenson, 2011; Sexton, 2006), as well as the versatility, convenience and speed of digital platforms (YouTube, HBO Netflix, Amazon Prime Video, etc.). Sexton (2006) uses powerful contemporary media, and movie and television clips, when teaching economics to large lecture class with 150–200 students per semester at the Pepperdine University (California), and demonstrates the utility of using real-life examples. Mateer et al. (2011) present the idea of creating an Economics Website that identifies the economics concepts broadcast on different TV shows. Mateer and Stephenson (2011) and Mateer et al. (2016) catalog many movies that can be used to teach concepts of public choice economics. Acchiardo and Vachris (2018) present economic principles via popular movies like *The Walking Dead*, *Mad Max* or *The Hunger Games*.

Despite the existing literature in the Economics and Business field and the use of movie-based teaching tools, existing studies that have applied his approach to accounting classes only analyze characters' behavior in ethics and corporate governance terms, but neither focus on the specific link of movies' content or some accounting issues, nor assess the possible impact on students' knowledge acquisition (Bay & Felton, 2012; Biktimirov & Cyr, 2013; Okougbo & Okike, 2021; Werner, 2014). Okougbo and Okike (2021) examine teaching strategies, such as case studies, digital videos, role playing, lecture notes, group learning, games, films/movies, etc. with a sample comprising 245 accounting undergraduates enrolled in an accounting ethic class. They were required to rank each teaching method on a discrete scale ranging from 1 to 7, with 1 representing the most preferred and 7 the least preferred. The results revealed that active teaching strategies ranked better than more passive methods.

Therefore, we postulate the following hypotheses:

H2: There is a direct relation between the proposed methodology and students' final exam performance

H2.1: There are differences between movies' impact on knowledge acquisition, which can be useful for redesigning the teaching experience in future courses

H2.2: Students understand complex accounting content that is staged in movies

Moreover, an assessment of the methodology effect on the final exam's score is not the only research question to examine, but students' perception is also relevant for discovering whether they are engaged or not. In this vein, the stronger student

Table 1. Movies selected for the methodology.

Movies
Margin Call (2011)- MC
The Big Short (2015)- BS
The Wizard of Lies (2017)- WL
Accounting issues
<ul style="list-style-type: none"> • Banking sector: financial system, financial crisis, bailouts • Balance sheet accounts: assets, liabilities, equity • Financial instruments: credit default swaps, mortgages, bonds, obligations, options, loans, debt, stocks, leverage • Profit and loss account: income, expenses, gains, losses • Agents: investors, analysts, supervisors, regulators, rating agencies, government • Transactions: investment, payment, purchase, collection • Risk assessment: volatility, expectation, estimate, impairment of credit • Market: listed companies, stock market, stocks
Ethical issues
Action, aggressiveness, conflict, eccentricity, greed, guilt, innocence, interest, manipulation, moral behavior, professional ethics, repentance, selfishness, witness, 'Golden Rule', direct responsibility (by commission or omission) and indirect responsibility (by induction or cooperation).

Source: the authors.

commitment is, the greater their experience and knowledge acquisition (Acchiardo & Vachris, 2018; Marzlin et al., 2017; Okoungbo & Okike, 2021). Hence we postulate the following hypothesis:

H3: The implemented methodology is well-perceived and well-accepted by accounting students.

We selected three movies that introduce different accounting concepts and pose some ethical dilemmas. The movies and their main background are detailed in Table 1.

3. Experimental design

3.1. Sample

Our complete sample was made up of 195 students out of near 450 students of the total course. The sample is composed of three groups taught in different languages (English, Spanish and Valencian) in the Financial Accounting subject of the Business Administration and Management degree of the University of Valencia (Spain), and two different teachers, one for the English and Spanish group and another for the Valencian group. The teachers follow the same syllabus and curriculum content in the subject, maintaining the teaching freedom as regards to the organization of sessions, practical exercises and activities in the classroom. Learning experience was implemented during the first semester of academic year 2020–2021 and 30% of the students in the sample obtained a 'satisfactory' mark (between 5 and 6.9 of 10 points), 40% were 'good' (between 7 and 8.9) and 4.6% were 'excellent' (9 to 10 points). The sample's socio-demographic characteristics appear in Table 2. The majority of students only study (87%) and a few also work a part-time job. Approximately 50% of students' parents have completed university studies, 45% have completed Vocational Training or Secondary Education, and only 5% have completed Primary Education or no studies. Regarding the use of technologies, students expressed that their daily average use of technologies was 4 h. Therefore, most of

Table 2. Sample's socio-demographic characteristics.

	N	%
Panel A. The group's language		
English	57	29
Spanish	68	35
Valencian	70	36
Panel B. Gender		
Female	99	51
Male	95	49
NA	1	
Panel C. Access mark to University (PAU)		
Less than 8	2	1
8 to 10	39	20
10 to 12	135	70
12 to 14	16	8
NA	2	1
Panel D. Occupation		
Only studies	169	87
Studies and works	26	13
Panel E. Parents' studies		
No studies	2	1
Primary	8	4
Secondary	34	18
Vocational Training / Baccalaureate	52	27
University	93	48
NA	5	3
Panel F. Technology and its daily use time		
Less than 2 h	9	5
2–4 h	93	48
4–6 h	74	38
More than 6 h	17	9
NA	1	1

Source: authors' projection based on the sample data.

them employed them from 2 to 4 h and between 4 and 6 h, with 48% and 38%, respectively. Only a low percentage indicated extreme values of very little use or excessive use.

The students in these teaching groups received training in ethical concepts about motivation, business ethics and decision making in another subject during the same semester when taking Financial Accounting. This was why all the ethical knowledge that they acquired could be built upon during the learning process of the specific accounting subject, where we worked and assessed students through the methodology presented below.

3.2. Methodology

During academic year 2020–2021, the final mark of the course to be obtained was 60% of the final exam mark and 40% of the continuous assessment mark. Particularly, this course's continuous assessment in the subject increased from 20% to 40% because of the COVID-19 crisis. In addition, teaching moved to a hybrid model with practical face-to-face classes and synchronous online theoretical classes. For the continuous assessment system, students had to solve practical and theoretical tasks and exercises, as well as three tests related to the ethical, financial and accounting concepts covered in movies (one test per movie). Details about the selected movies appear in [Table 3](#).

Table 3. Descriptive details per movie.**Margin Call (2011)**

It simulates the bankruptcy of Lehman Brothers. Risk analyst Peter Sullivan realizes that the fluctuating value of assets linked with toxic mortgages can trigger significant losses for the company, which would imply a market crash. Subsequently, the company's managers initiate a strategy to transfer the risk to the market and to save themselves, to the detriment of investors' interest.

Acc. and Financial issues:

- Subprime crisis
- Fair value and assets impairment
- Volatility

Ethical issues:

- Greed and professional ethics
- Ethical decision making.
- 'Gold Rule' breach

The Big Short (2015)

The movie tells the story of some investors in the real estate market and toxic mortgages context. Despite the market value being higher than the face value, the government and rating agencies paid no attention. Then Credit Default Swaps become the center of the story. The trigger uncovers the deficiencies in the financial system and supervisory entities' behavior.

Acc. and Financial issues:

- Credit Default Swap (CDS)
- Rating agencies
- Oversight system

Ethical issues:

- Greed / Interest / manipulation
- Public Interests jeopardized
- Ethical decision making

The Wizard of Lies (2017)

It reproduces the judicial process of Bernie Madoff, the main person in charge of the biggest pyramid scandal ever. Fraud begins by exchanging false financial instruments with a pseudo-profit. This strategy is supported by additional investors who cover previous profit payments. Bernie Madoff realizes that it is impossible for him to sustain the scam and everything is over. Many families, including his own, will face a fatal fate.

Acc. and Financial issues:

- Pyramidal fraud
- Share price / quoted market
- Investment

Ethical issues:

- Regret and guilt
- Ethical decision making
- Professional ethics

Source: the authors.

These films address specific topics of the financial accounting subject curriculum such as the double book-keeping method, the adjustments, concepts and classes of financial instruments and annual accounts, among others. In this way, we make it easy for the student to achieve the skills and learning outcomes of this subject.

On the one hand, these contents are directly linked to the following curricular competencies: critical thinking ability, ethical commitment and social responsibility at work, ability to search and analyze information, capacity to make decisions by applying knowledge to practice, ability to handle information technologies, and knowing how to analyze and interpret financial economic information.

On the other hand, these skills must be translated into specific aspects that teachers must evaluate. In particular, these movies show real life examples linked to the following learning outcomes: the information systems and their fundamental concepts, the accounting language and its meaning, the accounting principles as well as national and international standards, the accounting cycle, the problem of investment funds, collection rights and payment obligations, the annual accounts and their interpretation, business organization models, transmit information to others, orally, in an interesting, creative and convincing way, efficiently use teamwork for the search, analysis and synthesis of multiple and complex information and to improve creativity.

Each test of one movie counts 0.5 points toward the final continuous assessment mark (out of 10 points). Tests were voluntary and there were no wrong or right answers. Student obtain 0.5 points when answering all the questions. First, four questions evaluated engagement with the methodology: (i) I think that the movie is interesting; (ii) I think that the movie is easy to understand; (iii) I think that the movie has helped me to

Table 4. Students as a % who selected each type of abstract and correctly answered the questions.

		MC	WL	BS
Abstract	Filmographic	11.79	23.08	15.38
	Accounting	27.18	23.59	25.13
	Ethics	61.03	53.33	59.49
Correct answer	Accounting question	61.54	82.05	34.87
	Ethics question	58.97	49.23	61.03

MC, WL and BS refer to Margin Call, The Wizard of Lies and The Big Short.

Source: authors' projection based on the sample data.

understand a certain accounting or financial concept; (iv) I think that watching movies helps me to learn in an entertaining way. These questions were evaluated on a 5-point Likert scale, with 1 meaning 'strongly disagree' and 5 'strongly agree'.

We asked the students to identify which of the available 250-word summaries (each one with a filmographic, accounting or ethical focus) best suited the description that they would give the movie once they had watched it. The filmographic abstract attempts to describe how the movie develops by emphasizing details of events and the characters' personal experiences; the accounting abstract attempts to explain the movie's evolution in accounting and financial terms by relating concepts to the arguments to be studied in class and are adapted to students' level without going into advanced-level accounting and finance issues. Finally, the ethical abstract highlights the explanation of the characters' ethical and human behavior to understand the movie from the point of view of favoring a better understanding of characters' decisions. Abstracts were intended to respond to H1. In addition, there was an ethics question and an accounting question, each with three possible answers, but only one was correct. These questions allowed H1 and H2.2 being respectively addressed. Students' responses are shown in Table 4.

Table 4 shows an interesting result because students perceived the ethical abstract as the most appropriate abstract to develop events in movies by focusing on characters' behaviors in ethical terms and their repercussion on the rest of society. This shows that students are particularly aware about ethical issues or 'put themselves in the place of the other' when feeling the consequences of those affected by the unethical facts depicted in movies. Thus it is clear that students assimilate the ethical concepts being learnt, as in the 'golden rule of ethics': do not do to others what you do not want them to do to you or do to others what you want them to do with you. However when answering the specific questions, and despite the fact that a noticeable percentage of students answered correctly in all three films, part of them did not specifically detect the ethical problem behind each one. This fact shows the importance of knowledge about ethical theory and the need to integrate business ethics education into students' training in curricula, especially in the accounting and finance field to prevent financial scandals as in the past.

4. Results and discussion

In this section, we analyze students' perceptions of the methodology, as well as the relevance and effects of this learning technique on the final exam mark.

Table 5. Students' perception of each movie.

		MC	WL	BS
Interesting	Strongly disagree	2.56	0.51	1.54
	Disagree	8.21	4.10	2.05
	Neither agree nor disagree	16.92	10.77	9.23
	Agree	50.26	58.46	45.64
	Strongly agree	22.05	26.15	41.54
Easy	Strongly disagree	2.56	1.03	5.15
	Disagree	16.92	4.62	21.65
	Neither agree nor disagree	24.10	24.10	31.96
	Agree	42.56	53.85	33.51
	Strongly agree	13.85	16.41	7.73
It helped me to understand concept X	Strongly disagree	1.03	0.00	0.51
	Disagree	2.56	1.54	3.08
	Neither agree nor disagree	17.44	12.82	14.36
	Agree	41.54	50.77	42.56
	Strongly agree	37.44	34.87	39.49
I felt I learned	Strongly disagree	1.03	1.03	4.54
	Disagree	5.64	1.03	6.15
	Neither agree nor disagree	16.41	10.26	12.82
	Agree	52.82	36.92	51.79
	Strongly agree	24.10	50.77	27.69

MC, WL and BS, refer to Margin Call, The Wizard of Lies and The Big Short.

Source: authors' projection based on the sample data.

4.1. Students' opinion of the methodology

The descriptive statistics (Table 5) evidence student engagement with the methodology as they supported the idea that the methodology stood out for its entertainment capacity and its educational nature (Acchiardo & Vachris, 2018; Marzlin et al., 2017). In most of the questions and movies, around 70–80% of the students agreed or strongly agreed with the positive evaluations of interest, easy understanding, helpfulness in learning an accounting or financial issue, and entertaining nature. In particular, the 'The Wizard of Lies' movie stood out from the others for exceeding 82%. It should be noted that the item with the lowest acceptance percentage for all the movies was their easy understanding. This highlights the fact that the selected movies require students' cognitive effort and, despite this, students perceived them as entertaining and interesting (Okougbo & Okike, 2021).

Likewise, all students' responses to these subjective questions about the methodology displayed a positive correlation, and significant at 1%. Hence those students who felt that the movie was interesting also found it easy to understand and useful for achieving learning objectives. Likewise, a significant and positive correlation was found between the responses across different movies with some minor exceptions. This suggests that those students who took a good attitude toward this methodology generally maintained their level of engagement in all three movies. This finding is consistent with our H3 (Table 5).

4.2. Effect of the methodology on the final exam

We employed the Stata 12 software for computing some nonparametric tests (Table 6). We conducted five tests of medians (U-Mann Whitney test) for each movie with dependent variable exam mark: (i) one to see if those who watched the movie

Table 6. Nonparametric test (Mann Whitney U).

DIFFERENCE IN EXAM MARK IF THE STUDENT:	MC		WL		BS	
	Z	p-value	Z	p-value	Z	p-value
Watched the film	-3.785	0.000***	-3.503	0.001***	-3.672	0.000***
Correctly answered the accounting question	-0.578	0.563	-1.502	0.133	2.105	0.035**
Correctly answered the ethical question	-1.033	0.302	-1.020	0.308	-1.733	0.083*
Abstract						
Chose the Accounting abstract	1.420	0.156	1.539	0.124	0.982	0.326
Chose the Ethics abstract	-2.039	0.041**	-2.139	0.033**	-2.095	0.036**

MC, WL and BS, refer to Margin Call, The Wizard of Lies and The Big Short.

Source: the authors.

obtained a significantly different exam mark; (ii) two other tests to assess whether those who correctly answered the accounting or ethics question obtained a significant difference; finally, (iii) two tests to determine if those who selected the accounting or ethical summary obtained a different exam mark for each movie.

The results evidenced that the methodology seemed interesting because it was related to a higher exam mark for all movies as those students who watched a movie obtained a higher mark than those who did not follow the methodology. The accounting or ethical issues of movies were related to acquiring some skills, as evidenced in the final exam. So we paid attention to the different test questions of each movie because we were unable to affirm a direct causality between the methodology and the exam as the result could also be explained by these students' commitment to the entire course rather than to the methodology itself. However, the questions only showed a significant effect for one of the movies: *The Big Short*. The students who correctly answered the accounting and ethics questions in that movie showed significantly different final exam performance. However, correctly answering the ethics question was related to a higher exam score (the exam average was 6.30 and 5.70 for the students who correctly and incorrectly answered, respectively). The accounting question evidenced the opposite effect (the exam average was 5.60 and 6.30 for the students who correctly and incorrectly answered, respectively). This particular effect of the accounting issue can be explained by good students' difficulty to understand the Credit Default Swap concept as they had no prior knowledge about financial derivatives (H2.2 would be rejected). This evidences the need to integrate this knowledge acquisition type so that students realize the relevance of learning from real life and past events to avoid certain misbehaviors and to understand both technical concepts and the significant consequences of acting in appropriately rather than succumbing to immoral acts. This integration should be done in every subject instead of teaching it as an isolated competence. So establishing discussion in class is critical to add these valuable skills to student training so they can be good professionals (Acchiardo & Vachris, 2018; Mateer et al., 2011, 2016; Mateer & Stephenson, 2011; Sexton, 2006).

As regards ethical sensitivity, the ethical abstract showed a significant positive effect for all the movies, which suggests that those students who were more sensitive to the topic, and they better performed in the exam. Consistently with previous evidence, and in line with our H1, students showed special interest in understanding the

Table 7. OLS linear regression models.

Variables	Model 1	Model 2	Model 3	Model 4
MC_a_acc	-0.884 (-1.502)	-0.775 (-1.305)		
MC_a_eth	-0.894 (-1.404)	-0.808 (-1.215)		
WL_a_acc	0.157 (0.395)		0.105 (0.254)	
WL_a_eth	0.238 (0.479)		0.112 (0.226)	
BS_a_acc	-0.388 (-0.712)			-0.520 (-0.945)
BS_a_eth	-0.539 (-0.856)			-0.525 (-0.821)
MC_q_acc	0.113 (0.401)	0.270 (0.975)		
WL_q_acc	0.373 (0.969)		0.445 (1.215)	
BS_q_acc	-0.024 (-0.061)			-0.009 (-0.023)
MC_q_eth	0.360 (1.171)	0.469 (1.604)		
WL_q_eth	0.274 (0.839)		0.422 (1.374)	
BS_q_eth	0.548* (1.707)			0.616* (1.949)
English	-0.165 (-0.299)	0.308 (0.867)	0.134 (0.301)	0.058 (0.135)
Female	0.897*** (2.880)	1.023*** (3.377)	0.845*** (2.828)	0.799*** (2.665)
Works	-0.509 (-1.134)	-0.379 (-0.839)	-0.518 (-1.111)	-0.423 (-0.954)
Lecturer	1.610** (2.376)	1.514*** (3.399)	1.202** (2.271)	1.305*** (2.814)
Access mark	1.660** (2.182)	1.642** (2.531)	1.518** (2.381)	1.910*** (2.871)
Parents' studies	0.344 (0.362)	0.457 (0.473)	0.530 (0.730)	0.566 (0.588)
intercept	4.792*** (4.786)	4.710*** (6.603)	4.207*** (6.568)	4.943*** (6.540)
Obs.	193	194	195	196
R2	0.193	0.159	0.151	0.153
F	5.03***	6.62***	12.77***	5.62***

MC, WL and BS refer to Margin call, The Wizard of Lies and The big short, respectively. *, **, *** refer to 10%, 5% and 1% significance, respectively.

Source: the authors.

ethical implications about accounting in every movie, which led them toward real activity in business, financial and accounting areas (Shawver, 2009). This bridges the gap between academic knowledge and professional activities (Chaffer & Webb, 2017; Howcroft, 2017) and makes them pay attention to the consequences of applying ethical considerations to their decision-making process (Guillen, 2021).

4.2.2. Multivariate analysis: linear regression

A linear regression model was run in the Stata 12 software. Standard errors were corrected for heteroscedasticity. As all the VIF coefficients were less than 10, there were no multicollinearity problems. Model 1 in Table 7 was globally significant (p-value <0.01) and explained more than 19% of the variability in the exam mark data (R2).

The model's errors complied with the normality hypothesis. In addition, Models 2 to 4 were tested, where we ran an individual analysis per movie.

Dummy variables were generated for the accounting and ethical abstracts for each movie (*MC_r_acc*; *MC_r_eth*; *WL_r_acc*; *WL_r_eth*; *BS_r_acc*; *BS_r_eth*). These dichotomous variables took a value of 1 when the student selected that abstract, and a value of zero otherwise. In this way, the effect of opting for the accounting or ethical abstract for each movie was included in the analysis.

Likewise, dichotomous variables were incorporated for the right answer to questions on ethics and questions on accounting or financial concepts for all three movies (*MC_q_acc*, *MC_q_etica*, *WL_q_acc*, *WL_q_eth*, *BS_q_eth*, *BS_q_eth*).

The model also controlled for the dichotomous variable lecturer, gender, English group (high academic performance), high university access mark (those students with between 12 and 14 points) and those students whose parents have university studies because they have been considered interesting control variables in other accounting teaching studies (e.g. Zorio-Grima & Merello, 2020a).

As regards the controls, according to the results gender positively influenced the test result as females obtain a higher exam mark on average. Another significant difference in the average exam mark appeared between the two lecturers. However, no significant effect of the linguistic criterion has been proved.

Regarding the methodology, we point out that one of the movies, the right answer to the question about ethical decision making in *The Big Short* has a positive and significant effect. This could be due to the fact that the movie itself included moments when an off-screen voice explained what was happening. So perhaps students could better understand the course of events and assess characters' decision making more accurately thanks to this narrator. This fact evidences a clear difference between understanding the accounting concepts and the methodology effectiveness depending on the used tools' characteristics, whereas behavior is better assimilated by students (Bay & Felton, 2012; Biktimirov & Cyr, 2013; Okougbo & Okike, 2021; Werner, 2014). This is consistent with H2.1, and allows the opportunity to redesign the learning process in future academic courses.

5. Conclusions

This study reflects on the need to include certain innovative learning tools or techniques in the university studies field in teaching models. It revealed that students engage with this methodological approach, which can help them to improve their performance in exams. This is particularly relevant in the accounting area, which has always been a field closely oriented to professional practice. This should allow the tools that bring business reality to the classroom to be employed. However, traditional teaching techniques have focused only on a fairly theoretical vision at the classroom level, and tend to avoid direct applications and reflections on how issues are addressed in real-life situations, where ethical problems may arise.

The approach herein followed brought students closer to real-life situations where the concepts taught in class were applied. Although it is true that movies are a dimension of reality adapted to filmographic needs, they could act as a source of

unlimited knowledge to develop specific competencies in the accounting and business ethics areas. To this, end, we should consider them in a controlled environment in which students are explained how they should approach selected movies for their learning.

Our experience proves that the rate of students generally participating and engaging in such activity is acceptable. The extra effort made by teachers and students is appreciated, and is an incentive in a blended and hybrid learning context in the COVID crisis. Likewise, participants valued the time spent on discussing the tests related to movies, as well as more practical movie discussions in classroom during the session with accounting-related contents, which seems especially challenging in the initial stages of university studies. In this way, students observed that accounting fundamentals can be useful in many areas, and can act as a differentiating element in their acquisition of skills to face future situations. This knowledge enables them to understand, analyze, explain, and even solve, problems in their future careers.

Regarding our empirical findings, we conclude that the students who chose the accounting or ethical abstracts were those who significantly obtained better final exam results. However, the ability to correctly answer specific questions in ethical and accounting terms is not significant to that end. We also evidenced a significant difference linked with gender. Indeed we observed that female students obtained higher exam marks than male students. As regards to the students' cultural background no significant differences are found for the linguistic criterion nor the parent' studies.

All in all, our study reflects the importance of innovating in learning techniques and in the way to acquire knowledge and skills. Currently, business ethics and ethics concepts or detecting and solving professional problems constitute an essential part of the transversal competences that university students should develop. This makes movies a very useful way to take students closer to certain scenarios that increase their learning capacities and their cognitive development of accounting and business ethics concepts. It also allows their final results to improve with higher levels of engagement in the subject. Students' feedback on this experience was positive in terms of their satisfaction with the applied learning methodology and the selected movies. Hence, the interest of this study focused on students and teachers in the accounting field can be also extended to other stakeholders, e.g. students and teachers in the general economics field, as at the end of the day, these innovative techniques help reinforce the ethical attitude of the future alumni who will join the labor market in the near future and maybe even become part of ethics committees in the longer term.

Future experiences could include these or other movies in advanced accounting courses, as well as further refinements of the questions in the test proposed for each movie. Abstracts could also be synthesized to analyze the impact of keywords by control groups. All this would allow students to acquire more items to be reflected on and discussed in the classroom after watching each movie.

Competing interests

The authors declare no competing interests.

Disclosure statement

No potential conflict of interest was reported by the authors.

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ORCID

P. Merello  <http://orcid.org/0000-0001-8240-3003>

A. Zorio-Grima  <http://orcid.org/0000-0001-6835-7434>

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