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Transforming the Accounting Classroom into a Professional Consulting Office: An Active Learning Project Based on a Pilot Experience in Financial Statement Analysis

Transformar el aula de contabilidad en una consultora profesional: un proyecto de aprendizaje activo basado en una experiencia piloto en Análisis de Estados Financieros

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Abstract: This paper presents a teaching innovation proposal applied to the Financial Statement Analysis course, consisting of transforming the classroom into a professional financial consulting office. Through a methodology that combines project-based learning, cooperative learning, gamification, and flipped classroom strategies, alongside the use of artificial intelligence, students conduct an in-depth economic and financial analysis of four real companies. The objective is to study the impact of this methodology on improving learning, motivation, and the development of technical and social skills. It also aims to determine whether students' efforts translate into improved academic results. To this end, pilot experience was conducted with undergraduate students, applying descriptive analysis and Pearson correlation tests. The results show positive and significant correlations between the perceived usefulness of the project and the improvement of learning and motivation, as well as the development of technical and social skills. Furthermore, they indicate that higher levels of motivation are associated with greater learning improvement, and that greater effort leads to better academic performance. These findings confirm the effectiveness of combining active methodologies with the use of tools such as ChatGPT in higher education.

Keywords: Teaching innovation, active learning, financial statement analysis, project-based learning, cooperative learning, gamification, flipped classroom, artificial intelligence.

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Resumen: Este artículo presenta una propuesta de innovación docente aplicada a la asignatura de Análisis de Estados Contables, consistente en transformar el aula en un despacho profesional de consultoría financiera. A través de una metodología que combina el aprendizaje basado en proyectos, aprendizaje cooperativo, gamificación y clase invertida, junto con la utilización de la inteligencia artificial, los estudiantes realizan un análisis económico-financiero profundo de cuatro empresas reales. El objetivo es estudiar el impacto de esta metodología en la mejora del aprendizaje, la motivación y el desarrollo de habilidades técnicas y sociales. Además, de conocer si el esfuerzo realizado por el alumnado se traduce en mejores resultados académicos. Para ello se desarrolló una experiencia piloto, aplicando análisis descriptivos y pruebas de correlación de Pearson. Los resultados muestran correlaciones positivas y significativas entre la utilidad del proyecto y la mejora del aprendizaje y la motivación, así como el desarrollo de habilidades técnicas y sociales. Además, indican que, a mayor motivación, mayor es la mejora del aprendizaje; y, que, a mayor esfuerzo mejor calificación. Estos hallazgos confirman la eficacia de combinar metodologías activas con el uso de herramientas como ChatGPT en la educación superior.

Palabras clave: Innovación docente, aprendizaje activo, análisis de estados financieros, aprendizaje basado en proyectos, aprendizaje cooperativo, gamificación, clase invertida, inteligencia artificial.

1. INTRODUCTION

The teaching of Financial Statement Analysis (in advance FSA) has undergone a profound transformation in recent years due to digital disruption, changes in financial markets, and the growing prominence of active learning methodologies in higher education (Arquero-Montaño et al. 2023; Gallardo-Vázquez et al., 2023; Laurillard, 2023). Today's students demand more meaningful, practice-oriented learning that emphasizes the acquisition of professional competencies required in the labor market. Consequently, innovative teaching approaches that foster active student engagement, practical application of knowledge, and the development of transversal skills are increasingly replacing traditional, unidirectional methods of knowledge transmission (Angulo-Armenta et al., 2015).

The current approach to accounting analysis requires teaching strategies that enable students to acquire technical and non-technical competencies in real or professionally simulated contexts (Arquero-Montaño et al., 2022). Active learning methodologies such as cooperative learning, project-based learning (in advance PBL), the flipped classroom model, and gamification have become essential tools. These methods place students at the center of the learning process and promote the development of critical thinking, analytical capacity, leadership, communication, and teamwork skills (Bergmann & Sams, 2014; Freeman et al., 2014; Arquero-Montaño et al., 2023; Albort-Morant et al., 2025). Higher education in technical disciplines such as FSA is undergoing significant changes driven by technological, social, and economic transformations. The integration of advanced technologies and active methodologies is not only beneficial but essential for adequately preparing students to face the demands of today's dynamic and highly competitive job market (Graça et al., 2023; Sangrà et al., 2023).

Moreover, the new generation of university students, particularly Generation Z, exhibits distinctive traits: they are digital natives, expect immediacy in information access, prefer experiential and visual learning, and show a clear preference for dynamic and technologically enhanced learning environments. These characteristics often clash with traditional lecture-based formats, underscoring the need for innovative strategies that

foster attention, engagement, and extrinsic motivation (in advance M) (Arquero-Montaño et al., 2009; Zainuddin & Halili, 2016; Chen et al., 2020).

In this context, we propose the educational project "Turn Your Classroom into a Professional Office", which integrates five active learning methodologies such as PBL, cooperative learning, flipped classrooms, and gamification, along with the innovative use of artificial intelligence (in advance AI) through ChatGPT. This proposal directly addresses current educational needs, aiming not only to transfer knowledge but also to foster the development of key competencies such as critical thinking, analytical skills, leadership, teamwork, and advanced digital literacy (Freeman et al., 2014).

The experience gained through the implementation of this methodology at the University of Murcia, and previously in other academic institutions, has demonstrated highly positive results in terms of student M, participation, and academic performance (in advance AP) (Zainuddin & Halili, 2016; Chen et al., 2020). Nonetheless, a constructive critique must be directed at universities that continue to uphold rigid and traditional educational models, which remain poorly adapted to the evolving expectations of students and professional environments. Universities must embrace the challenge of transformation, committing to innovative methods and emerging technologies to avoid lagging in the training of competent, critical, and highly qualified professionals.

Accordingly, this article presents a teaching innovation project that aspires to serve as a reference point and to inspire a profound methodological shift. The project's usefulness (in advance PU) is intended to be reflected in the improvement of university education and to provide comprehensive training to students in Business Administration programs. The purpose of this work is twofold: (1) to describe the design and implementation of the proposed educational intervention, and (2) to evaluate its impact on student effort (in advance SE), M, learning improvement (in advance LI), and development of technical and soft skills (in advance DTS/DSS) (Delors et al., 1996; OECD, 2018). The following table lists the acronyms most used in this research.

Table 1. Acronyms used in the study.

Concept	**Acronym**
Financial Statement Analysis	FSA
Project-based learning	PBL
Project's usefulness	PU
Student effort	SE
Extrinsic motivation	M
Learning improvement	LI
Development of technical and soft skills	DTS/DSS
Academic performance	AP

The work is structured as follows. The next section outlines the theoretical framework. The following section presents the methodology, including the context and phases of the teaching innovation. The fourth section reports the data analysis and subsequently presents the results. Finally, the discussion and main conclusions are presented.

2. THEORETICAL FRAMEWORK

In recent decades, active learning methodologies have gained substantial traction in higher education for their effectiveness in fostering student engagement, deep learning, and professional competence (Prince, 2004). Within accounting education, traditional lecture-based methods have been criticized for their inability to cultivate critical thinking and practical skills (Apostolou et al., 2013). Consequently, approaches such as problem-based learning (PBL), cooperative learning, flipped classrooms, and gamification are

increasingly employed to bridge the gap between theoretical instruction and professional application (Vergara, 2017).

PBL engages students with real-world problems in a structured, goal-oriented manner, promoting autonomy, collaboration, and problem-solving abilities (Bell, 2010). Cooperative learning emphasizes positive interdependence and individual accountability, making it particularly effective for cognitively demanding tasks such as financial analysis (Johnson & Johnson, 2009). The flipped classroom model reallocates class time toward discussion and application, thus enhancing learning efficiency (Bishop & Verleger, 2013). Gamification, the application of game elements in non-game contexts, has been shown to increase motivation and engagement, enabling students to apply analytical concepts through interactive and competitive environments (Dichev & Dicheva, 2017).

The integration of ChatGPT into higher education introduces new opportunities to enhance learning processes. Empirical studies suggest that ChatGPT improves academic performance, supports higher-order thinking, and reduces cognitive load, thus promoting more efficient learning (Zawacki-Richter et al., 2025). Furthermore, it provides personalized feedback and scaffolding that strengthen students' critical thinking and problem-solving skills (Chukwuere, 2024).

When incorporated into active learning strategies, such as PBL, cooperative learning, flipped classrooms, and gamification, ChatGPT can further enrich the educational experience. In flipped classrooms, it can deliver immediate feedback and clarify pre-class materials, allowing class time to focus on collaborative learning (Huesca et al., 2024). Within PBL and cooperative learning contexts, it facilitates brainstorming, research, and drafting, thereby enhancing group collaboration and productivity (Rasul et al., 2023). In gamified learning, ChatGPT can generate interactive simulations and scenarios that heighten engagement and motivation (Tlili et al., 2023).

In accounting education specifically, ChatGPT has been used to support comprehension of complex concepts, offer explanations, and assist in problem-solving tasks, thereby improving students' understanding and application of accounting principles (Zawacki-Richter et al., 2025).

Recent literature evidences a growing trend toward integrating multiple active learning methodologies in higher education to enhance students' motivation, engagement, and meaningful learning. Empirical findings indicate that combining problem-based learning (PBL), cooperative work, and flipped classroom approaches facilitates the development of both technical and transversal competencies by centering the learning process on students and fostering autonomy and collaboration (Baig & Yadegaridehkordi, 2023; Lopes et al., 2024). The incorporation of gamification elements within these frameworks further amplifies engagement and provides immediate feedback, creating more dynamic and motivating learning environments (Lopes et al., 2024).

Concurrently, the inclusion of artificial intelligence tools, particularly ChatGPT, within flipped or PBL settings has demonstrated effectiveness in delivering personalized tutoring, generating learning materials, and stimulating students' critical reflection (Huesca et al., 2024; Li, 2023; Civit et al., 2024). Collectively, these studies underscore that the synergy between active learning methodologies and digital technologies enhances academic performance, self-regulated learning, and students' perceived usefulness of the educational experience, thereby constituting a robust and adaptable pedagogical paradigm for higher education.

Therefore, the present study draws on these methodologies to design a comprehensive and integrative learning experience that simulates a professional consultancy environment. This multifaceted approach is supported by recent evidence indicating that active learning strategies significantly outperform traditional methods in terms of student outcomes, particularly when combined synergistically (Freeman et al., 2014).

2.1. Specific objectives and hypotheses

Building upon the two general objectives established in the introduction, this methodological model pursues two further specific objectives: (1) to facilitate meaningful learning based on real professional situations, enhancing the transfer of theoretical knowledge into practice; (2) to foster the development of transversal competencies essential to professional practice, such as effective communication, teamwork, leadership, strategic decision-making, and critical thinking (Delors et al., 1996; OECD, 2018). Additionally, it has established other objectives related to student satisfaction with this innovative experience:

- To assess whether the project is beneficial for students, that is, to determine whether it enhances their learning outcomes.
- To examine whether the project increases students' M.
- To explore whether M has a potential impact on the improvement of learning.
- To determine whether the project fosters the development of technical and/or non-technical skills among students. The study did not examine gender differences due to the limited sample size.
- Finally, to evaluate whether students' AP, as reflected in their grades, has improved because of the project.

The integration of active methodologies, such as cooperative or PBL, the flipped classroom model, and gamification has been widely recognized for its potential to improve students' learning outcomes (Bergmann & Sams, 2014; Freeman et al., 2014; González-Zamar & Abad-Segura, 2020; Albort-Morant et al., 2025). These approaches encourage students to take an active role in the learning process, facilitating deeper understanding and the retention of knowledge (Freeman et al., 2014). Besides, PBL has been shown to positively impact students' learning outcomes by promoting active engagement and practical application of knowledge (Shi & Li, 2024; Papageorgiou ,2022) and, integrating game elements into educational contexts, increases student M and participation, leading to improved academic outcomes (Kim et al., 2018). In turn, PBL involves students in solving real-world problems through structured projects, significantly improving academic achievement, critical thinking skills, and extrinsic M (Zhang & Ma, 2023; Doly, 2024). On the other hand, cooperative learning promotes collaboration in heterogeneous student groups, fostering the development of social and cognitive skills that enhance deep understanding of content; for instance, Johnson and Johnson (2009) found that cooperative learning strategies led to higher academic achievement compared to competitive and individualistic learning. Moreover, flipped classroom models have been associated with improved academic outcomes (Bishop & Verleger, 2013); a meta-analysis by Lo and Hew (2017) reported that flipped classrooms had a positive effect on student learning in higher education settings. Gamification techniques have also been shown to positively influence AP by increasing student M and engagement (Subhash & Cudney, 2018). These findings collectively suggest that

incorporating diverse, student-centered methodologies can enhance AP. Based on the foregoing, we propose the following hypothesis:

H1: PU significantly enhances students' LI.

Moreover, the implementation of gamified elements in PBL has been associated with increased student M. Almuntsr et al. (2024) conducted a study on accounting students in Libyan universities and found that gamification in PBL contexts led to higher levels of M and enjoyment in learning introductory accounting. This suggests that incorporating engaging, interactive elements into PBL can enhance students' extrinsic M to learn. So, we have considered the following hypothesis:

H2: PU significantly increases students' M.

Besides, M plays a critical role in students' academic success. According to the expectancy-value theory, students' achievement-related choices are influenced by their expectations of success and the value they place on the task (Atkinson, 1957). When students are motivated, they are more likely to engage deeply with the material, leading to improved learning outcomes. This theoretical framework underscores the importance of fostering M to enhance AP. Recent research has expanded on this theory, highlighting that students' perceptions of the costs associated with academic tasks, such as effort, time, and emotional strain, also significantly impact their M and academic outcomes (Arquero-Montaño et al., 2009; Benden & Lauermann, 2023). Accordingly, the following hypothesis has been established:

H3: Students' M positively influences their LI.

Moreover, active educational projects that integrate PBL, the flipped classroom, gamification, and cooperative learning have been found to substantially enhance both technical and soft skills. These active methodologies promote meaningful engagement and situate application of theory, facilitating the development of transversal competencies essential in professional contexts (Parra-González et al., 2019). For instance, a systematic review by Camacho-Sánchez et al. (2023) demonstrated that gamified activities in physical education significantly improved students' motivation, academic engagement, and interpersonal competences. Besides, Crespí et al. (2022) found that PBL had a stronger impact on communication skills ($\eta^2 = .17$) than on teamwork ($\eta^2 = .07$), underscoring its potential to strengthen non-technical abilities across genders. Also, the study by Sanz-Angulo et al. (2025) evaluates the effectiveness of an active teaching methodology that combines flipped learning, cooperative work, and gamification in higher engineering education. The results indicate significant improvements in students' soft skills, particularly in communication, teamwork, and time management, demonstrating the value of integrating these approaches to enhance transversal competences in technical disciplines. Thus, we formulated the following hypothesis:

H4: The project fosters development skills among students.

H41: The project fosters DTS among students.

H42: The project fosters DSS among students.

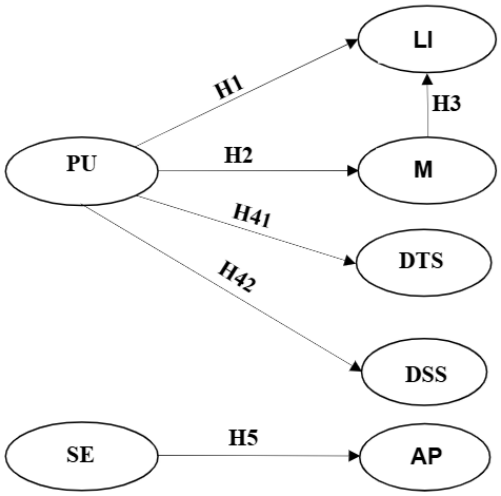
Finally, empirical research indicates a positive correlation between SE and AP in PBL contexts. For instance, a study by Zen et al. (2022) found that students engaged in Project-Based Online Learning, who demonstrated higher levels of engagement and

effort achieved superior academic outcomes, particularly in developing entrepreneurial competencies. The study employed a mixed-method convergent parallel design, combining qualitative data from interviews and observations with quantitative data from questionnaires and portfolios. Similarly, a study by Terrón-López et al. (2017) examined the impact of PBL engineering courses on students' self-efficacy, effort regulation, and AP. The findings indicated that effort regulation was positively associated with course performance, suggesting that students who effectively managed their effort and persisted through challenges achieved higher academic success. These studies underscore the critical role of SE in maximizing the benefits of PBL approaches. So, we have considered the following hypothesis:

H5: Greater SE in the project leads to higher AP.

The following figure summarizes the hypotheses proposed in this study.

Figure 1. Hypotheses proposed. Source: Own elaboration



3. METHODOLOGY

The teaching proposal entitled "Transforming the Classroom into a Professional Consultancy Practice" arises from the need identified in university studies related to finance and accounting to offer a pedagogical model more aligned with the professional competencies demanded by today's labour market. The essence of this proposal lies in converting the traditional classroom into a simulated professional environment, a financial consultancy firm, where students take on active roles, collaborate in teams, and develop real-world projects within simulated professional contexts.

3.1. Context of the Teaching Innovation Experience

The proposal is implemented within the course FSA, a core component of the Business Administration degree program, typically taught in the first semester of the fourth academic year. This context is particularly conducive to active methodologies, given the intrinsic complexity of the content, which requires both solid theoretical understanding and practical skills in financial interpretation and decision-making.

In this teaching innovation experience, a total of 120 students were enrolled in this degree at the University of Murcia, distributed across three groups. The final sample consisted of 31 students, excluding those who chose to validate the course through the SICUE/Seneca academic exchange program. This represents a response rate of 25.83%, which is comparable to that reported in many studies within the field of business administration.

This elective course is taught during the first semester, and classes are held in the morning and evening. On the first day of class, the faculty explained to all students the continuous assessment system and the tasks they had to perform throughout the course. These tasks were: three partial deliveries, each worth 0.5 points, to be discussed in class, plus the preparation and presentation of a final report with the project's conclusions (worth 1.5 points). Attendance is mandatory for all components.

This assessment instrument is mandatory. The grade obtained through it is non-recoverable and will be retained across the three official examination sessions for the current academic year. Since attendance is compulsory for all partial and final debates, students who are unable to participate may opt for an alternative assessment. This consists of a mandatory individual report on the project developed in class (worth 1.5 points) and a multiple-choice exam focused on the conclusions of the analytical project, to be completed individually (worth 1.5 points). Submission of the report prior to the exam is an essential requirement to be eligible to sit the test. It is noteworthy that no student chose this option.

The following table shows the characteristics of the course in which this teaching innovation was carried out (table 2).

Table 2. Characteristics of the Course. Own elaboration

Characteristics		
Degree	Business Administration	
Subject	FSA	
Course	4th	
Credits	4.5	Two classes per week: one theoretical lecture lasting one and a half hours, and two practical sessions, each one hour long, conducted with separate subgroups
Type of Subject	Theoretical/Practical	
Assessment System	Type of Test	Score
Final Exams	A theoretical-practical multiple-choice test covering all the course content. To pass this component, students must achieve a minimum score of 50% on this assessment instrument	60%
Partial Exams	Topics 1	10%
Group Activities	Final Project	30%

3.2. Detailed Description of the Method

The methodology integrates four key pedagogical approaches to enhance learning outcomes:

Project-Based Learning (PBL): Students work in cooperative groups to solve a realistic case involving the comprehensive analysis of pre-selected companies. The case

simulates an assignment from a multinational corporation seeking to acquire a firm for international expansion, requiring rigorous financial advisory work (Meyer & Wurdinger, 2016; Thomas, 2000).

Cooperative Learning: Stable base groups of four students are maintained throughout the project, promoting positive interdependence, effective communication, individual and group accountability, and efficient time management (Johnson & Johnson, 1999).

Flipped Classroom: All theoretical content is provided in advance through a digital platform (Wix), including videos, readings, official documents, and methodological guides. Students prepare the materials independently and use classroom time for practical tasks, collaborative discussions, and problem-solving activities (Bergmann & Sams, 2014).

Gamification: The project concludes with a Digital Breakout (virtual escape room) using the Genially platform. This dynamic and interactive tool reinforces learning in an engaging way (Deterding et al., 2011).

It is important to note that, prior to implementation, the teaching staff received formal training in active learning methodologies through professional development programs delivered by the *Centro de Formación y Desarrollo Profesional (CFDP)* at the University of Murcia. This training ensured methodological consistency and an appropriate pedagogical foundation for the design, supervision, and assessment of the learning activities. Regarding students, their prior experience with these techniques was not formally assessed; however, given that the course is offered during the fourth year of the degree, it is reasonable to assume that they possessed a solid background in teamwork, academic project development, and the use of digital tools. In addition, most students had already been exposed to generative artificial intelligence tools, including ChatGPT, through previous coursework or independent learning. This prior exposure facilitated the integration of AI-supported activities within the project-based, cooperative, and flipped learning environment.

3.3. Organization of Base Groups

Each base group consists of four students, assigned strategically by the instructor to ensure a balanced distribution of skills. Within each group, students assume two types of roles:

Company Expert: Each student specializes in one of the proposed companies (four real firms in one sector), collecting and analyzing detailed economic, financial, and qualitative information.

Functional Cooperative Role: Each student also assumes a functional role to facilitate the group's dynamics:

- *Administrator:* Organizes meetings, coordinates schedule, manages deliverables, and resolves conflicts.
- *Network Expert:* Gathers and synthesizes external data on the economic sector and market trends.
- *Data Expert:* Processes financial information, ensuring accuracy and consistency in the group's analyses.
- *Communication Expert:* Prepares executive documents, develops presentations, and ensures clarity in communication.

3.4. Project Development Phases

The project unfolds across four phases, combining individual, cooperative, and plenary activities to promote deep, competency-based learning. Each phase is enriched with the purposeful integration of ChatGPT to support content understanding, foster critical thinking, and enhance students' analytical and communicative performance.

Phase 1: Individual Preparation and Data Collection

Each student gathers economic, financial, and qualitative data on their assigned company. This preparatory work is crucial for the collaborative stages of the project. In this phase, students use ChatGPT to retrieve preliminary information about the economic sector and clarify qualitative business concepts such as competitive positioning or strategic diagnosis. This phase of the project encompasses content related to the first two topics of the course, which have examined the annual financial statements, the general and specific environment, as well as the tools employed for the FSA.

Example prompt: "*What are key factors in conducting a SWOT analysis of the frozen food sector?*"

Phase 2: Specialized Cooperative Debate

In this phase, students participated in three structured cooperative debates aligned with the main thematic blocks of the course (Topics 3, 4, and 5). The first debate focused on short-term solvency and liquidity, examining concepts such as working capital, liquidity ratios, the operating cycle, and operating working-capital requirements. The second debate addressed long-term solvency and financial structure, including leverage, indebtedness indicators, and debt sustainability. The third debate centered on economic and financial profitability, as well as financial leverage and its implications for shareholder value. These debates enabled students to contrast performance across firms, develop financially grounded arguments, and apply analytical frameworks to real corporate data in a collaborative and critical-thinking environment. Roles are methodologically assigned:

- The *Administrator* moderates the discussion.
- Network *Expert* provides sectoral context.
- The *Data Expert* presents comparative analytics.
- The *Communication Expert* synthesizes conclusions.

During this stage, students use ChatGPT to clarify technical concepts and enhance their arguments.

Example prompt: "*How does the average collection period affect a firm's liquidity?*"

Phase 3: Gamified Learning

At the end of the course, the students participated in a Genially based digital breakout room (Escape Room) to demonstrate their mastery of financial concepts in a competitive and engaging format. Prior to the activity, ChatGPT serves as a preparatory tool to reinforce key content areas.

Example prompt: "*Summarise key points to consider when analysing economic and financial profitability*".

Phase 4: Final Presentation and Decision-Making

Each group presents its investment recommendation to the class, defending its conclusions with structured, data-driven arguments. Students are encouraged to use

ChatGPT to support the creation of professional documentation and the refinement of their presentation materials.

Example prompt: "*Give me a standard outline for writing an executive financial analysis report*".

The integration of ChatGPT within the pedagogical framework of this project extended beyond its use in specific phases. Its transversal role provided cognitive, communicative, and instrumental support across the entire learning process and contributed to the development of transversal competencies such as critical thinking, synthesis of information, and argumentative reasoning. These contributions are especially relevant in cooperative and PBL environments, where effective collaboration depends not only on technical expertise but also on communication, negotiation, and consensus-building (Rasul et al., 2023). Students employed ChatGPT not only to clarify technical terms and explore financial concepts, but also to draft preliminary reports, structure arguments, and refine presentations. This broadened usage aligns with recent literature that highlights the tool's capacity to enhance self-regulated learning and AP (Zawacki-Richter et al., 2025).

However, the pedagogical potential of ChatGPT depends on its strategic use. It is therefore recommended to incorporate a structured framework for evaluating its application. This includes assessing the relevance and clarity of students' prompts, verifying the accuracy and reliability of the information generated through comparison with official sources, and analyzing the extent to which ChatGPT supports the construction of knowledge and the improvement of analytical and communicative skills (Tlili et al., 2023; Zawacki-Richter et al., 2025).

3.5. Instructional Resources

Several technological tools support this innovative methodology:

- Wix Platform: Centralises teaching materials, including documents, videos, guides, and sectoral reports.
- Genially: Facilitates interactive gamified activities.
- Advanced Excel: Enables precise financial analysis.
- Communication Tools: WhatsApp, Google Drive, Zoom, and Microsoft Teams support collaborative work.

3.6. Empirical study

Data Collection Instrument

To evaluate the impact of the teaching innovation project, a structured questionnaire was designed consisting of two main sections. The first part included 40 items aimed at assessing students' perceptions of the project, while the second part comprised 8 items focused on evaluating the functioning of collaborative work groups. Within the first section, 28 items were specifically dedicated to six key variables: (1) perceived PU, (2) M, (3) DTS and (4) DSS, (5) perceived IL and, (6) SE. The seventh variable, AP, was obtained from the students' final course grade, which was based on the score achieved in the official exam.

Most of the items were formulated using a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree), enabling a quantitative analysis of students' perceptions, as this format is commonly employed in educational research to assess students' perceptions and experiences. The questionnaire was reviewed by experts in accounting education and teaching innovation to ensure content validity. Additionally, a pilot test was conducted with students from previous academic years to refine item clarity and internal consistency. A part of this full questionnaire is provided in Appendix I. This questionnaire

was previously validated through a pilot study conducted with a representative sample of students enrolled in the FSA course. Based on the feedback received, several items were revised and rewarded to improve clarity and ensure accurate interpretation by the respondents. The questionnaires were administered during the final days of class sessions under the supervision of a member of the research team. To mitigate common method variance, we adhered to the procedural recommendations proposed by Podsakoff et al. (2003). The survey instrument included an introductory section outlining the general aims of the study, carefully avoiding any implication of causal or correlational relationships among variables. Participants were assured of the confidentiality of their responses, which would be used exclusively for research purposes and analyzed only in aggregated form. Additionally, the research team emphasized the importance of providing honest and thoughtful answers, clarifying that there were no right or wrong responses and that the information provided would not influence students' academic evaluation in any way. Besides, to evaluate potential non-response bias, the characteristics of the students who completed the questionnaire were compared to those who did not, using Pearson's chi-square test. No significant differences were observed, suggesting that the results are not biased by non-response and are representative of the student population.

Measurement of Variables

The measurement of variables in this study follows the approach adopted in prior research.

PU was assessed through three items addressing the perceived value of the activity, its applicability to other subjects, and the contribution of group participation to class engagement, like constructs used by Carrasco et al. (2018).

M was measured using five items capturing increased effort, interest, and a shift in students' perception of their role in the learning process, in line with the operationalization proposed by Anazifa and Djukri (2017). It constitutes an extrinsic, achievement-oriented motivation (Arquero-Montaño et al., 2009).

DTS was measured with five items focusing on the application of classroom knowledge to real-life situations, active learning, and the integration of theory and practice, consistent with previous studies on learning outcomes in PBL environments (Carrasco et al., 2018).

In turn, DSS was evaluated through an eight-item scale, including a final item listing 17 representative examples (e.g., teamwork, leadership, problem-solving, time management, and communication), as recommended by Wurdinger and Qureshi (2016) for capturing a wide range of interpersonal and intrapersonal competencies and in a manner consistent with that employed in previous research (Arquero-Montaño et al., 2000).

LI was assessed through eight items addressing knowledge integration, conceptual understanding, critical thinking, and the ability to connect information across disciplines, also in line with prior studies that emphasize the cognitive gains associated with active learning methodologies (Wurdinger & Qureshi, 2016).

SE was quantified by tracking the number of hours each student dedicated to project-related activities. This approach aligns with methodologies in existing literature, where actual workload is assessed through time-tracking tools to evaluate its impact on AP (Otero-Saborido et al., 2022).

Lastly, AP was operationalized as the final course grade obtained by each student, reflecting the comprehensive assessment of the curriculum delivered through the project. This measurement approach is justified because the project encompassed all

instructional content evaluated in the course, ensuring that the grade is a valid indicator of the learning achieved. Similar procedures have been used in previous research (Ngereja et al., 2020).

Sample

In Table 3 the descriptive statistics of the variables used in the study are presented.

Table 3. Descriptive statistics of sample. Source: Own elaboration.

	Mean	Median	SD	Min	Max	Skewness	Shapiro-Wilk	
Age	25.19	23	5.724	22	51	3.467	**W**	**p**
PU	4.35	4.33	0.557	2.33	5.00	-0.135	0.926	0.089
M	4.48	4.40	0.541	2.80	5.00	-0.147	0.952	0.090
AP	7.06	7.00	1.120	5.00	9.00	0.188	0.955	0.097
SE	47.77	35	38.648	8	126	0.158	0.912	0.080
DHT	4.49	4.60	0.500	2.80	5.00	-0.109	0.943	0.077
DSS	4.13	4.12	0.660	2.18	5.00	-0.183	0.940	0.081
LI	4.19	4.29	0.653	2.43	5.00	-0.104	0.936	0.062
Gender identity								
• Male			n = 15 (48.4%)					
• Female			n = 16 (51.6%)					

Source: Note: Gender identity was self-reported and coded as 0 = Male, 1 = Female.

All statistical analyses were conducted using Jamovi software, version 2.6.26 (The Jamovi Project, 2024), and R, version 4.4.0 (R Core Team, 2024).

The sample consisted of 31 participants, with no missing data. The mean age was 25.2 years (SD = 5.72), with a median of 23 years, indicating a slightly right-skewed distribution due to the presence of older participants (range: 22–51 years). Although the sample primarily consisted of students belonging to Generation Z, as noted in the introduction, one participant was considerably older (51 years). This was the only case outside the typical age range for the cohort, with the remaining students falling between 22 and 29 years. Although this participant may be viewed as a potential outlier from a generational standpoint, we opted not to remove the case, as preliminary inspection of the descriptive statistics and subsequent analyses showed no evidence of distortion or undue influence on the results. The inclusion of this participant is therefore retained to preserve the integrity of the dataset (Aguinis et al., 2013).

The gender distribution was nearly balanced, with 48.4% identifying as male (n = 15) and 51.6% as female (n = 16).

The mean of AP indicators was 7.06 (SD = 1.12), on a scale of 1 to 10, with a median of 7.00, suggesting that the distribution of grades is slightly skewed toward higher academic achievement.

Regarding engagement, the time dedicated to the project showed high variability, with a mean of 47.7 hours (SD = 38.648) and a median of 35 hours. The minimum reported was 8 hours, while the maximum was 126 hours, indicating considerable dispersion and likely the presence of outliers or a positively skewed distribution. This substantial variation suggests heterogeneous levels of commitment or time availability among participants.

Overall, the sample is relatively young and academically moderate to high performing, with balanced gender representation. However, the wide range of project time investment highlights the need to consider individual differences in effort when interpreting project-related outcomes.

After removing one potential outlier, the distributional properties of the variables were reassessed using the Shapiro–Wilk test. The results indicated that all variables presented non-significant deviations from normality ($p > .05$), with W values ranging from 0.912 to 0.955. This suggests that the assumption of univariate normality is now reasonably met across the dataset. Consequently, the use of parametric statistical analyses, such as Pearson's correlations, t-tests, and linear regression, is deemed appropriate for the forthcoming hypothesis testing.

Preliminary descriptive analyses provide initial support for several of the study's hypotheses. Students reported high levels of M ($\mu = 4.48$, $\sigma = 0.54$) and perceived LI (LI; $\mu = 4.19$, $\sigma = 0.65$), suggesting that participation in the project had a positive effect on both motivational and cognitive outcomes, thus supporting hypotheses H1 and H2. Moreover, the substantial variability in the hours devoted to the project ($\mu = 47.77$, $\sigma = 38.65$) indicates heterogeneous levels of SE, which offers a favorable context for testing H5, the hypothesis that greater effort leads to better AP.

Gender-based comparisons suggest that female students scored slightly higher than male students in non-technical skills such as social skills (DSS: $\mu = 4.20$ vs. 4.04) and teamwork/leadership (LI: $\mu = 4.30$ vs. 4.06), while males showed marginally lower scores in technical skills (DHT: $\mu = 4.43$ vs. 4.54).

To ensure adequate quality in the measures used in the study, several criteria were evaluated (Table 4). Firstly, internal consistency of the constructs was assessed using McDonald's omega (ω), which is considered a more robust reliability coefficient than Cronbach's alpha, particularly in the presence of multidimensionality or unequal item loadings or the sample is small, as in this case. All constructs demonstrated acceptable reliability, with ω values ranging from .776 to .875. These results indicate a satisfactory level of internal consistency across the latent variables, thereby providing initial support for the convergent validity of the measurement model (Dunn, Baguley, & Brunsden, 2014; Peters, 2014). The table 4 shows these results.

Table 4. Reliability of the constructs. Source: Own elaboration.

	ω de McDonald	**Loadings (λ)**
PU	0.776	0.891
M	0.780	0.891
AP	0.875	0.729
SE	0.866	0.997
DHT	0.793	0.784
DSS	0.780	0.827
LI	0.790	0.780

An examination of the average variance extracted –AVE- (Table 5) revealed that all constructs exceeded the 0.50 cut-off set by the literature (Fornell and Larcker, 1981). Moreover, the R2 value for the endogenous constructs exceeds the recommended minimum value of 0.1, so are suitable for hypothesis testing. Besides, the discriminant validity of the measures was assessed. As Fornell and Larcker (1981) suggested, the AVE for each construct should be greater than the squared latent factor correlations between pairs of constructs and, the Heterotrait-Monotrait (HTMT) ratio, with values under 0.85 (Henseler et al., 2015) (Table 5).

In summary, all variables were found to show good reliability, convergent validity and discriminant validity.

Table 5. Psychometric properties and correlation matrix of the constructs. Source: Own elaboration.

	Statistics		Correlations						
	AVE	*R2*	*PU*	AP	SE	M	DHT	DSS	LI
PU	0.701	0.224	**0.802**	0.605	0.525	0.468	0.701	0.643	0.567
AP	0.571	0.155	0.393	**0.756**	0.623	0.498	0.543	0.601	0.465
SE	0.709	0.294	0.408	0.637	**0.842**	0.620	0.582	0.635	0.649
M	0.547	0.214	0.727	0.387	0.408	**0.740**	0.621	0.575	0.652
DHT	0.605	0.211	0.694	0.651	0.600	0.654	**0.821**	0.611	0.649
DSS	0.633	0.201	0.711	0.339	0.704	0.576	0.692	**0.856**	0.681
LI	0.539	0.199	0.642	0.380	0.640	0.626	0.569	0.766	**0.789**

Note: AVE=Average extracted variance; R2= R-squared; The diagonal of the covariances (in bold) captures the square root of the variance shared between the constructs and their measures. Below diagonal elements are the correlations between constructs. Above diagonal elements are the Heterotrait–Monotrait Ratio (HTMT) values.

4. RESULTS

To test our hypotheses, Pearson correlation analysis was conducted to examine the association between variables (table 6).

Table 6. Correlation analysis. Source: Own elaboration

Hypothesis	Variables Correlated	Pearson's r	p-value	Hypothesis Supported
H1	PU – LI	0.642	< .001	Yes
H2	PU – M	0.827	< .001	Yes
H3	M – LI	0.626	< .001	Yes
$H4_1$	UP – DTS	0.694	< .001	Yes
$H4_2$	UP – DSS	0.711	< .001	Yes
H5	SE – AP	0.486	< .001	Yes

The results revealed strong and statistically significant positive correlations between the perceived PU and LI and M, with coefficients of r = 0.642 (p < .001) and r = 0.827 (p < .001), respectively. These findings support Hypotheses 1 and 2, indicating that students who found the project more useful also reported higher learning gains and motivational engagement. This is consistent with previous research highlighting the positive impact of project-based methodologies on AP and deep learning (Wu et al., 2021; Shi & Li, 2024; Papageorgiou, 2022). The strength of the correlation between PU and M further suggests that well-implemented PBL can act as a powerful driver of M in higher education, reinforcing earlier findings on the benefits of active methodologies for student engagement (Thomas, 2000; Almuntsr et al., 2024).

Moreover, the analysis revealed a strong and statistically significant positive association between students' M and their perceived LI (r = 0.626, p < .001). This result supports Hypothesis 3, indicating that higher levels of M are associated with greater self-reported learning gains. These findings reinforce the theoretical expectation that M functions as a mediating factor in academic success within active learning environments (Deci & Ryan, 2000; Benden & Lauermann, 2023), especially when project-based approaches are applied.

Regarding Hypotheses 4.1 and 4.2, the results also support both hypotheses, which posited that the implementation of the project promotes the development of both

technical and non-technical competencies. Strong and statistically significant correlations were observed between PU and the DTS (DTS, $r = 0.694$, $p < .001$), as well as non-technical or soft skills (DSS, $r = 0.711$, $p < .001$). These results confirm that educational projects grounded in active learning strategies, including PBL, flipped classroom, gamification, and cooperative learning, can foster a broad range of professional competences beyond content knowledge, enhancing students' preparation for real-world challenges (Sanz-Angulo et al., 2025; Camacho-Sánchez et al., 2023).
Finally, for hypothesis 5, Pearson correlation analysis showed a moderate and statistically significant positive relationship between SE, measured as the number of hours dedicated to the project, and AP ($r = 0.486$, $p < .001$). This suggests that students who invested more time in the project achieved better academic results. These findings are aligned with prior research highlighting the role of sustained effort in improving AP in active learning contexts (Terrón-López et al., 2017; Wu et al., 2021; Zen et al., 2022).

5. DISCUSSION AND CONCLUSIONS

The findings of this study provide clear evidence that the objectives initially established were successfully achieved. First, the methodological design enabled students to engage with real professional scenarios, thereby promoting meaningful learning and facilitating the transfer of theoretical knowledge to practical financial-analysis tasks. Second, the project effectively fostered the development of transversal competencies, such as teamwork, communication, critical thinking, and decision-making, aligned with the essential skill set required in professional accounting and finance environments (Arquero-Montaño et al., 2009; Camacho-Sánchez et al., 2023). Third, consistent with the hypotheses, the project enhanced students' motivation and perceived learning, while motivation was positively associated with learning improvement, in line with empirical investigations showing that active and flipped-learning approaches boost motivation and academic performance (Zainuddin & Halili, 2016; Terrón-López et al., 2017; Zen et al., 2022). Additionally, students reported that the project contributed to the development of both technical and non-technical skills, and academic performance outcomes suggested a positive association between student effort and achievement. Collectively, these results confirm the capacity of combining active pedagogies with digital tools to strengthen both learning outcomes and professional readiness.

The findings of this study provide empirical support for the effectiveness of integrating active learning methodologies, specifically PBL, cooperative learning, flipped classrooms, and gamification, in a FSA course. The results confirm that students who perceived the project as more useful also reported higher levels of M and LI, in line with the foundational principles of student-centered pedagogies (Arquero-Montaño et al., 2009; Freeman et al., 2014; Papageorgiou, 2022). Furthermore, M was positively associated with perceived learning gains, reaffirming theoretical models such as expectancy-value theory (Atkinson, 1957) and self-determination theory (Deci & Ryan, 2000), which posit that extrinsic M plays a key role in AP (Zainuddin & Halili, 2016; Chen et al., 2020).

The strong and significant correlations between the project's perceived usefulness and the development of both technical and soft skills underscores the capacity of active methodologies to promote holistic student development. This is particularly relevant in fields such as accounting and finance, where transversal competencies, such as critical thinking, communication, and teamwork, are increasingly valued in professional contexts (Sanz-Angulo et al., 2025; Camacho-Sánchez et al., 2023). The successful implementation of the "Turn Your Classroom into a Professional Office" initiative illustrates how combining technology (e.g., ChatGPT) with active pedagogies can create meaningful, immersive learning environments that mirror professional practices and expectations.

Additionally, the study highlights that greater SE, measured in hours dedicated to the project, is positively associated with AP. This finding aligns with previous research emphasizing the importance of time-on-task and effort regulation in predicting student success in higher education (Terrón-López et al., 2017; Zen et al., 2022). Thus, fostering student commitment through engaging and professionally relevant tasks emerges as a key component of effective instructional design.

In practical terms, the results advocate for a pedagogical transformation in university education, particularly in technical disciplines. Educators are encouraged to adopt blended approaches that combine traditional academic content with experiential, team-based, and gamified activities, while leveraging tools such as AI to support student autonomy and feedback. The model presented in this study may serve as a replicable framework for curricular innovation aimed at improving not only academic results but also students' readiness for the demands of the labor market. For example, in engineering or computer science programs, the PBL structure can be applied to the development of prototypes or analytical models, supported by cooperative problem-solving strategies (Johnson & Johnson, 1999) and flipped-learning resources (Bergmann & Sams, 2014). In business, marketing, or management courses, real case simulations involving strategic decision-making, market analysis, or sustainability evaluation can parallel the financial advisory tasks undertaken in this study, encouraging active engagement and deep learning consistent with student-centered pedagogies (Freeman et al., 2014). In the social sciences and humanities, applied research projects, policy analysis, or ethical debates may be incorporated to foster critical reasoning and argumentation, similarly benefiting from blended environments that enhance learner autonomy and participation (Zainuddin & Halili, 2016). Across disciplines, the integration of AI tools such as ChatGPT can provide individualized scaffolding, formative feedback, and support for autonomous inquiry, reinforcing transversal competencies such as communication, collaboration, and digital literacy that are essential in contemporary academic and professional contexts (Arquero-Montaño et al., 2009).

Despite promising outcomes, this study is not without limitations. The sample size is relatively small (n = 31), which may limit the generalizability of the findings. Additionally, the research was conducted within a single course in the FSA subject, which may restrict the applicability of the results to other disciplines or academic contexts. As such, the findings should be interpreted with caution, as they may not fully capture the diversity of outcomes that might emerge in different curricular settings or programs. Furthermore, although students reported that the use of ChatGPT was highly beneficial for understanding concepts and supporting project development, this study did not systematically collect or analyze their reflections or the specific prompts they employed. Informal observations during the project indicated that some initial prompts occasionally produced responses that were too generic or insufficiently tailored to the financial context, requiring students to refine their questions to obtain more accurate and technically precise output.

Therefore, future studies should consider longitudinal designs, larger sample sizes, and the inclusion of multiple courses across different academic programs to enhance the robustness and generalizability of the findings. Moreover, descriptive analysis suggested the possibility of gender-based differences in the development of both technical and soft skills, with female students appearing to report slightly higher levels of non-technical competencies, such as social and teamwork-related skills, and male students showing marginally higher scores in technical areas. However, due to the limited sample size, it was not feasible to explore these differences statistically. Future research with larger samples should investigate this aspect in depth, as understanding potential gender-related patterns could inform more inclusive and effective instructional design. Moreover,

obtaining a larger sample size would allow for the construction of a model that encompasses all potential causal relationships among the variables considered, which could then be tested using methods such as PLS-SEM. Finally, future studies should incorporate structured reflection logs and prompt-use analysis to better understand how students interact with AI tools, identify common prompting challenges, and examine the mechanisms through which generative AI enhances or constrains learning processes.

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Appendix I (Student Evaluation Survey)

Objective:
To assess students' perception of the usefulness of the project, their motivation, the development of both technical and soft skills, and the overall improvement in the learning process.

PERSONAL DATA: Last Name, First Name: _____

Age	
Sex	M ☐ F ☐ Other ☐
Average academic grade (1 to 10)	
Average grade in accounting courses (1 to 10)	
Time (hours) dedicated to the project (SE)	

Instructions:
Please rate the following statements based on your level of agreement, using the following scale:

1 = Strongly Disagree / 2 = Disagree / 3 = Neutral / 4 = Agree / 5 = Strongly Agree

Section A: Perceived Usefulness of the Project (PU)
1. The activity was useful.
2. Using it in other subjects would improve the quality of teaching.
3. Active group participation makes the class more interesting.

Section B: Motivation (M)
4. The activity has motivated me to work harder on the subject.
5. The activity has improved my opinion of the subject content (practical perspective).
6. I feel more motivated by the subject than if it were more theoretical.
7. The activities increase my interest in accounting.
8. The activity changes my view of the student's role as a passive recipient of information.

Section C: Development of Technical Skills (DTS)
9. Helps compare knowledge learned in the classroom with its application in real-life situations
10. Helps bridge the gap between theory and practice
11. Facilitates learning of the Accounting Analysis subject
12. Involves participants in their own learning
13. Creates an attitude of active participation

Section C: Development of Soft Skills (DSS)
14. It has helped me develop my ability to synthesize and critique.
15. It has helped me develop my information search skills, as well as my use of bibliographic sources and information technology.
16. It has developed my teamwork skills.
17. I have improved my ability to present, defend, and debate opinions in public.
18. I have improved my report writing skills.
19. Presentations make participating in debates easier.
20. Identify whether the activity has contributed to the development of the following skill:
    - Time Management
    - Problem Solving
    - Decision Making
    - Planning
    - Computer Use

- Database Management
- Creativity
- Management by Objectives
- Project Management
- Intellectual Stimulation
- Delegation
- Self-Motivation
- Ethical Sense
- Interpersonal Communication
- Conflict Management
- Negotiation
- Leadership

Section D: Learning Improvement (LI)

21. It has helped me connect new concepts and information with other previously learned knowledge.
22. It has helped me apply the concepts I've learned and understand new concepts.
23. It has helped me understand, expand, and connect my ideas.
24. It has helped me connect content from this subject with concepts and content from other subjects.
25. It has helped me question, be critical, and debate.
26. The activity was useful for learning from other students' perspectives on concepts and problems.
27. The debate of different opinions has enriched my knowledge with alternative points of view.
28. Other improvements