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Developing accounting students' professional competencies and satisfaction through learning experiences: Validation of a self-administered questionnaire

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Developing Accounting Students' Professional Competencies and Satisfaction through Learning Experiences: Validation of a Self-Administered Questionnaire

Abstract

The aim of this study is to validate a questionnaire that facilitates a comprehensive assessment of the development of professional competencies, including interdisciplinary aspects such as soft skills, attitudes and values, and students' satisfaction. An empirical research process combining documentary, qualitative and quantitative methods is developed. The results, based on the responses of 365 university students participating in an active learning experience in the field of accounting, confirm the classification of the 30 items into three factors: satisfaction, attitudes and values, and soft skills. The analyses also indicate a high level of internal consistency for both the questionnaire as a whole and each individual construct. This study addresses a gap in the literature by developing and validating an instrument that enables a holistic evaluation of the effectiveness of active learning methodologies in fostering professional competencies and enhancing students' satisfaction. Furthermore, the instrument's cross-disciplinary nature makes it adaptable for use in various fields beyond accounting.

Keywords

Professional competencies; soft skills; attitudes and values; satisfaction; active learning methodologies: project-oriented learning; accounting.

1. Introduction

Over the last few decades, the rapid process of globalisation and changes in the economy and the business environment, as well as innovation and technological advances, have continued to transform the nature of jobs in the labour market (Chan et al., 2017). This has required a reconversion of the university system in which competency-based training has become a central issue in all disciplines of higher education (Kirschner et al., 1997). While the acquisition of technical knowledge by students is still important, the simultaneous development of relevant soft skills and attitudes and values is now equally essential to their future professional performance (Gichuru et al., 2021; Westera, 2001). In fact, research confirms that graduates' level of professional competency increases their productivity and therefore affects their competitiveness in the labour market (Urbancova et al., 2022). Thus, it has been necessary to transform educational models by incorporating active learning methodologies so that students become the true protagonists of their own learning (Esteban Yago et al., 2023; Huber, 2008). These methodologies have demonstrated their effectiveness in enhancing learning outcomes, while this is conditioned by the level of students' motivation and involvement (Esteban Yago et al., 2023). Therefore, when evaluating the effectiveness of a learning experience, the satisfaction of students should not be overlooked (So & Brush, 2008).

University teachers are continuously undertaking new teaching experiences aimed at developing professional competencies in their students (Bennett et al., 2021; Marco-Fondevila et al., 2022). In the specific field of accounting, the International Education Standards (IES), as issued by the International Accounting Education Standards Board (IAESB) of the International Federation of Accountants (IFAC), have become a global benchmark (International Federation of Accountants, 2019). This normative framework, together with the empirical evidence obtained by several studies published in indexed journals, constitutes a good basis on which to determine, apart from the technical knowledge required, the sets of soft skills and attitudes and values that are necessary for adequate professional practice of accounting in the labour market.

The previous literature that uses active learning methodologies for the development of accounting professional competencies is very extensive, focusing on methodologies such as problem-based learning (Gil-Galván et al., 2021), cooperative learning (Delgado del Mar & Castrillo, 2015), case studies (Culpin & Scott, 2012), game-based learning (Mora

et al., 2018), and project-oriented learning (Palazuelos et al., 2018). To the best of our knowledge, an instrument has not yet been developed and validated that allows a joint evaluation of the effectiveness of active learning methodologies for training in relevant professional competencies and the satisfaction of students with this learning experience. Within the accounting field, Carrasco et al. (2015) propose a questionnaire to measure students' development of technical and non-technical competencies. However, their instrument does not consider students' satisfaction and, as regards non-technical competencies, they focus almost exclusively on soft skills.

To fill that gap, the aim of this study is to validate a questionnaire that enables a comprehensive assessment of the development of professional competencies in its most interdisciplinary aspects (soft skills and attitudes and values), as well as students' satisfaction.

The data were collected during three academic years (2017–2018, 2018–2019 and 2019–2020) in the subject of "auditing". This subject is taught in the Degree in Business Administration and Management of a Spanish university. Since the 2010–2011 academic year, Project-Oriented Learning (POL) has been applied to this subject through the elaboration and presentation of a professional auditing dissemination journal. In total, the opinions of 365 students who participated in this teaching experience were collected and analysed.

First, in order to explore the structure of the questionnaire, an exploratory factor analysis was implemented. The results obtained allow for the definition of a questionnaire made up of 30 items and organised in three different constructs: (1) satisfaction, (2) attitudes and values, and (3) soft skills. Second, a confirmatory factor analysis was applied. Both the global scale and its three dimensions present high levels of reliability and validity, which proves that the instrument developed is useful and valid for evaluating the development of relevant professional competencies among accounting university students and their satisfaction with the learning experience.

This paper contributes to the existing literature by presenting a questionnaire that allows for the simultaneous assessment of both the development of professional competencies and students' satisfaction. Its cross-disciplinary nature makes it a versatile instrument applicable not only in the field of accounting but also in other disciplines.

The remainder of the paper proceeds as follows. Section 2 provides an overview of the relevant previous literature. Section 3 outlines the research methodology. Section 4 discusses the main results obtained. Finally, Section 5 presents the conclusions of the study, including its contribution, limitations, and future lines of research.

2. Literature Review

In this section, we conduct a review of literature related to the topic under study. First, we review some of the main references of international regulations (IFAC and CICA) and previous literature in relation to professional competencies in accounting. Next, we describe the most relevant aspects of active learning methodologies in higher education, particularly of POL. Lastly, we allude to the importance of measuring students' satisfaction within the process of evaluating learning outcomes.

2.1. Professional Competencies in Accounting

Since the end of the last century, universities have been challenged to help students develop the necessary competencies for their adequate insertion in the labour market (Kirschner et al., 1997). This is also the case within the professional field of accounting (Fontaine et al., 2023; Stoner & Milner, 2010).

The term "competence" is quite problematic (Albeha et al., 2020; Westera, 2001), as it is frequently used in different ways (Courtis & Zaid, 2002; Howieson, 2003; Jackling & Calero, 2006; Jackling & De Lange, 2009; Niu et al., 2021). However, since 2015, IFAC (2019) has defined it as the capacity of a person to perform a job by complying with a certain standard in real work environments. Likewise, this regulatory body defines "capacity" as the total knowledge, skills and values, ethical aspects, and professional attitudes required to demonstrate competence. Therefore, professionals must be trained from three different perspectives in order to be proficient in accounting:

- the *cognitive perspective* (i.e. technical knowledge), which is regulated in International Education Standard 2: Initial Professional Development – Technical Competence;
- the *procedural perspective* (i.e. soft skills), which is regulated in International Education Standard 3: Initial Professional Development – Professional Skills; and

– the *attitudinal perspective* (i.e. attitudes and values), which is regulated in International Education Standard 4: Initial Professional Development – Professional Values, Ethics, and Attitudes.

Focusing attention on the two most transversal components of professional competencies (i.e. soft skills and attitudes and values), the regulatory framework organises a set of 24 soft skills that future accounting professionals should achieve into four categories (IFAC, 2019, pp. 45–46): intellectual (e.g. information search and analysis, problem solving), interpersonal and communication (e.g. teamwork, oral and written communication), personal (e.g. time and resource management, initiative), and organisational (e.g. leadership, delegation of tasks to meet deadlines). On the other hand, it organises a set of 12 attitudes and values that future accounting professionals should also gather into three categories (IFAC, 2019, pp. 55–56): scepticism and professional judgment (e.g. critical thinking, evaluation of alternatives), ethical principles (e.g. integrity, objectivity), and commitment to the public interest (e.g. social responsibility, good governance).

Another benchmark regulatory body in this matter is the Canadian Institute of Chartered Accountants (CICA), which provides an overview of the professional competencies and proficiency levels that chartered accountant candidates are expected to demonstrate on the profession's Uniform Evaluation (UFE), although it uses a slightly different classification to IFAC (2019). It proposes the UFE Candidates' Competency Map, which is divided into two main competency categories, namely pervasive qualities and skills, and specific competencies. The former, which is what this study focuses on, includes three subcategories: ethical behaviour and professionalism (e.g. acting competently with honesty and integrity, carrying out work with due care, protecting the confidentiality of information), personal attributes (e.g. demonstrating leadership and initiative, managing changes, treating others in a professional manner), and professional skills (e.g. examining and interpreting information and ideas critically, resolving problems and making decisions, communicating effectively and efficiently).

Substantial empirical evidence has emerged at the international level concerning the development of professional competencies across diverse disciplines, with a particular focus on soft skills, and attitudes and values. This body of literature highlights positive aspects and significant advancements in university teaching and learning within this topic. Some studies delve into the development of professional competencies through practical

experiences in companies and institutions during the university stage (Corujo-Vélez et al., 2021). Other research explores the potential of service-learning activities to connect students with their communities (Holmes et al., 2022). However, a significant area of research revolves around assessing the effectiveness of active learning methodologies implemented in university classrooms (Ribeiro-Silva et al., 2022).

The field of accounting has not remained untouched by this current trend of research within the educational realm. However, different papers have demonstrated the presence of certain issues in aligning the development of professional competencies among university students with the expectations of the labour market (Blasco Burriel et al., 2023; Dolce et al., 2020; Montoya & Farías, 2018; Timpson & Bayerlein, 2020). In this regard, several studies indicate that university graduates are not adequately prepared with some of the most important soft skills and attitudes and values. Specifically, the primary deficiencies in training are identified in areas such as oral and written communication (Frecka & Reckers, 2010; Hassall et al., 2005; Kavanagh & Drennan, 2008; Montaño, 2000; Tempone et al., 2012), problem-solving skills (Hassall et al., 2005; Kavanagh & Drennan, 2008; Pan & Perera, 2012), and teamwork (Frecka & Reckers, 2010; Kavanagh & Drennan, 2008; Tempone et al., 2012). Additionally, employers in the accounting field perceive the need for greater emphasis and training in various aspects, including a global understanding of the business environment, recognition of the interdisciplinary nature of business, and ethical awarenesss (Kavanagh & Drennan, 2008). Other desired skills include critical thinking and problem analysis, along with project management (Frecka & Reckers, 2010), time management (Pan & Perera, 2012), and self-management (Tempone et al., 2012), as well as analytical and creative thinking abilities (Chaplin, 2017).

2.2. Active Learning Methodologies in Higher Education: Project-Oriented Learning (POL)

Based on all these weaknesses found, the competency-based training approach requires the introduction of important changes in the university pedagogical model of accounting. Looking ahead of their effective development, some authors suggest the importance of students acquiring professional practical experience during their undergraduate studies (Lansdell et al., 2020; Paisey & Paisey, 2010). However, the most widespread action proposal is the one that supports greater involvement and a more active role performed

by teachers in university classrooms by implementing innovative educational interventions (Blankley et al., 2017).

Thus, there are various authors who defend the need to introduce methodological changes both in the technical content to be taught and in the use of appropriate pedagogical innovations, which allow accounting students to develop the professional competencies required by the labour market (Arquero et al., 2017; Burnett, 2003; Demski & Zimmerman, 2000; Gandía & Montagud, 2011; Hopper, 2013; Lawson et al., 2014). The following active learning methodologies can be mentioned as the most widespread for developing accounting competencies: problem-based learning (Gil-Galván et al., 2021), cooperative learning (Delgado del Mar & Castrillo, 2015), case studies (Culpin & Scott, 2012), game-based learning (Mora et al., 2018), and project-oriented learning (Palazuelos et al., 2018).

Specifically, POL is the active learning methodology implemented in the experience of carrying out this study, which is based on action-oriented experiential learning. It is proposed that students work, normally cooperatively, in the realisation of a specific real project during a certain period of time. The end goal can be diverse, from solving a problem to providing a service or creating a product. In any case, planning, designing, and carrying out a series of activities in which it is necessary to apply the acquired learning and effectively use the available resources are required (De Miguel, 2006). In other words, throughout the process, students must solve relevant and very different problems through data collection and analysis, reflection, and debate, generating their own ideas and putting them into practice (Blumenfeld et al., 1991; Mettas & Constantinou, 2007). Recent publications in other areas show that it is a methodology with which very positive results can be obtained in terms of the development of competencies (Chassidim et al., 2018; Filho & Shiel, 2016; Iriondo et al., 2019). In this research, POL is used due to its effectiveness in developing soft skills, and attitudes and values, which ultimately enhances employability prospects (Filho & Shiel, 2016).

2.3. Students' Satisfaction

In general, satisfaction can be viewed as an outcome of experience (Goh et al., 2017), and, more specifically, in the education field, Elliott and Shin (2002) define students'

satisfaction as the "favorability of students and the personal evaluation of various outcomes and experiences linked to their educational activities".

According to Elliott and Healy (2001), higher education institutions should identify the level of students' satisfaction and fulfil the expectations of students, as this plays a crucial role in universities' success (Abdullah, 2006) and learning outcomes (Eom et al., 2006; Putwain et al., 2018). Therefore, when evaluating the effectiveness of a learning experience, consideration of students' satisfaction should not be left aside (So & Brush, 2008). This perception can be measured by using different types of questionnaires, surveys, and interviews (Jung, 2014; Novo-Corti et al., 2013; Sun et al., 2008), and from different perspectives (Virtanen et al., 2017), with the students' point of view being the most widespread measure (Elliott & Shin, 2002; Sun et al., 2008). Several studies have viewed satisfaction as an important factor when evaluating different aspects of teaching, such as the clarity and communication skills of the instructors (Parayitam et al., 2007), their support for students' learning (Jones, 2008; S. J. Lee et al., 2011), the organisation and structure of the course (J. Lee, 2014), and the implementation of active learning methodologies (Missildine & Fountain, 2013; Selçuk & Çalışkan, 2010; Williams et al., 2007).

In this study, we follow the approach proposed by Muñoz-Carril et al. (2021), who believe that satisfaction is determined by the combination of enjoyment throughout the educational experience and its perceived usefulness. Enjoyment refers to how enjoyable students find the process of learning regardless of the result of the process itself (Motl et al., 2001). Several studies agree that it is a key factor in the perception of satisfaction and state that if students think the learning experience is enjoyable, they are more likely to be more satisfied with it (Gao et al., 2020; Ifinedo, 2017; Jung, 2014; Muñoz-Carril et al., 2021). Perceived usefulness can be defined as the degree to which a person believes that using a particular system would enhance his or her performance (Davis, 1989). Similarly, previous research has found evidence that perceived usefulness has a positive significant effect on educational satisfaction (I. H. Chang & Chen, 2020; Han & Sa, 2022).

After conducting a comprehensive literature review, it becomes evident that there is a need to assess the development of professional competencies in their most cross-disciplinary aspects (i.e. soft skills and attitudes and values) in the field of accounting, along with students' satisfaction. The following section outlines the key elements

involved in elaborating a questionnaire that enables the measurement of these aspects through students' perceptions, specifically in the context of an active learning experience.

3. Methodology

From the literature review described in this study, we developed an empirical research that combines qualitative and quantitative methods in order to propose and validate a questionnaire that enables evaluation of the improvement of professional competencies and the satisfaction that students perceive when participating in an innovative learning experience. Qualitative methods were used for the elaboration and refinement of the items included in the scales. Quantitative methods were used to test the properties of the scales and therefore corroborate the suggested structure of the questionnaire.

3.1. Questionnaire Elaboration and Measurement Scales

The preliminary version of the questionnaire was developed from the review of the regulatory framework and previous literature. The *Handbook of International Education Pronouncements* (IFAC, 2017) and *UFE Candidates' Competency Map* (CICA, 2013) were mainly used as references for elaboration of the "soft skills" and "attitudes and values" items. "Satisfaction" items were adapted from Motl et al. (2001), Padilla-Meléndez et al. (2013), Sahin and Shelley (2008), and So and Brush (2008).

Subsequently, five accounting teachers and five auditing professionals reviewed the questionnaire and discussed its content in two different focus groups. The results of these meetings allowed us to define the list of items to include in each variable. Specifically, there were no changes to "attitudes and values", which consisted of eight items. However, in the "soft skills" variable, we added the item "work in a team" and divided the item "communicate effectively and efficiently" into two separate items: "communicate orally" and "communicate in written form". This resulted in 12 items, an increase of two from the original ten. Additionally, in the "satisfaction" variable, one item ("I prefer working on this kind of project to attending master classes") was removed. This decision was made based on expert feedback, as they argued that this item made a comparative assessment with other methodologies, whereas the objective was to measure the satisfaction with the methodology, not to assess whether the students were more satisfied with it than with others. The remaining items exclusively pertain to the specific project undertaken.

Finally, some minor modifications were made to the wording of certain items to enhance comprehension.

As a final step before handing out the questionnaire, we conducted a pilot test among ten students to assess its comprehensibility. While the sample was not statistically representative in this instance, it provided valuable insights, confirming that the participants easily understood the items. The test also revealed that the students felt adequately informed and confident in providing answers to all the statements. Moreover, it reassured us that the students had no concerns regarding the content of the scale or the confidentiality of their responses.

Tables 1, 2, 3, and 4 show the final measurement scales. The questionnaire finally included 30 aspects that students had to assess regarding their perception of the development of professional competencies and their satisfaction with the learning experience. They were all measured using multi-item instruments (seven-point Likert scales: 1 = strongly disagree and 7 = strongly agree), which allowed evaluations of psychological variables that cannot be quantified directly (Churchill & Iacobucci, 2006).

Table 1

Soft Skills

I believe that the project performance has allowed me to improve in the following aspects…

	1	**2**	**3**	**4**	**5**	**6**	**7**
Take responsibility for my actions	1	2	3	4	5	6	7
Demonstrate leadership and initiative	1	2	3	4	5	6	7
Being aware of my capabilities and my limitations	1	2	3	4	5	6	7
Strive to perform tasks in an innovative way	1	2	3	4	5	6	7
Manage changes	1	2	3	4	5	6	7
Relate to others in a professional manner	1	2	3	4	5	6	7
Work in a team	1	2	3	4	5	6	7
Analyse and interpret information	1	2	3	4	5	6	7
Communicate orally	1	2	3	4	5	6	7
Communicate in written form	1	2	3	4	5	6	7
Manage time and available resources	1	2	3	4	5	6	7
Solve problems and make decisions	1	2	3	4	5	6	7

Table 2

Attitudes and Values

I believe that the project performance has helped me to be more aware of the importance of…

	1	2	3	4	5	6	7
Respect and follow the stipulated rules	1	2	3	4	5	6	7
Carry out my work with due care	1	2	3	4	5	6	7
Act competently, honestly and with integrity	1	2	3	4	5	6	7
Protect the confidentiality of information	1	2	3	4	5	6	7
Maintain objectivity and independence	1	2	3	4	5	6	7
Maintain and enhance the reputation of the profession	1	2	3	4	5	6	7
Avoid conflicts of interest	1	2	3	4	5	6	7
Protect the public interest	1	2	3	4	5	6	7

Table 3

Satisfaction – Enjoyment

I believe that the project performance…

	1	2	3	4	5	6	7
Has been interesting	1	2	3	4	5	6	7
Has been exciting	1	2	3	4	5	6	7
I liked it	1	2	3	4	5	6	7
Has allowed me to extract something positive	1	2	3	4	5	6	7

Table 4

Satisfaction – Perceived Usefulness

As a result of my experience with POL…

The quality of my learning has improved	1	2	3	4	5	6	7
The understanding of the subject has been easier	1	2	3	4	5	6	7
Doing more interesting and imaginative work has been possible	1	2	3	4	5	6	7
I would like to take similar projects in other subjects	1	2	3	4	5	6	7
My learning expectations have been met	1	2	3	4	5	6	7
Overall, I am pleased with it	1	2	3	4	5	6	7

The students were informed of the importance of their participation, the goal of the study, and the confidentiality of their data, which would only be used for the aims of the investigation. Additionally, in order to avoid problems related to common method variance (CMV) bias (Podsakoff et al., 2003), the questionnaire protected the anonymity of the respondents and tried to reduce evaluation apprehension. It was indicated clearly in the introduction that there were no right or wrong answers, and the participants were asked to answer questions as honestly as possible. In this way, we tried to reduce the level of fear and make respondents less likely to edit their responses so that they were "socially desirable" or more in line with what they thought the researcher wanted them to say (S. J. Chang et al., 2010).

3.2. Teaching Experience

The POL consisted of designing, elaborating, and exposing an issue of a professional auditing dissemination journal. It was developed through teamwork (3–5 students) over a four-month period.

The journal needed to include three principal items: (1) a personal interview with a practising auditor; (2) a technical article about the last five years' evolution and the current situation of the Spanish audit market; and (3) an article about the internal control mechanisms of a specific company. Moreover, students had to freely add in complementary material related to the subject, such as interviews with other accounting and auditing professionals, opinion articles on current issues, job offers, training courses, pastimes, and advertising, among others.

The weight of the project in the final mark of the subject was 40%, distributed as follows: 30% on the project content and 10% on the project exposition. The other 60% was evaluated through theory and practice exams. The project evaluation was done through rubrics, which are an increasingly widely used tool in innovative teaching (Allen & Tanner, 2006; Gilmour & Majeika, 2018). In addition, students evaluated their peers through a co-assessment instrument (Hortigüela et al., 2019). It is important to point out that, once teachers had provided their feedback, students were given the opportunity to improve their project and produce a new version (two-week deadline).

The general requirements for the proper conduct of the project were established and explained to students from the very beginning of the course, and they were also informed that the objective of this activity was not only to assess students' performance, but to favour their deep learning.

3.3. Scenario Development and Sample

The sample of the study comprises students of the Degree in Business Administration and Management from a Spanish public university. Specifically, the POL experience was developed within the subject of "auditing", which is taught in the fourth year of the degree and is suitable for the implementation of this type of educational learning experience for two main reasons: (1) it is compulsory (the bias that enrolled students have a positive predisposition towards this type of learning experience is avoided), and (2) it has an

adequate number of students enrolled (the sample is neither so small as to be useless nor so large as to be unable to handle its implementation).

The experience took place during the 2017–2018, 2018–2019, and 2019–2020 courses. Information was collected through a personal questionnaire, which had previously been reviewed and approved by the University Ethics Committee. Then, it was administered by hand to the respondents once the project had finished. The students had time to complete the questionnaire in the last class of the semester and no one refused to do so, so we obtained a response rate of 100%. A total of 365 questionnaires with complete and valid answers were collected. Specifically, 136 observations were collected in 2017–2018, 125 in 2018–2019, and 104 in 2019–2020.

The sample profile is shown in Table 5:

Sample Profile

GENDER	Female	48.7%
	Male	51.3%
AGE	Average	21.7
	Mode	21
	Minimum	20
	Maximum	44
AVERAGE GRADE ACADEMIC RECORD	5.0 – 5.9	8.3%
	6.0 – 6.9	55.1%
	7.0 – 7.9	24.5%
	8.0 – 8.9	10.7%
	9.0 – 10.0	1.4%
PROFESSIONAL EXPERIENCE	Yes	68.3%
	- Business Related	56.9%
	- Non Business Related	43.1%
	No	31.7%

4. Results

First, in order to test the psychometric properties of the questionnaire items, an exploratory factor analysis (EFA) was implemented using the statistical software IBM-SPSS v.24. The purpose of this step was to explore the factor structure of the scale and

the item composition of each factor. Second, a confirmatory factor analysis (CFA) was applied using the software EQS v.6.1. This enables the reliability and convergent validity of the scale to be corroborated along with the discriminant validity among its factors.

4.1. Exploratory Factor Analysis

First, prior to the EFA, a series of tests must be carried out to verify how well the data suit the factor analysis. The Kaiser-Meyer-Olkin sample adequacy measure was calculated (KMO = 0.972), showing appropriate values for later factoring (KMO ≥ 0.800). Likewise, Bartlett's test of sphericity was also performed (p = 0.000), which passed the significance test and was also shown to be suitable for factor analysis.

In order to explore the factor structure of the scale and the item composition of each factor, an EFA was implemented using varimax rotation (see Table 6). First, communalities analysis indicated that all items were above 0.500, so all items were accepted as valid to form part of the questionnaire. Second, the principal components method indicated that there were three components or factors with eigenvalues greater than 1. These three factors explained 70.545% of the total variance in the sample. In these three factors, all the items presented loading values over the advisable 0.500 (Hair et al., 1987). Factor 1 referred to the students' "satisfaction", which included ten items. Factor 2 was composed of eight items, which included all the "attitudes and values" of students. Factor 3 comprised 12 items related to "soft skills".

Table 6

Exploratory Factor Analysis

Items	Factors		
	Factor 1 Satisfaction	Factor 2 Soft Skills	Factor 3 Attitudes and Values
1. Has been interesting	**0.802**	0.302	0.298
2. Has been exciting	**0.714**	0.260	0.279
3. Has allowed me to extract something positive	**0.743**	0.323	0.318
4. I liked it	**0.810**	0.352	0.271
5. I would like to take similar projects in other subjects	**0.773**	0.303	0.067
6. My learning expectations have been met	**0.794**	0.300	0.286
7. Overall, I am pleased with it	**0.773**	0.293	0.280
8. The quality of my learning has improved	**0.659**	0.343	0.423
9. The understanding of the subject has been easier	**0.732**	0.802	0.311
10. Doing more interesting and imaginative work has been possible	**0.688**	0.309	0.334
11. Respect and follow the stipulated rules	0.342	0.317	**0.696**
12. Carry out my work with due care	0.353	0.402	**0.683**
13. Act competently, honestly, and with integrity	0.302	0.346	**0.718**
14. Protect the confidentiality of information	0.241	0.315	**0.746**
15. Maintain objectivity and independence	0.214	0.381	**0.759**
16. Maintain and enhance the reputation of the profession	0.353	0.305	**0.728**
17. Avoid conflicts of interest	0.310	0.300	**0.759**
18. Protect the public interest	0.246	0.309	**0.759**
19. Take responsibility for my actions	0.288	**0.604**	0.504
20. Demonstrate leadership and initiative	0.243	**0.664**	0.358
21. Being aware of my capabilities and my limitations	0.274	**0.605**	0.482
22. Strive to perform tasks in an innovative way	0.423	**0.576**	0.368
23. Manage changes	0.365	**0.631**	0.390
24. Relate to others in a professional manner	0.329	**0.655**	0.378
25. Work in a team	0.292	**0.651**	0.277
26. Analyse and interpret information	0.278	**0.630**	0.311
27. Communicate orally	0.310	**0.626**	0.271

28. Communicate in written form	0.336	**0.720**	0.225
29. Manage time and available resources	0.316	**0.736**	0.241
30. Solve problems and make decisions	0.339	**0.652**	0.395
% Variance	25.237	22.868	22.440
% Total			70.545
α Cronbach	0.959	0.949	0.949
Nº items	10	12	8
Bartlett's sphericity test $\chi 2$ (435) = 10,617.892 (p = 0.000)			
KMO index = 0.972			
α Cronbach (30 items) = 0.976			

4.2. Confirmatory Factor Analysis

In the second validation step, the measurement model was estimated with CFA to test the psychometric properties of the measurement scales (reliability and validity).

The reliability of the measurement scales was evaluated using Cronbach's alpha, compound reliability, and AVE coefficients (Bagozzi & Yi, 1988). The values of these statistics are, in every case, clearly above the required minimum values of 0.7 and 0.5, respectively (Hair et al., 1987), which supports the inner reliability of the proposed constructs (Table 7). The convergent validity of the scales is also confirmed (Table 7) since all items are significant to a confidence level of 95% and their standardised lambda coefficients are higher than 0.5 (Steenkamp & Van Trijp, 1991).

Also, the results obtained for the goodness-of-fit indices show a correct specification of the measurement model. In particular, the Bentler-Bonett normed fit index (NFI), the Bentler-Bonett non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA) are calculated for the measurement of overall model fit; and the comparative fit index (CFI) and incremental fit index (IFI) are calculated as measures of incremental fit (Hair et al., 1987). The results, summarised in Table 7, confirm that the NFI, NNFI, CFI, and IFI statistics are close to, or above, the recommended minimum value of 0.9 and that the RMSEA is located within the maximum limit of 0.08.

Table 7

Confirmatory Factor Analysis

Factors	Items	λ	R^2	α	CR	AVE
Satisfaction	1. Has been interesting	0.904	0.817			
	2. Has been exciting	0.799	0.638			
	3. Has allowed me to extract something positive	0.870	0.757			
	4. I liked it	0.926	0.857			
	5. I would like to take similar projects in other subjects	0.769	0.591			
	6. My learning expectations have been met	0.872	0.760	0.959	0.960	0.706
	7. Overall, I am pleased with it	0.861	0.741			
	8. The quality of my learning has improved	0.807	0.651			
	9. The understanding of the subject has been easier	0.781	0.610			
	10. Doing more interesting and imaginative work has been possible	0.795	0.632			
Attitudes and values	11. Respect and follow the stipulated rules	0.819	0.671			
	12. Carry out my work with due care	0.862	0.743			
	13. Act competently, honestly, and with integrity	0.841	0.707			
	14. Protect the confidentiality of information	0.817	0.667	0.949	0.950	0.702
	15. Maintain objectivity and independence	0.853	0.728			
	16. Maintain and enhance the reputation of the profession	0.844	0.712			
	17. Avoid conflicts of interest	0.845	0.714			

Factors	Items	λ	R^2	α	CR	AVE
	18. Protect the public interest	0.820	0.672			
Soft skills	19. Take responsibility for my actions	0.827	0.684			
	20. Demonstrate leadership and initiative	0.769	0.591			
	21. Being aware of my capabilities and my limitations	0.813	0.661			
	22. Strive to perform tasks in an innovative way	0.799	0.638			
	23. Manage changes	0.826	0.682			
	24. Relate to others in a professional manner	0.818	0.669	0.949	0.949	0.609
	25. Work in a team	0.720	0.518			
	26. Analyse and interpret information	0.715	0.511			
	27. Communicate orally	0.700	0.490			
	28. Communicate in written form	0.765	0.585			
	29. Manage time and available resources	0.780	0.608			
	30. Solve problems and make decisions	0.821	0.674			

Goodness of fit: NFI = 0.850; NNFI = 0.913; CFI = 0.920; IFI = 0.920; RMSEA = 0.052

Moreover, the Anderson and Gerbing (1988) process was used to verify the discriminant validity (Table 8). Confidence intervals for the correlation of the constructs were obtained and compared with unity. None of the intervals contained this value, thus confirming that the proposed measurement model is correct.

Table 8

Discriminant Validity

	Satisfaction	Attitudes and Values	Soft Skills
Satisfaction	-	0.747 (0.036)	0.806 (0.025)
Attitudes and Values	[0.675-0.819]	-	0.865 (0.020)
Soft Skills	[0.756-0.856]	[0.825-0.905]	-

Note: Cells above the diagonal show the correlation between pairs of factors along with the standard error (in brackets). Cells below the diagonal show the confidence intervals for the correlation between pairs of factors.

4.3. Students' Perceptions

To summarise the findings of the study, Table 9 presents the descriptive statistics of the items and factors that compose the final scale to measure the effectiveness of POL. In order to simplify the interpretation of the results, and given the similarity between them, the assessment values "1", "2", "3" and "5", "6", and "7" have been aggregated in "disagree" and "agree" groups, respectively.

Table 9

Descriptive Statistics

Item	Disagree	Agree	Mean	s.d.
Satisfaction	**15.16%**	**84.84%**	**5.35**	**1.57**
1. Has been interesting	11.25%	88.75%	5.55	1.53
2. Has been exciting	27.45%	72.55%	4.86	1.67
3. Has allowed me to extract something positive	8.71%	91.29%	5.61	1.44
4. I liked it	14.61%	85.39%	5.36	1.62
5. I would like to take similar projects in other subjects	23.13%	76.87%	4.95	1.75
6. My learning expectations have been met	18.51%	81.49%	5.09	1.59
7. Overall, I am pleased with it	13.06%	86.94%	5.45	1.62
8. The quality of my learning has improved	15.91%	84.09%	5.24	1.55
9. The understanding of the subject has been easier	13.79%	86.21%	5.39	1.59
10. Doing more interesting and imaginative work has been possible	6.31%	93.69%	5.95	1.33
Attitudes and values	**7.61%**	**92.39%**	**5.58**	**1.33**
11. Respect and follow the stipulated rules	9.82%	90.18%	5.48	1.35
12. Carry out my work with due care	6.13%	93.87%	5.66	1.28
13. Act competently, honestly, and with integrity	5.85%	94.15%	5.74	1.29
14. Protect the confidentiality of information	6.69%	93.31%	5.77	1.30
15. Maintain objectivity and independence	5.54%	94.46%	5.66	1.28
16. Maintain and enhance the reputation of the profession	7.45%	92.55%	5.54	1.30
17. Avoid conflicts of interest	10.54%	89.46%	5.45	1.41
18. Protect the public interest	9.06%	90.94%	5.38	1.44
Soft skills	**7.27%**	**92.63%**	**5.61**	**1.28**
19. Take responsibility for my actions	8.26%	91.74%	5.65	1.34
20. Demonstrate leadership and initiative	5.75%	94.25%	5.51	1.26
21. Being aware of my capabilities and my limitations	9.94%	90.06%	5.47	1.39
22. Strive to perform tasks in an innovative way	6.65%	93.35%	5.67	1.29
23. Manage changes	9.78%	90.22%	5.38	1.31
24. Relate to others in a professional manner	6.82%	93.18%	5.70	1.33
25. Work in a team	5.25%	94.75%	5.77	1.21
26. Analyse and interpret information	4.57%	95.43%	5.64	1.11
27. Communicate orally	10.19%	89.81%	5.52	1.41

28. Communicate in written form	6.79%	93.21%	5.59	1.26
29. Manage time and available resources	6.38%	93.62%	5.71	1.26
30. Solve problems and make decisions	6.99%	93.01%	5.69	1.26

As can be seen from Table 9, students value most positively the acquisition of soft skills (mean = 5.61), followed by the improvement of their attitudes and values (mean = 5.58) and their satisfaction with the experience (mean = 5.35). However, the most valued item is the opportunity to do more interesting and imaginative work (mean = 5.95). On the other hand, although students think that the POL experience has been exciting, it is the least valued item (mean = 4.86). With regard to attitudes and values, students believe that, after completing the project, they are, in particular, more aware of the importance of protecting the confidentiality of information (mean = 5.77), and also of acting competently, honestly, and with integrity (mean = 5.74). Finally, teamwork (mean = 5.77) and the ability to manage the time and resources available (mean = 5.71) are the most frequently highlighted soft skills.

Additionally, frequency analysis also presents significant results. Specifically, more than 90% of students agree that the POL experience is effective when it comes to improving their "attitudes and values" (items 11–18) and "soft skills" (items 19–30). In the case of perceived "satisfaction" (items 1–10), the percentage decreases to 72%.

5. Conclusions

Previous studies highlight the effectiveness of active learning methodologies for the development of competencies and the generation of satisfaction in university students. However, as far as we know, there is still no instrument for jointly measuring such effectiveness in the academic field of accounting. The main contribution of this paper is the validation of a questionnaire that allows for the joint evaluation of the development of relevant competencies in university accounting students and the satisfaction with their learning.

A 30-item scale was developed theoretically and tested empirically. Through an exploratory and confirmatory factor analysis, the questionnaire presents high levels of validity and reliability. After conducting these analyses, three factors were identified: (1) satisfaction, (2) attitudes and values, and (3) soft skills. In terms of "satisfaction", the

most valued aspect is the opportunity to do interesting and imaginative work. With respect to the development of "attitudes and values", students give special relevance to the protection of the confidentiality of information. Teamwork is the outstanding aspect among "soft skills".

Within the practical implications of this study, it is worth mentioning that the developed scales may assist professors/educators in evaluating the effectiveness of their teaching experiences in relation to both the development of professional competencies and the generation of satisfaction among their students. Thus, greater evidence could be obtained in a uniform manner on what types of active learning methodologies are most appropriate for future accounting professionals to achieve certain learning outcomes at the university stage. In addition, all the evidence that is being collected can serve to intensify the university-company relationship in the field of accounting, with the aim of narrowing the gap between the professional competencies demanded by the sector and those proposed by academia. As an additional contribution, given the multidisciplinary nature of the aspects considered in the questionnaire, it can be easily transferred/applied to other disciplines apart from accounting.

All of the above must be interpreted with due caution, as there are some limitations in the study performed. Although our findings are based on data collected during the last three academic years, the teaching experience was carried out in a single subject (i.e. auditing) of a generic bachelor's degree (i.e. Business Administration and Management) from a specific university (i.e. public and Spanish). Therefore, the extrapolation of the conclusions drawn to different subjects related to accounting, different university degrees, and different types of institutions and countries requires additional evidence to be obtained. Furthermore, the results obtained are based on a specific active learning methodology (i.e. POL), which pursues particular objectives. Finally, the questionnaire does not include the technical aspect of professional competencies (i.e. knowledge), given that this issue is specific to each discipline and could be an obstacle when applying it in other fields of study.

In light of all of the above, some lines of research that would be interesting to explore in the future are proposed. Firstly, future research could apply the validated questionnaire to other useful active learning methodologies (e.g. learning based on challenges, gamification, and all types of learning and collaborative work), with the aim of comparing

methodologies and learning outcomes in relation to the development of relevant professional competencies. Likewise, it would be interesting to apply the validated questionnaire to university students in internships or in their first years of employment, with a view to identifying areas for improvement in their professional development within the actual work environment. In addition, this paper is based on the perceptions of students. Although their opinions regarding teaching-learning processes are essential in order to understand and improve the reality of university education, future research could include the perceptions of professors/educators, professionals, and employers. Finally, the analysis of perceptions has been carried out based solely on the responses of students who have participated in an active learning experience, but they have not been compared with the opinions of other students not involved in the project. Thus, it could be interesting to consider a control group that allows for a comparative analysis.

Declaration of interest statement

No potential conflict of interest was reported by the author(s).

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