

Framework-Based Teaching: does the choice of the active methodology matter for the application of teaching cases?

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Abstract

Objective: to demonstrate the benefits of active methods, the study proposes to identify which skills and competencies are developed in the application of different teaching cases and techniques, in the light of framework-based teaching (FBT) and Bloom's taxonomy (BT).

Methods: The technique Verbalization and Observation Group (VG-OG), Simulated Jury and Problem-Based Learning (PBL) were tested. The students' perception was collected through a questionnaire and analyzed in further depth through a focus group.

Results: According to the students, the use of the techniques developed distinct skills and competencies. Thus, the choice of the method to apply cases should be aligned with the educational objectives established by the teacher. Although competencies of all FBT stages were developed, the teaching techniques VG-OG and PBL developed the competencies of the advanced stage of FBT more, while the simulated jury developed competencies of the intermediate stage.

Contribution: The findings may be useful for teachers in various areas to step up the process of teaching and learning through the application of active methods, and for the International Accounting Standard Board (Iasb) to go beyond the development of cases for teaching FBT, incorporating them into the agenda for reflection about what methods to use for the application of these materials in the institute to promote the understanding and coherent application of the International Financial Reporting Standards (IFRS).

Keywords: Active methods; FBT; Teaching cases; Competencies.

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1. Introduction

The consistent application of IFRS requires skills from students that are related to making judgments, the ability to cope with uncertainties, to make choices and estimates (Barth, 2008). In line with this, the Iasb has developed teaching materials in accounting, composing the so-called framework-based teaching (FBT), aiming to assist teachers, students, accounting professionals and Higher Education Institutions (HEIs) in the teaching-learning process of IFRS (Wells, 2011). FBT is specifically aimed at the development and/or improvement of skills and competencies, mainly for the understanding and consistent application of IFRS, dividing teaching into three stages: awareness, understanding and competence (Costa, Gomes, Braunbeck, & Santana, 2018; Wells, 2011; Wells & Tarca, 2014). In this perspective, the teaching of IFRS occurs gradually, in that these three stages with the introductory, intermediate, and advanced disciplines of the Accountancy course, respectively (Costa *et al.*, 2018).

The didactic materials the Iasb has developed for FBT are characterized as teaching cases, as they correspond to the problematization of situations that take place in the professional context in the teaching-learning process (Alberton & Silva, 2018). The teaching case *Open Safari*, specifically developed for stage-three FBT, leads students to conceptual reasoning and accounting policy formulation consistent with the conceptual structure, besides exercising estimates and judgments (Wells & Tarca, 2014). This choice of cases can be justified by the fact that these materials support skills and competency building for accounting professionals (Januário, Pinho, Gonçalves, & Araújo, 2020; Costa *et al.*, 2018). Regarding the achievement of this goal, Costa *et al.* (2018) identified that, in the perception of Accountancy students, the teaching case *Open Safari*, applied using the PBL teaching technique, helped students in the development of skills and competencies in the cognitive and affective domains of BT.

In this sense, the FBT stages are associated with the skills and competencies in the cognitive and affective domains of BT, which implies that, even in initial disciplines, students can develop skills and competencies of the intermediate and advanced stages of FBT, and vice-versa (Costa *et al.*, 2018). Costa, Áila, Santos, and Cruz (2020) also found this association, but showed results that differ from Costa *et al.* (2018) regarding the skills developed through the application of the *role-play* teaching technique in a discipline in stage-one FBT. These results suggest that it is possible to use different teaching strategies for skills and competency building in the cognitive and affective domains of BT in all FBT stages, with different strategies developing different skills and competencies.

Given this context, teaching cases can be applied using different teaching strategies, and both the case and the strategy adopted for its application can help students in building different skills and competencies (Costa *et al.*, 2018; Costa *et al.*, 2020). In this line of thought, Januário *et al.* (2020) identified that, in the students' view, the active method used to apply the teaching case may have a differentiated impact on the teaching-learning process. Nevertheless, these authors did not associate this perception with skills and competency building. In addition, Costa *et al.* (2018) and Costa *et al.* (2020) applied the PBL and *role-play* techniques in stage-three and stage-one classes, respectively, and at different times, which does not permit evaluating whether different techniques develop different skills and competencies in the same class.

It is noteworthy that, through FBT, the Iasb has produced IFRS teaching materials that could develop skills and competencies this board considers relevant for the training of accounting professionals, but did not discuss ways to apply these materials. Thus, identifying which active methods help in building the skills and competencies required from the accounting professional constitutes a relevant research gap for the improvement of FBT.

Hence, the objective of this research is to identify which skills and competencies are developed in the resolution of teaching cases that apply different teaching techniques. This analysis was performed in the light of BT and FBT. The research was undertaken with Accountancy graduates from a public university in Minas Gerais. The teaching techniques VG-VO, simulated jury and PBL were tested in the application of three different teaching cases. The students' perception was collected through a questionnaire applied at the end of each teaching technique employed and supplemented with a focus group at the end of the introductory accounting discipline II (first stage of FBT).

The VG-OG technique is mainly recommended for students to develop distinct synthesis skills in the construction of knowledge (Anastasiou & Alves, 2004). The VG examines and discusses a situation proposed by the teacher, while the OG critically analyzes the discussions. Next, the groups' role is inverted, when the VG starts to listen while the OG presents its contributions (Saldanha, Guerra, Firmino, Vasconcelos & Sampaio, 2019). The objective of the Simulated Jury is similar to that of the VG-OG technique, but its dynamics consist in assigning the role of the prosecution to one group of students and the role of the defense to another (Thiesen, Giovanaz, Rieger, & Bernhard, 2017). Due to the simulation of a jury environment, the application of this technique allows the students to engage broadly (Anastasiou & Alves, 2004). On the other hand, the PBL mainly stimulates the students' responsibility of the students for their own learning and the development of more in-depth and significant knowledge and can be conducted in seven steps with the application in more than one tutorial session (Soares, Botinha, Casa Nova, Soares, & Bulaon, 2017). The teaching cases applied using the teaching techniques VG-GO, Simulated Jury and PBL constitute an opportunity for skills and competency building resulting from the association between FBT and BT.

The results of this research contribute to the literature on the validity of the grounds of FBT, showing the effectiveness of the teaching cases for skills and competency building, partially depending on the active method that is used to apply it, and also to the literature on the effectiveness of using active methods in the teaching-learning process in higher education. More specifically, the results of this study contribute to the evaluation of the use of the teaching techniques VG-OG, Simulated jury and PBL, in teaching cases, regarding skills and competency building required by the accounting professional, in the initial disciplines of the course, corresponding to stage-one FBT. Furthermore, the results may be useful for the Iasb to reflect on how to apply the teaching cases developed in FBT, as the board has not yet provided information on how to apply these cases in order to achieve the objectives of FBT.

2. Literature Review and Research Hypotheses

The adoption of IFRS entails implications in accounting practice as well as in accounting education (Carvalho & Salotti, 2013). In that context, one of the main challenges is to prepare students for the conscious application of concepts inherent in the standards and in principles-based financial reporting (Barth, 2008). Therefore, the Iasb has developed teaching materials in accounting in order to assist HEIs in the teaching-learning process of IFRS (Costa *et al.*, 2018). It is important to note that the main objective of FBT is to assist students in building and improving the skills and competencies needed for the understanding and coherent application of IFRS (Costa *et al.*, 2018; Wells, 2011).

According to Wells and Tarca (2014), FBT divides IFRS teaching into three stages: awareness, understanding and competence. In the first stage, students become aware of the existence of judgments and estimates for the application of IFRS. In the second stage, they delve into the content addressed in the first through the knowledge of excerpts from the conceptual structure. In the third stage, that of competence, through the fundamental principles of the standards, students recognize transactions and events, and know how to classify transactions and apply the requirements established in the standards (Costa *et al.*, 2018; Wells, 2011; Wells & Tarca, 2014). These stage coincide with the introductory, intermediate and advanced disciplines of the Accountancy course, respectively (Costa *et al.*, 2018).

Both FBT and BT establish gradual skills and competency building through stages and domains, respectively. BT advocates that the teaching-learning process should start from the simpler to the more complex, in order to stimulate students in the search for behavioral experiences (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1983). In this sense, BT classifies the learning opportunities in three main domains: cognitive, affective and psychomotor.

The cognitive domain deals with intellectual learning, comprising the acquisition of new knowledge, skills and attitudes, and is composed of six categories: knowledge, understanding, application, analysis, synthesis and evaluation (Bloom *et al.*, 1983). The student can recall information (knowledge), give meaning to the content (understanding), use information, methods and content in new situations (application), identify and analyze content parts and their interrelationships (analysis), organize, aggregate and join parts of learning in order to create a new “whole” (synthesis) and, furthermore, judge the value of the knowledge based on well-defined criteria (evaluation) (Ferraz & Belhot, 2010).

The affective domain involves feelings and postures and is related to the emotional and affective development of the individual, which is composed of five categories: receptivity, response, appreciation, organization and characterization (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1974). The skills and competencies developed in the affective level mean that the individual has accepted the knowledge, thus helping the development of the cognitive level. Thus, disposition, responsibility, interest and participation are aspects in this domain (Bloom *et al.*, 1974). According to BT, the individual only ascends to a new category, in the three domains, when (s)he achieves proper performance in the previous category, as each persons uses skills acquired in the previous levels (Ferraz & Belhot, 2010), which is analogous to the philosophy of the stages in FBT.

Ferraz and Belhot (2010) clarify that BT permits the planning and choice of the learning instrument that can be addressed in an integrated and structured way, considering that all individuals have the capacity to learn and that they differ only in relation to the level of depth and abstraction of each person's knowledge. This difference can be characterized by the method used and the organization of the teaching-learning process, so it is important to choose appropriate strategies and teaching methods and delimit the specific content (Ferraz & Belhot, 2010).

Costa *et al.* (2018) and Costa *et al.* (2020) associated the FBT stages and the cognitive and affective domains of BT and showed effectiveness in achieving the objectives FBT proposed. Hence, these domains are the focus of this work. Costa *et al.* (2018) state that in the first stage of FBT, the categories of knowledge, understanding and application in the cognitive domain of BT would be developed. In the second stage, the analysis category would be added to these three initial categories, while all categories of the cognitive domain of BT would be developed in the third stage. Costa *et al.* (2020) declare that the affective domain can be fundamental for the development of the categories of knowledge and understanding, addressed in FBT stages 1, 2 and 3. These authors showed that the categories of the cognitive domain of BT mutually interact with the affective domain, suggesting that there is simultaneity among them. Also, the affective domain of BT helps in the development of cognitive categories and vice versa (Costa *et al.*, 2020). The association between the cognitive and affective domains of BT and the stages of FBT is shown in Table 1.

Table 1

Association between BT and FBT stages

Domains	Stage 1 – FBT	Stage 2 – FBT	Stage 3 – FBT
Cognitive			
1. Knowledge	•	•	•
2. Understanding	•	•	•
3. Application	•	•	•
4. Analysis		•	•
5. Synthesis			•
6. Evaluation			•
Affective	•	•	•

Source: adapted from Costa *et al.* (2018) and Costa *et al.* (2020).

As noticed, Costa *et al.* (2018) and Costa *et al.* (2020) employed active learning methods as a way to intensify the teaching-learning process. Active methods consist of teaching methods that enable students to develop learning through their own responsibility, changing them from passive subjects into active participants in the teaching-learning process (Sauaia, 2006). These methodologies are based on how to assist the student in the learning process through real or simulated experiences, in order to solve the challenges that may arise in social practice (Berbel, 2011). Coetzee and Schmulian (2013) highlight that the traditional style, in the passive transmission of knowledge, does not provide, by itself, the development of critical, analytical, and judgment skills. Thus, the teaching methods develop different competencies and help in the enrichment of content and the achievement of educational objectives (Leal & Borges, 2016).

Nagib and Silva (2020) explain that the teaching technique the teacher uses can help the student in the development of different competencies. Hence, applying teaching cases by means of different teaching techniques allows you to develop different behaviors and competencies in the teaching-learning process. In this sense, the VG-OG teaching technique is associated with self-control, social interaction, creativity, and oral expression (Oliveira & Campos, 2017). The Simulated Jury teaching technique permits the confrontation of viewpoints and different positions in an intellectual dispute (Moura, Pereira, & Souza, 2017). The PBL teaching technique develops knowledge, skills, and attitudes in solving real problems that arise in business practice (Soares, Botinha, Casa Nova, Soares & Bulaon, 2017). Table 2 shows the synthesis of skills and competencies that can be developed through the application of these teaching techniques, in accordance with the domains of BT proposed by Bloom *et al.* (1974).

Table 2

Teaching techniques versus skills and competencies

Technique	Definition	Skills and competencies	BT	Source
VG-OG	It is a teaching technique in which the classroom is divided into two groups: one verbalization group (VG) and one observation group (OG). The VG has to discuss the theme the teacher proposed, while the OG has to observe whether the concepts are being discussed appropriately.	Self-control	AF	Masetto (2003); Nagib (2018); Oliveira and Campos (2017).
		Creativity	AF	
		Social interaction	AF	
		Leadership	PS	
		Oratory and verbal communication	CO	
		Critical thinking	CO	
Simulated Jury	Is considered as a formal discussion in which two or more opinions on a theme that tends to be considered polemic are opposed and both sides try to convince a third party.	Respect for other people's opinions	AF	Moura <i>et al.</i> (2017); Thiesen, Giovanaz, Rieger and Bernhard. (2017).
		Mental agility	PS	
		Argumentation	CO	
		Critical thinking	CO	
PBL	It is a discussion-centered method focused on problem solving. Drives the individual towards deeper and more significant knowledge, permitting courage and responsibility for the student's individual learning.	Teamwork	CO	Coetzee and Schmuliam (2013); Jackling, De Lange and Natoli (2013); Heinz <i>et al.</i> (2019); Soares <i>et al.</i> (2017).
		Intellectual and cultural curiosity	AF	
		Interdisciplinarity	CO	
		Critical thinking	CO	
		Duty of one's own learning	AF	
		Solving practical problems	CO	
Decision making	CO			
		Teamwork	CO	

Obs.: BT: Bloom's taxonomy; AF: affective domain; CO: cognitive domain; PS: psychomotor domain.

Source: elaborated by the authors.

Given the differences among the teaching methods (Table 2), in the selection of active methods for use in the teaching-learning process, the teacher should analyze the subject/content's teaching objectives, understand the profile of the group (Marion, Garcia & Cordeiro, 2009), as well as the amount of time available to apply the techniques, the complexity of the elements to be considered in all activities and feature of the learning environment that should offer freedom, decisions, and judgments of solutions (Smith *et al.*, 2017). Active methods are resources that, when aligned with the pedagogical objectives, can contribute to skills and competency building (Nagib & Silva, 2020).

Thus, the active methods can help in achieving the objectives proposed by FBT and established in the cognitive and affective domains of BT as, as Costa *et al.* (2018) and Costa *et al.* (2020) demonstrated, in the use of these strategies in the classroom, students became more active in the teaching-learning process. In addition, these strategies make it possible to relate theory with practical examples, reconcile the themes learned in teaching cases with other disciplines, seek information and develop affective and cognitive skills in the students' perception. These authors specifically found that the application of active methods helped to build the skills and competencies in the cognitive domain of BT, and not only in the first three categories (knowledge, comprehension, and application), thus suggesting that students can develop the abilities and skills of the intermediate and advanced stages of FBT, even when taking subjects in the initial stages, and, vice-versa, beyond those linked to the affective domain. Hence, the objectives of FBT were achieved, using active methods. Given this context, the first research hypothesis is:

- **H₁: The application of the teaching techniques VG-OG, Simulated Jury and PBL in the solution of teaching cases develops distinct skills and competencies, according to the students' perception.**

Costa *et al.* (2018) identified the students' perception of the utility of the PBL teaching technique applied in the discussion of the teaching case *Open Safari* in a stage-three FBT subject. Costa *et al.* (2020) observed the students' perception when the role-play technique was applied in first-stage FBT skills and competency building. These authors identified that both techniques develop skills and competencies required by FBT and that these are aligned with the cognitive and affective domains of BT. Nevertheless, the skills and competencies built were different when using PBL and role-play, which leads to the second research hypothesis:

- **H2: the application of the teaching techniques VG-OG, Simulated Jury and PBL in the resolution of teaching cases develops the FBT stages differently.**

3. Methodological Procedures

The research is descriptive, in view of the objective, the data collection and, in relation to the technical procedures, these are classified as a qualitative-quantitative approach. This section is divided into two parts: in the first, it is described how the techniques were applied in the classroom, as well as the theme of the teaching cases. In the second sub-section, the content of the questionnaire and how it was applied are illustrated. In addition, the method used in the implementation of the focus group is presented.

3.1 Application of teaching techniques: VG-OG, simulated jury and PBL

The teachers of the subject Introductory Accounting II intentionally chose the teaching techniques VG-OG, Simulated Jury and PBL in accordance with the learning objective set for the classes of each content taught. These techniques were used in the application of teaching cases prepared for three contents contained in the program of this discipline, respectively: i) Fixed Funds and Bank Reconciliation; ii) Trade Bills in Portfolio, Simple collection and Factoring of Trade Bills; and iii) Provisions, Contingent Liabilities and Assets. A brief description of the content of these cases is presented in Table 3.

Table 3

Topic addressed in teaching cases

Theme	Case
Fixed Funds and Bank Reconciliation	The case presents real data on a union that goes through bank reconciliation, cash management and internal control problems. In the role of consultants, the students need to propose solutions to the problems listed in the case.
Provisions and Contingent Liabilities	The focus of the case is to reflect the criteria for the identification, measurement, and recognition of contingent provisions and liabilities based on the context of the rupture of the Fundão and Brumadinho dams.
Trade Bills in Portfolio, Simple Collection and Factoring	The purpose of the case is to take students into a context of analyzing transactions involving factoring loans and/or promissory notes, including the assessment of the risks and financial benefits involved in the transactions.

Source: Elaborated by the authors.

The application of each teaching case happened in three distinct moments: pre-class, class and post-class. As a pre-class, students had to follow the instructions and perform the activities available on the Moodle platform: reading the references indicated, quizzes and solving the teaching cases. The teaching techniques VG-OG, Simulated Jury and PBL were applied during the class. In Table 4, the application process of these techniques is summarized.

Table 4

Application process of the teaching techniques in the classroom

Theme	Application form of the technique to solve the teaching case
Fixed Funds and Bank Reconciliation	VG-OG: six pairs were drafted to present the bank reconciliation. Subsequently, the students were divided into verbalizing and observing groups for the debate on cash management and internal control. After this stage, the roles of the groups were reversed. At the end, the tutors complemented to end the technique.
Provisions and Contingent Liabilities	Simulated Jury: students were divided into: prosecution group, defense group, jury and judge. Each group had a limited time to present its arguments. After the debates between the groups, the teacher closed off, pointing out the main points on the topic.
Trade Bills in Portfolio, Simple Collection and Factoring	PBL: the application of the technique was segregated in seven steps and developed in two tutorial sessions. In the first session, the students were separated into groups and were instructed to choose a leader and a secretary to advise the group, and also performed steps one to five: i) reading the problem-situation; ii) identification of problems; iii) discussing background knowledge; iv) synthesis of previous steps, and: v) identification of subjects/themes to be studied. Then, the tutors discussed each stage with the students and requested the delivery of the reports prepared in group. As a post-class, the students were instructed to submit a new report with all the steps redone, and individually perform step six: search for information. In the second tutorial session, the previous groups were maintained. The last stage of the PBL – stage seven: integration of information and problem solving, proposed that the students prepare a final report with useful information for the solution of the identified problem-situation. To discuss the teaching case, the following activities were randomly distributed to the groups: presentation; elaboration of questions; answering of questions; and complementing answers. Finally, the tutors closed off the technique and asked the groups to provide for the final report.

Source: elaborated by the authors.

After the application of teaching techniques during the class (Table 4), in the post-class, the students continued the study of each theme with the proposed activities, aiming to consolidate and verify the learning.

3.2 Applying the questionnaire and conducting the Focus Group

To identify the students' perception of skills and competency building in the application of the teaching techniques, a questionnaire based on Weil, Oyelere, Yeoh and Firer (2001) and adapted by Costa *et al.* (2018) was used to establish a relationship with the cognitive and affective domains of BT. This instrument comprises four parts: i) information to characterize the respondent: age, regular course period, gender, occupation and whether they worked in the accounting area; ii) evaluation of techniques, containing 37 statements for students to score (from one to ten) regarding the likely acquisition of skills; iii) four statements for students to score (from one to ten) regarding: benefits, usefulness and ways of applying techniques; and iv) open questions – space for students to freely express their opinions.

The subject Introductory Accounting II was taught in the second academic semester of 2019, the first year of an undergraduate degree in Accountancy. Out of 48 enrolled students, 37 took the discipline for the first time. Thirty-one students participated in the application of the VG-OG technique; 23 students in the Simulated Jury and 33 students in PBL, adding up 87 answers. The students voluntarily answered the evaluation questionnaires at the end of the application of each teaching technique. The respondents' age range varied between 18 and 40 years, with a mean age of 20 years, being 51% male. Regarding the exercise of the accounting profession, 71% of the students reported not working and 12% of those who worked said they worked in the accounting area.

The answers the students provided were analyzed with the help of descriptive statistics. Subsequently, the *Shapiro-Francia* univariate normality test was used to evaluate the applicability of parametric and non-parametric tests to the respective data (Fávero, Belfiore, Silva, & Chan, 2009). For the outputs that followed a normal distribution, Student's t-test was used for comparison of means; for the others, the Kruskal-Wallis test and Wilcoxon test were used for medians. These procedures were adopted to verify whether the skills and competencies differed in relation to the teaching techniques used, the FBT stages in the light of BT, as well as to evaluate the students' general perception of the active methods.

To triangulate the analysis of the data in this study, a focus group was organized in which 12 students participated. The focus group took approximately two hours and was held at the university premises. The students agreed to participate voluntarily, and the criteria for choosing them balanced characteristics such as gender (five men and six women) and performance of the discipline (lower and higher grades).

The focus group was led by a moderator and three observers. Like in the study by Costa *et al.* (2020), the topics present in the discussion script were: i) development of skills and competencies in each stage of the work (case and application techniques); ii) motivation; iii) individual or group study and research; iv) practical business vision; v) teamwork; (vi) difficulties and limitations; and vii) performance in the discipline. If the debate did not develop from the main question of each of these topics, the moderator had alternative questions to seek the students' participation.

Before starting the focus group, the moderator clarified to the participants that the grades of the Introductory Accounting II discipline had been closed, although not yet published. The focus group was recorded with audiovisual resources (with the students' formal authorization), and fully transcribed manually by the observers. As performed in the study by Cunha, Beuren, & Guerreiro (2014), the answers and questions of the discussion script served as reference for the content analysis. To quote the participants' conversations in the focus group, their names were replaced by A1, A2 (...) A12.

4. Analysis of Results

Table 5 shows a general average for the three techniques and the students' perception for each of them. First, the general average of the students' perception was analyzed (Table 5, "General" column). Based on the ranking elaborated based on the general average of the grades obtained in the questionnaire, the students' perception shows that the teaching cases applied with the teaching techniques VG-OG, Simulated Jury and PBL enabled the development of the 37 skills and competencies related to the cognitive and affective domains of BT (general average between 7.56 and 8.88), corroborating Coetzee and Schmuliam (2013), considering that the change in the traditional teaching style would entail the students' skills and competency building.

The competency “practical-view of the decision process” ranked 1st (mean 8.88, Table 5). This competency also ranked 1st in the study by Costa *et al.* (2020), and 2nd in the study by Costa *et al.* (2018). This result suggests that the use of active methods can help students visualize the business environment and the decision-making process, which is relevant for professional training as recommended by AICPA (2020).

The 2nd place in the ranking is “responsibility for one’s own learning”, in this study and in that of Costa *et al.* (2020), and 7th in the study by Costa *et al.* (2018). In the focus group, student A12 commented on this competency as follows: “*we had to seek information, seek knowledge, before they gave it to us*”. For student A4, this competency was more developed through the PBL technique: “*the PBL instigated more the aspect of seeking, pursuing knowledge, stimulating research (...), in the PBL we had to seek everything first*”. Because this competence belongs to the affective domain of BT, these findings show that the students were affectively involved with the active methods applied, and that this competence can help the development of the students’ cognitive level, according to Bloom *et al.* (1974) and Costa *et al.* (2020).

The “view of a company’s functioning” ranked 3rd, against the 5th and 16th place in the study by Costa *et al.* (2020) and Costa *et al.* (2018), respectively (Table 5). Considering the development of this competency and the competency of “a practical view of the decision-making process” in the 1st position of the ranking, it is verified that the cases applied with the teaching techniques VG-OG, Simulated Jury and PBL generally caused the students to glimpse more the business environment than with the role-play technique employed by Costa *et al.* (2020) and the teaching case *OpenSafari* applied with the PBL technique in the research by Costa *et al.* (2018). Therefore, the active methods applied in this study mainly stimulated the development of business-related competencies, as recommended by AICPA (2020), leading students to understand factors related to the internal and external environment of companies (AICPA, 2020; Ott, Cunha, Júnior & Luca, 2011).

In this sense, in the focus group, student A8 said that the active methods applied enabled their maturation because of the contact with practice: “*I think it helped me in the question of maturing, because we study the subject in the classroom and that’s it. Then, when you get out of this ‘box’, sometimes it gets a little confused, but it also helps you see the reality and the problems it has, mistakes that the accountants should not make; we learn from their mistakes so as not to repeat them*”. Student A1 also shared this opinion: “*in school, we get very stuck in theory, and when we have contact with these cases, I think we go more towards reality*”.

Nevertheless, compared to the studies by Costa *et al.* (2020) and Costa *et al.* (2018), the active methods applied in this research resulted in higher positions in the ranking regarding the following skills and competencies: “technical knowledge” (4th position *versus* 11th in both studies), “problem identification” (6th position *versus* 34th and 22nd), “evaluating ideas” (13th position *versus* 16th and 15th), “synthesis” (15th position *versus* 29th and 25th) and “organization of information” (19th *versus* 23rd and 20th). Therefore, the students perceived these skills and competencies more in the application of cases with the teaching techniques VG-OG, Simulated Jury and PBL, suggesting that H_1 cannot be rejected.

Table 5

Ranking of skills and competencies

R	Skills and Competencies	BT	General		VG-OG				Simulated Jury				PBL			
			\bar{x}	M	\bar{x}	M	P>t	P>z	\bar{x}	M	P>t	P>z	\bar{x}	M	P>t	P>z
1	Practical view of the decision-making process	SYNT	8.88	9	8.77	9	0.58		9.00	10		0.77	8.91	9		0.83
2	Responsibility for one's own learning	AFFECT	8.83	9	8.63	9		0.37	8.70	9		0.56	9.09	10		0.16
3	View of a company's functioning	SYNT	8.80	9	8.79	9		0.94	8.78	9		0.85	8.82	9		0.92
4	Technical knowledge	COMP	8.76	9	8.83	9		0.91	8.70	9		0.88	8.73	9		0.98
5	Considering several solutions	EVAL	8.70	9	8.93	10		0.36	8.39	9		0.25	8.70	9		0.89
6	Identifying problems	KNOW	8.61	9	8.77	9		0.64	8.71	9		0.81	8.39	9	0.22	
7	Relating theory and practice	SYNT	8.61	9	9.00	10		0.05*	8.35	8		0.25	8.42	9		0.38
8	Interpretation	ANAL	8.53	9	8.94	9		0.05*	8.39	8		0.44	8.24	8		0.21
9	Considering different perspectives and users	SYNT	8.53	9	8.65	9		0.73	8.70	9		0.42	8.30	8		0.29
10	Thinking conceptually	ANAL	8.51	9	8.55	8		0.92	8.48	9		0.78	8.48	9	0.92	
11	Integrating various subjects of the discipline	COMP	8.49	9	8.61	9		0.45	8.13	8		0.08	8.64	9		0.40
12	Applying knowledge	SYNT	8.49	9	8.74	9		0.28	8.57	9		0.89	8.21	8		0.23
13	Evaluating ideas	ANAL	8.48	9	8.58	9	0.71		8.91	9		0.58	8.09	9		0.12
14	Critical thinking	ANAL	8.42	8	8.66	9	0.32		8.57	8		0.91	8.09	8		0.05*
15	Synthesis	COMP	8.41	8	8.65	9		0.39	8.30	8		0.56	8.27	8		0.75
16	Analysis	ANAL	8.41	9	8.44	9	0.92		8.45	9		0.85	8.36	9	0.83	
17	Identification of relevant data	KNOW	8.38	8	8.23	8	0.55		8.61	9		0.53	8.36	9	0.95	
18	Summarizing information	COMP	8.35	9	8.66	9		0.19	8.39	9		0.91	8.03	8		0.23
19	Organizing information	KNOW	8.34	8	8.42	9	0.77		8.65	8		0.51	8.06	8	0.23	
20	Studying the contents of the discipline	AFFECT	8.31	9	8.39	9	0.80		8.50	9		0.73	8.12	9		0.86
21	Interpreting the financial statements	ANAL	8.26	9	8.08	8	0.53		9.27	10		0.00*	7.76	8	0.06	
22	Consolidation of prior knowledge	COMP	8.25	9	8.87	10		0.02*	8.04	8		0.30	7.82	8		0.17

R	Skills and Competencies	BT	General		VG-OG				Simulated Jury				PBL			
			\bar{x}	M	\bar{x}	M	P>t	P>z	\bar{x}	M	P>t	P>z	\bar{x}	M	P>t	P>z
23	Problem solving	APPLIC	8.16	8	8.61	9		0.08	7.87	8		0.19	7.94	8		0.57
24	Distinguishing facts from opinions	APPLIC	8.15	8	8.06	8		0.79	8.70	9		0.16	7.85	8		0.31
25	Active participation	AFFECT	8.12	8	8.1	8		0.95	8.30	8		0.82	8.03	8		0.85
26	Research skills	AFFECT	8.10	8	8.31	9		0.47	8.41	9		0.46	7.70	8		0.17
27	Dealing with uncertainty and ambiguity	EVAL	8.09	8	8.26	8		0.87	7.87	8		0.54	8.09	9		1.00
28	Judgment	APPLIC	8.09	8	8.11	8		0.93	8.65	9		0.11	7.67	8		0.13
29	Relevant questions	AFFECT	8.07	8	8.08	9		0.86	8.39	9		0.26	7.85	8		0.23
30	Decision making using incomplete information	EVAL	8.06	9	7.90	8		0.63	8.30	9		0.53	8.03	9		0.93
31	Teamwork	KNOW	8.02	8	7.38	8		0.04*	8.35	8		0.73	8.36	9		0.23
32	Persuasion	KNOW	7.98	8	7.94	9		0.89	8.52	9		0.20	7.63	8		0.09
33	Ability to listen	KNOW	7.95	8	7.85	8		0.66	8.43	8		0.32	7.70	8		0.35
34	Motivation	AFFECT	7.85	9	7.68	9		0.64	8.30	9		0.56	7.70	9		0.66
35	Oratory and verbal communication	KNOW	7.69	8	7.5	8		0.59	8.36	9		0.13	7.41	8		0.40
36	Creativity	AFFECT	7.61	8	7.34	8		0.39	8.45	9		0.04*	7.30	7		0.07
37	Written communication	KNOW	7.56	8	7.58	8		0.95	7.61	8		0.87	7.52	8		0.72

Obs.: R: ranking of the skills and competencies selected by the student in agreement with the overall average; BT: the Taxonomy of Bloom; AFFECT: affective domain; APPLIC: application; ANAL: analysis; EVAL: evaluation; COMP:: comprehension; KNOW: knowledge; SYNT: synthesis; \bar{x} : mean; M: median; P>t: p-value of student's t-test between the mean of skills and competencies in each teaching technique and others; P>z: the p-value of the Kruskal-Wallis test between the mean of skills and competencies in each teaching technique and others; N: no. of observations; *: variables that are statistically distinct.

Source: elaborated by the authors.

Specifically, considering the case applied with the teaching technique VG-OG, the students perceived greater development of the skills and competencies of “relating theory and practice”, “interpretation” and “consolidation of background knowledge”. Regarding the skill of “relating theory and practice”, some students emphasized, in the focus group, that the applied method made it possible to visualize accounting in practice: “it seemed closer to reality” (A9). “I think we felt the profession more” (A7). Associated with the skills of “interpretation” and “consolidation of background knowledge”, student A11 said: “the VG-OG was what made us work more, because we struggled to understand bank reconciliation, the question was asked in the group what a cashed cheque is, what this is, what that is”. Student A6 concluded: “all the steps of VG-OG, from solving the union case to listening, talking and knowing how to debate, VG-OG was what made us feel like an accountant” (A6). In contrast to the other active methods applied, the skill of “teamwork” presented less development in the case applied using the teaching technique VG-OG (mean of 7.38). This finding corroborates the skills and competencies listed in Table 2, as their development is not covered in the literature with the application of the VG-OG teaching technique.

Regarding the case applied with the Simulated Jury teaching technique, as observed in Table 5, the students perceived greater development of the ability to “interpret financial statements” and the competency of “creativity”. In function of referring to situations that have occurred in the Brazilian context regarding the identification, measurement, and recognition of provisions, contingent liabilities and assets, the students may have chosen the ability to “interpret financial statements” as an alternative to the argumentation skills expected in Table 2, as found in some of the statements of the students in the focus group: *“in the Jury, you need to argue, even if you do not agree with what is going on”* (A2). *“The Jury activity brings much more argumentation than PBL”* (A12). *“I agree with A12, I think the jury and VG-OG instigate the argumentation part more”* (A4).

Regarding the development of the competency of “creativity” with the Simulated Jury technique, the students may have glimpsed this because it relates to the ability of argumentation, as students A1 and A4 pointed out in the focus group: *“at the moment when we are in a jury, we have to be able to create an argument very quickly”* (A1); *“I think that also in the jury maybe we lose a little of the focus, because I remember the times when a (...) had to reach out to us and talk: do not forget that the focus is provision! You are so incited to want to argue about that that you actually forget (...)”* (A4). Although student A4 commented on the loss of focus of the discussion during the prosecution and defense with this technique, her statement indicates that the students sought to be creative. This finding demonstrates that the teacher can consider this technique when the educational objective is the development of creativity, in addition to composing the set of skills and competencies indicated by the literature (Table 2).

Regarding the case applied with the teaching technique PBL, as shown in Table 5, the ability of “critical thinking” was less developed with this technique compared to the others, according to the students’ perception, despite the mean score of 8.09. The development of this skills confirms Soares *et al.* (2017), in the sense of using the PBL teaching technique to direct the student to a deeper knowledge, in addition to favoring the development of other skills and competencies (Table 2). In the focus group, the students stressed that the technique allowed them to interconnect subjects from other disciplines or exercise research skills.

Thus, the skills and competencies developed in each case applied with the teaching techniques do not permit rejecting H1, suggesting that the application of the teaching techniques VG-OG, Simulated Jury and PBL in the resolution of teaching cases, develops distinct skills and competencies, according to the students’ perception. Based on the above, the 38 skills and competencies in the ranking were developed according to the students, mainly as the average scores were superior to seven. In addition, among the teaching techniques applied, four were more perceived with VG-OG, two with the Simulated Jury and one with PBL.

Table 6 shows the descriptive statistics for the BT domains, as well as the hypothesis tests performed to assess whether the skills and competencies the students indicated differ between the FBT stages.

Table 6

Comparison between the investigated BT domains and the FBT stages

Panel A – General									
BT	N	\bar{x}	s	Min	M	Max	FBT stages		
Affective Domain	83	8.16	1.36	4	8.29	10	E1	E2	E3
Knowledge	82	8.08	1.3	2.63	8.19	10	\bar{x} : 8.24 M: 8.32	\bar{x} : 8.29 M: 8.35 P>z:0.00* ^a	\bar{x} : 8.35 M: 8.37 P>z:0.00* ^b
Comprehension	86	8.45	1.13	3.4	8.4	10			
Application	87	8.13	1.46	1.33	8.33	10			
Analysis	84	8.42	1.2	3	8.5	10			
Synthesis	86	8.66	1.02	5.6	8.7	10			
Evaluation	86	8.29	1.37	3.33	8.33	10			
Evaluation	86	8.29	1.37	3.33	8.33	10			
Panel B – VG-OG									
BT	N	\bar{x}	s	Min	M	Max	FBT stages		
Affective Domain	30	8.2	1.43	5.43	8.71	10	E1	E2	E3
Knowledge	30	8	1.3	5.13	8.31	10	\bar{x} : 8.36 M: 8.48	\bar{x} : 8.42 M: 8.63 P>z:0.01* ^a	\bar{x} : 8.48 M: 8.62 P>z: 0.03* ^b
Comprehension	30	8.73	1.07	6.2	9.05	10			
Application	31	8.26	1.4	4	8.33	10			
Analysis	31	8.54	1.26	4.67	9	10			
Synthesis	31	8.79	1	7	8.8	10			
Evaluation	30	8.4	1.3	4.33	8.33	10			
Evaluation	30	8.4	1.3	4.33	8.33	10			
Panel C – Simulated Jury									
BT	N	\bar{x}	s	Min	M	Max	FBT stages		
Affective Domain	20	8.41	1.07	5.57	8.5	10	E1	E2	E3
Knowledge	21	8.4	0.85	7	8.75	10	\bar{x} : 8.35 M: 8.33	\bar{x} : 8.41 M: 8.34 P>z: 0.01* ^a	\bar{x} : 8.39 M: 8.35 P>z: 0.32 ^b
Comprehension	23	8.31	0.79	6.8	8.2	10			
Application	23	8.41	0.86	7.33	8.33	10			
Analysis	20	8.65	0.63	7.5	8.5	10			
Synthesis	22	8.68	1	6.4	8.7	10			
Evaluation	23	8.19	1.18	5.67	8.33	10			
Evaluation	23	8.19	1.18	5.67	8.33	10			
Panel D – PBL									
BT	N	\bar{x}	s	Min	M	Max	FBT stages		
Affective Domain	33	7.97	1.46	4	8.14	10	E1	E2	E3
Knowledge	31	7.95	1.52	2.63	8	10	\bar{x} : 8.04 M: 8.02	\bar{x} : 8.08 M: 8.14 P>z:0.02* ^a	\bar{x} : 8.21 M: 8.27 P>z: 0.00* ^b
Comprehension	33	8.3	1.34	3.4	8.4	10			
Application	33	7.82	1.78	1.33	7.67	10			
Analysis	33	8.17	1.38	3	8.33	10			
Synthesis	33	8.53	1.06	5.6	8.6	10			
Evaluation	33	8.27	1.58	3.33	8.67	10			
Evaluation	33	8.27	1.58	3.33	8.67	10			

Note: BT: Bloom taxonomy; N: No. of observations; \bar{x} : mean; s: standard deviation; Min: minimum value; M: median; Max: maximum value; E1, E2 and E3: mean of the categories of the cognitive domain of BT that make up stages 1, 2 and 3 of FBT (according to Table 1); P>z: p-value of the Wilcoxon Test between: 1) a: E1 and E2; 2) b: E1 and E3; *: statistically distinct variables.

Source: elaborated by the authors.

The means registered in Table 6 (all superior to 7.82) indicate that, in the students' perception, the skills and competencies in the affective and cognitive domains of BT, as well as Stages 1, 2 and 3 of FBT, were developed through the application of the VG-OG, Simulated Jury and PBL techniques. The Wilcoxon tests ($P > z$) show that, in general, stage 1 developed differently from stages 2 (mean 8.29, p-value 0.00) and 3 (mean 8.35, p-value 0.00). The same occurred in the application of VG-OG and PBL. VG-OG and PBL specifically developed more stage-three skills and competencies, followed by stages 2 and 1, respectively. On the other hand, the Jury technique developed more stage-two skills and competencies, followed by stages 1 and 3 in a tie for the second place.

These results corroborate the findings by Costa *et al.* (2018) and Costa *et al.* (2020), as the active methods applied in this research permitted the development of competencies listed in the simple categories to more complex categories of the cognitive domain of BT, which, by association, correspond to FBT stages 1, 2 and 3, reinforcing the argument that skills and competencies of the intermediate and advanced stage can also be developed in the initial stage of FBT. Based on these findings, H2) cannot be rejected, suggesting that the application of the teaching techniques VG-OG, Simulated Jury and PBL in the resolution of teaching cases develops the FBT stages differently.

Table 7 shows the outputs of the hypothesis tests regarding the students' general perception of the applied active methods.

Table 7

General perception of the applied active methods

Attributes	General		VG-OG			Simulated Jury			PBL		
	\bar{x}	M	\bar{x}	M	P>t	\bar{x}	M	P>t	\bar{x}	M	P>t
Usefulness of the case for teaching	9.24	10	9.24	10	0.12	9.30	10	0.14	8.36	8	0.00*
Usefulness of teaching technique	8.92	9	8.92	9	0.73	9.43	10	0.02*	8.36	9	0.02*
Improvement in the teaching-learning process	8.61	10	8.61	10	0.91	9.22	10	0.07	8.27	9	0.13
Fitness to the subject introductory accounting II	9.61	10	9.61	10	0.05*	9.73	10	0.05*	8.33	9	0.00*

Obs.: \bar{x} : mean; M: median; P>t: P-value of *student's t-Test* between each attribute investigated in the applied methods and the others; *: statistically distinct variables.

Source: elaborated by the authors.

The results on the attributes investigated in Table 7 show that, overall, the students perceived, the usefulness and fitness of the cases applied with the teaching techniques VG-OG, Simulated Jury and PBL for the subject introductory accounting II, thus improving the teaching-learning process. This perception of the students confirms the development of skills and competencies based on the alignment between the pedagogical objectives established by the teacher and the use of active methods, as suggested in Nagib and Silva (2020).

Among the teaching techniques applied, the students perceived less usefulness of both the case and the teaching technique PBL applied, although this method enabled the development of all the skills and competencies investigated (Table 5). In the focus group, the student's statements help to understand the reasons for these results. According to student A7, one of the main reasons was the choice of content for the case: *"the only thing I have to suggest is about the PBL, not to apply it again with trade bills, because I think it is a matter with many details"*. For students A2 and A11, respectively, the reason was the absence of elements to carry out the accounting treatment: *"I found it cool, but the company is acquiring a lot of trade bills, so how could it solve this? We could show it, for example, in the form of entries"* (A2). *"We ended up fleeing and did not focus on promissory notes and trade bills, besides not having contact with the many details"* (A11). Despite these observations, the expressiveness of the grade assigned to the teaching technique PBL (average between 8.27 and 8.36) highlights its importance for the students' skills and competency building in the discipline. As the most useful teaching technique, the students chose the Simulated Jury, which, as already explained in this study, may have been the result of the association with the ability to "interpret financial statements" and the competency of "creativity", found to be the most developed through the application of this active method (Table 5).

That said, the results in Table 7 show that the active methods used in this research influences the teaching and learning process in the discipline, allowing the students to develop the 37 skills listed in the ranking in Table 5, in addition to the cognitive and affective domains, and the achievement of stages 1, 2 and 3 of FBT, both of which are presented in Table 6.

5. Final Considerations

The objective of this research was to identify which skills and competencies are developed in the resolution of teaching cases that apply different teaching techniques. This objective was achieved in the light of BT and FBT, based on the application of a questionnaire at the end of the application of the teaching techniques VG-OG, simulated jury and PBL, and supplemented with a focus group at the end of the subject Introductory Accounting II.

According to the students, the teaching cases applied with the three teaching techniques employed made it possible to develop all 37 skills and competencies investigated in the questionnaire. These active methods allowed the students to visualize the business environment and decision-making process. In addition, the students perceived the development of their autonomy and responsibility for their own learning, which suggests that the methods used made the students engage affectively with the teaching-learning process.

Comparing the results of the students' perception for the development of skills and competencies in the use of the three techniques in the application of the teaching cases, through average and median tests, the findings showed that:

- the VG-OG technique allowed greater development of the skills and competences of "relating theory and practice", "interpretation" and "consolidation of background knowledge". On the other hand, the competency "teamwork" reached a lower average in the students' perception;
- when using the Simulated Hury technique, the greatest development was found for the skills of "interpretation of financial statements" and "creativity";
- the PBL technique differed from the others only in terms of the competency of "critical thinking", indicated by the students as less developed (despite the mean score of 8.09).

Based on the results found in this research, the application of the teaching techniques VG-OG, Simulated Jury, and PBL in the solution of teaching cases develops distinct skills and competencies, according to the students' perception. Thus, it is inferred that the choice of the teaching technique in the application of cases should be aligned with the educational objectives established by the teacher.

In addition, the application of the teaching techniques developed skills and competencies from all stages of FBT and, consequently, from the cognitive and affective domains of BT, corroborating the studies by Costa *et al.* (2018) and Costa *et al.* (2020). Thus, the applied active methods are effective for the improvement of skills and competencies necessary for the understanding and consistent application of IFRS. The VG-OG and PBL techniques developed the FBT stages in the following order: 3, 2 and 1. When the Simulated Jury was applied, stage 2 comes first, followed by stages 1 and 3 in a tie in the second place. These results suggest that the Iasb could include the study of appropriate active methods for the application of teaching cases in each of the FBT stages on its agenda, as the results of the research highlight the relevance of the method used in the application of the teaching cases.

In addition, affective issues demonstrated by the students, such as interest, responsibility for learning, creativity and active participation contribute to cognitive development, leading to the finding that the cognitive and affective domains interact mutually, in line with the results found by Costa *et al.* (2020)

As contributions of this study, the importance of teaching techniques for the development of skills and competencies in the solution of teaching cases is highlighted, demonstrating based on the research findings that educational learning objectives can be optimized with the help of active methods. Therefore, these results can be useful to teachers, HEIs, company managers and regulators that are involved in the teaching-learning process of IFRS, so that the development of skills and competencies required for the training of accounting professionals is encouraged. Specifically, the Iasb can go beyond the development of teaching cases in FBT, reflecting on which methods to use in the application of these materials.

One limitation of the study may be related to the impossibility of separating the skills and competencies developed exclusively through the solution of teaching cases and with the teaching techniques VG-OG, Simulated Jury and PBL. In this sense, as a suggestion for future research, it is suggested to evaluate the segregated development and set of skills and competencies, using the active methods applied in this research, as well as the interaction with other disciplines.

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