The Impacts of Adopting Active Methods in the Performance of Accounting Students at a Higher Education Institution in the State of Minas Gerais

Abstract

The scientific community has discussed a reformulation in education in order to meet new goals in the learning processes. It is a challenge for universities to modify their social role by adding new teaching methods in their undergraduate programs to fit into this current context. The motivation of this study is to verify if the adoption of active teaching methods in the Accounting course at a private Higher Education Institution located in the region of the Zona da Mata, State of Minas Gerais, contributed to the performance of its students. In this research, performance is characterized at the improvement in students' grades. The active methods, in response to this educational reformulation, are concerned with preparing a critical student, capable of acting in the contemporary market, subject to constant changes. The study period covers the years between 2011 and 2014. We sought to answer the following question: Is there an impact on the performance of accounting students after the implementation of active methods at the HEI investigated? To test the proposed hypothesis, we used Student's T test and regression methods. The analyzed data were collected from documents provided by the institution's employees. The results show that there is evidence that the use of active methods in the accounting course contributed to the students' performance in the period studied.

Key words: Active methods. Accounting course. Student performance.

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1. Introduction

The need for an educational reformulation in the areas of higher education has been discussed internationally with the purpose of defining new objectives for the teaching-learning system, and this discussion has been expanding scientific research on the subject (Lapina & Slaidins, 2014). The challenge of 21st century educational institutions is to meet new social needs (Miter, Siqueira-Batista, Girardi-de-Mendonça, Morais-Pinto, Meirelles, Pinto-Porto, Moreira & Hoffmann 2008).

For Mitre et. al. (2008), these needs are due to the environment we are currently living in: constant changes, new and advanced technologies and perception of a world with dynamic relationships. Thus, the university should rebuild its role in order to provide broad knowledge and social development (Mitre et. al., 2008; Goñi Zabala, 2006).

Thus, in the academy, publications on new teaching-learning approaches are increasing to meet this new scenario, highlighting the active methods in Brazil. Studies carried out with the use of active methods in Accounting courses, involving some disciplines such as Introductory Accounting I, have been showing advantages in such methods, such as improved communication, teamwork and teacher satisfaction (Soares, Araújo & Leal, 2008; Heagy & Lehmann, 2005)

Nevertheless, there is a need for more studies on this topic in the literature, involving more disciplines and more than one active teaching-learning method (Stanley & Marsden, 2012). For Stanley and Marsden (2012), Accounting courses need to reinforce skills future professionals need to obtain, but that seem to be forgotten.

Agreements with universities, also in Brazil, have been established to contribute to the reinforcement and innovation of higher education in the 21st century, as promoted by the Laspau - affiliated with Harvard University in the United States, with Science, Technology, Humanity, Engineering and Mathematics (STHEM Brazil) (Sthem, 2015). It is highlighted that Accounting courses deserve attention for the following reasons: their expansion in recent decades; the changes in Brazilian Accounting resulting from the adoption of international standards; (Mamede, Marques & Rogers, 2015), and the low levels of performance on national exams performed by the students (Mamede, Marques & Rogers, 2015)

Therefore, the following research question was raised: **What is the impact on the performance of Accounting students after the implementation of active methods in HEI?** In this context, the objective of this study is to verify how the adoption of these active methods has contributed to the performance of the Accounting students.

In this study, the Accounting course of a Private Higher Education Institution (HEI), located in the Zona da Mata region of Minas Gerais, has adopted active methods in its teaching programs, in addition to being a member of STHEM (Sthem, 2015). It is expected that the active methods will impact the Accounting students' performance, as they seek to enable them to make decisions and have control over the tasks that need to be performed (Mitre et al., 2008).

As to the structure of this work, we present, in this first chapter, the introductory discussion of the research, the research problem, the motivation to carry out the study and its objective. Chapter two presents the contribution of the literature necessary for the development of this research. The subthemes are: Active Teaching Methods; Higher Education and the Accounting course. Chapter three contextualizes how the process of adopting the active methods in the HEI studied took place and the agreements the HEI signed for the implementation of this new teaching-learning method.

Chapter four constructs the hypothesis of this research. The fifth considers the methodological aspects of the study to obtain the previously proposed objective, as well as data collection, data analysis variables and techniques. Chapter six deals with the analysis of the results, and chapter seven with the conclusions and final considerations of the research.

2. Theoretical Framework

2.1 Active Teaching Methods

The active teaching-learning methods are a process that includes the students actively in the environment related to their profession while still in their training, stimulating them to seek answers to various problems, and this permits putting in practice their ability to investigate and reflect already at the undergraduate level, besides proposing means that make them produce new studies (Mitre et. al., 2008).

By means of real situations or not, the students are able to solve the challenges arising from the social environment in different contexts through the problems they are confronted with (Berbel, 2011). Active learning occurs when the student engages in activities that lead him to think about what he is doing, being concerned with solving problems and developing projects, whether reading, writing, asking and discussing (Bonwell & Eison, 1991; Silberman, 1996).

For these active teaching methods to be applied in undergraduate courses, there are some structural (academic and administrative) challenges, as well as in the beliefs of teachers and students (Wall, Prado & Carraro, 2008). The individuals need to strive to think, reason, observe, reflect independently on what path will be used to provoke active learning (Barbosa & Moura, 2014).

There are teachers who support the idea that students are already actively participating in classes simply because they are involved in attending an expository class. Meyers and Jones (1993), however, state that students need to do much more than just listen to the mentor to learn effectively. They also complement Nihalani and Saha (2012), who argue that it is important for the learner to actively understand what is being done in tasks in order to better secure knowledge, stating that the disposition contributes to understanding and learning.

In the view of Barbosa and Moura (2014), the difference between a traditional teaching environment and an active learning environment is precisely the active attitude of thinking in contrast to the passive attitude, which is associated with traditional teaching methods. Nevertheless, the training of teachers with new learning methods does not happen through regulatory decrees and does not bring expected results if the vision only addresses the training curriculum (Barbosa & Moura, 2014).

It is necessary to involve students, who will be able to build knowledge in groups and solve past problems (Gwee, 2009). In Freire's (1996) view, regarding active methods, new knowledge and experiences provide the construction of knowledge that determines the capacity to learn, and also to overcome challenges and solve problems. Engagement and active participation are necessary to maximize the effectiveness of the teaching-learning process (Souza, 2000).

When using the active method, the teacher acts as a facilitator so that, working together with the student, the two obtain results (Madruga et al., 1996; Cyrilo & Toralles-Pereira, 2004, cited by Silva Souza, Iglesias, & Pazin-Filho, 2014, Mitre et al., 2008). It is noted that the person responsible for the activity is the teacher but, in the active learning method, he adapts to learning at the students' level, seeking results with them (Silva Souza, Iglesias, & Pazin-Filho, 2014).

2.2 Studies on Active Methods

A study conducted by Berbel (2011) discussed the promotion of student autonomy promoted by the active methods with the purpose of promoting the discussion between pedagogy and these methods, to present the convergent points between these areas to educators and trainers. Their findings made it possible to conclude that only the method itself is not capable of transforming education, even if it is the most promising.

In the accounting area, in the application of active methods in an Introductory Accounting I discipline, research has shown that there is no method capable of solving all teaching-learning problems, nor one that guarantees placement in the professional market (Soares et al. , 2008). However, Soares et. al. (2008) highlighted advantages resulting from the application, such as increased responsibility; stimulus for problem solving and for reading; skills to work as a team; and communicate.

Work has already been carried out in relation to the Accounting curriculum, using traditional methods of evaluation and others using Problem Based Learning (PBL), which presented more positive results and led to higher class satisfaction (Heagy & Lehmann, 2005).

For Stanley and Marsden (2012), the relevant ability to question seems forgotten in Accounting, fundamental to it, as it is to the Legal and Medical Sciences. The authors' proposal was to raise a discussion about a possible change in the education environment of the Accounting course at QUT University, where the importance of an active method to solve accounting problems was questioned. Only those students enrolled in a unit of the Accounting course were surveyed by means of a questionnaire. One of the methods applied was the clustering of students to reinforce that they should work as a team to solve problems in Accounting. These methods are unstructured and can be compared in practice (Stanley & Marsden, 2012).

Soares (2008) emphasizes that the subject is new to the accounting area, which favors new studies that can use different disciplines, or the entire semester of research for a greater number of students in Accounting. It was concluded that the objective of the study was reached and that, in the topic explored, the students absorbed knowledge, improved communication and gained confidence (Soares, 2008). Further research is needed in the field of Accounting, since the subject matter is still new in this area, with the use of more data, with a greater number of disciplines or a larger number of students to expand the discussion (Stanley & Marsden, 2012; Soares, 2008).

2.3 Construction of Research Hypothesis

Bonwell and Eison (1991) emphasize that the learning process needs to be carried out by placing the student as an active element in an engaged way, understanding that every cycle of activities will be better utilized when this individual is involved in the task rather than simply absorbing knowledge passively.

Regarding accounting education, for undergraduate studies, Stanley and Marsden (2012) argue that new active teaching methods seem to be forgotten in Accounting, and that, as well as for the Legal and Medical Sciences, it is fundamental to have new research for its findings on the active methods applied in accounting to contribute to Accounting Science.

According to Soares (2008), there is no method capable of solving all problems related to teaching-learning, nor one that guarantees placement in the professional market, but these methods can bring satisfactory results to those involved. In accordance with Lapina and Slaidins (2014), active methods proposed by pedagogical innovation, and participation competences and skills are essential in this process of educational innovation that is currently discussed.

Hence, we expect that the active teaching-learning method exert positive influence on the Accounting students' performance at the HEI studied. Therefore, the following hypotheses will be tested:

- H_0: No impact on the Accounting students' performance after the implementation of active methods at the investigated HEI.

- H_1: Impact on the Accounting students' performance after the implementation of active methods at the investigated HEI.

3. Research Method

3.1 Data Collection

To achieve the research objectives, the institutional documents of the Accounting students at the investigated HEI were used. Data like the end result, attendance, programs and timetable are filed biannually, at the end of an activity cycle. The accounting course at the investigated HEI works on an annual base. In total, students can gain 100 points per year. To pass, an average grade of at least 60% is required.

To measure the students' performance, Student's t-test and regression analyses will be used. First, the students' grade will serve as the dependent variable in the analyses. Then, the same tests are applied using the students' percentage absence.

3.2 Analysis Technique: Student's T test

A test of difference of means (Student's T test) will be applied to verify whether the adoption of the active teaching methods influences the Accounting students' performance. In the test, the grades of the students who received the traditional teaching method are compared with the grades of the students who received the active teaching methods. For the test of means, only those subjects that became active in the Accounting course between 2012 and 2014 were considered.

The students' grades when they received the active methods in the classroom were classified as treatment, while students who only received traditional classes served as controls. The T test is used when two conditions exist and one wants to know if the difference of means is significant for a sample with a smaller number of observations (Dancey & Reidy, 2006).

3.3 Analysis Technique: Regression Model

To verify if the active methods influenced the Accounting students' performance, the linear regression model was used, considering the students' grades in the years analyzed as the dependent variables. The equation was structured as follows:

$$Grade_i = \beta_0 + \beta_1 \, ofActive \, Discipline + \beta_2 \, DTime(Before \, and \, After) + \beta_3 DFail +$$
$$\beta_4 \, DTime \, (Before \, and \, After).DofActive \, Discipline + \beta_5 \, DTime \, (Before \, and \, After).DFail +$$
$$\beta_6 Dof \, Active \, Discipline.$$
$$DFail + \beta_7 \, Dof \, Active \, Discipline.DFail.DTime \, (Before \, and \, After) + \beta_8 \, Dgender + \beta_9 \, Dfies +$$
$$\beta_{10} \, Dmunigrant + \beta_{11} \, Dprouni + \beta_{12} \, Dnogrant + \beta_{13} \, Dteacherdegree + \beta_{14} \%absence + \beta_{15} \%age +$$
$$\beta_{16} \, teacherexp + \varepsilon_i$$

Where:

Grade: Dependent variable.

D of *Active Discipline*: Binary explanatory variable, assuming a group of disciplines, equal to 1 if the discipline became active in the course; 0 if not.

DTime (Before and After): Binary explanatory variable equal to:

1 if time > or equal to 2012; 0 if not – For the model 2012

1 if time > or equal to 2013; 0 if not – For the model 2013

1 if time > or equal to 2014; 0 if not – For the model 2014

DFail: Binary variable equal to 1 if the student failed; and 0 if not.

Dgender: Binary explanatory variable equal to 1 if the student is female and 0 if not.

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Dfies: Binary explanatory variable equal to 1 if the student got a student loan and 0 if not.

Dmunigrant: Binary explanatory variable equal to 1 if the student is a municipal grantee and 0 if not.

Dprouni: Binary explanatory variable equal to 1 if the student is a PROUNI grantee and 0 if not.

Dnogrant: Binary explanatory variable equal to 1 if the student gets no grants and 0 if not.

Dteacherdegree: Binary explanatory variable equal to 1 if the student holds M.Sc. or Ph.D.; and 0 if undergraduate or postgraduate.

%Absence: Percentage variable of students' absence from classes during the period under analysis.

Age: Explanatory variable of students' age in years.

Teacherexp: Variable indicating teachers' experience in years.

4. Results

4.1 Context of the Adoption Process of the Active Methods at the investigated HEI

The investigated HEI is a member of STHEM Brazil, which is committed to promoting innovative and quality higher education in Brazil (Sthem, 2015), which is an agreement with the Academic and Professional Program for the Americas (Laspau), dedicated to the mission of strengthening higher education In the Western Hemisphere. It is a nonprofit affiliate of Harvard University, founded in 1964 (Sthem, 2015).

The adoption of the active methods at the HEI occurred, according to information collected by the researcher, due to the perception that new approaches on learning are arising and by the reports of other faculties that were successful in adopting this method. Therefore, as from the year 2012, the techniques of these active teaching-learning methods have been gradually used in all undergraduate courses of the institution.

The HEI uses, to date, seven techniques (all used in the Accounting course): Case-Based Method, Team-Based Learning (TBL), PBL, Peer-Instruction, Simulated Jury, Project Methods, Audiovisual Teaching. For the Accounting course, until the year of the research, about 60% of the disciplines receive the method. Traditional classes usually take place, and the teacher can determine whether to use part of the active lesson or the whole class period, depending on the activity to be taught. Therefore, the active methods are complementary to the lectures (traditional classes + active classes).

4.2 Sample Characteristics

To assess whether the active method influenced the Accounting students' performance at the HEI, variables were surveyed that characterized these individuals. The results are demonstrated below.

Table 1:

Descriptive Statistics for Students

| | | Year | | | | | | | | Total | |
| | | 2011 | | 2012 | | 2013 | | 2014 | | | |
		N	%	N	%	n	%	N	%	n	%
Gender	Female	93	60%	80	62%	87	59%	108	63%	368	61%
	Male	63	40%	49	38%	60	41%	63	37%	235	39%
Age range	19 I-- 24 years	37	24%	57	44%	83	57%	106	62%	283	47%
	24 I-- 29 years	65	42%	49	38%	44	30%	46	27%	204	34%
	29 I-- 34 years	34	22%	17	13%	11	8%	14	8%	76	13%
	34 I-- 39 years	13	8%	5	4%	8	5%	4	2%	30	5%
	Over 39 years	7	5%	1	1%	1	1%	1	1%	10	2%
Primary Education	Private	4	3%	4	3%	6	4%	7	4%	21	3%
	Public	152	97%	125	97%	141	96%	164	96%	582	97%
Grant	Municipal grant	16	10%	15	12%	11	8%	17	10%	59	10%
	Fies	22	14%	35	27%	47	32%	37	22%	141	23%
	Prouni	19	12%	17	13%	22	15%	27	16%	85	14%
	No grant	69	44%	40	31%	47	32%	65	38%	221	37%
	Other benefits	30	19%	22	17%	20	14%	25	15%	97	16%
	Total	156	100%	129	100%	147	100%	171	100%	603	100%

Source: elaborated by the authors.

The samples contain a total of 603 students distributed between active and non-active years. When we analyze the variable "Gender", we perceive that the female gender corresponds to 61% of the total, while the male gender corresponds to 39% of the total, analyzing all the years studied. Regarding the age groups, on average, approximately 80% of the samples are composed of students aged 19 to 29 years old, and the other 20% from 29 to over 39 years.

Adoption by the Fies (student loan program) adds up to an average percentage of 23%, and the year 2013 had the highest percentage - 33% of the students joined the funding in that year (a total of 47 students). In Prouni, in the grand total, it presented 14% of student adoption, and 2014 showed the highest percentage - 16% (a total of 27 students).

The variable "Other Benefits" includes business agreements and other grants, such as kinship; Internal programs and Olympiads, in which the student has a discount percentage agreed upon with the institution. In the years analyzed, we can see that these benefits represent, on average, 16% of the total scholarships and financing analyzed.

The year 2014 had the highest number of discounts granted, comprising 25 Accounting students. It is verified that the students enrolled in the HEI came from a public school. This audience is more representative than the private school entrants, who constitute only 3% of the general total of students. In a total of 603 students, only 21 graduated from high school in the private school system. Table 2 below shows the statistics that described the characteristics of the HEI teachers in this period.

Table 2:

Descriptive Statistics for Teachers

Year	Teacher Degree	N	Experience in years (Mean)
2011	Undergraduate	5	8.20
	Post-Graduate	2	3.00
	Master's	11	8.55
	Total	18	6.00
2012	Undergraduate	2	24.00
	Post-Graduate	5	4.00
	Master's	10	8.20
	Ph.D.	1	8.00
	Total	18	3.00
2013	Undergraduate	2	11.00
	Post-Graduate	5	9.00
	Master's	12	7.56
	Ph.D.	1	8.13
	Undergraduate	20	5.00
2014	Undergraduate	2	6.00
	Post-Graduate	8	6.25
	Master's	11	7.95
	Ph.D.	1	11.00
	Undergraduate	22	6.00
Total		**42**	**7,95**

Source: elaborated by the authors.

When dealing with the characteristics of the teaching staff, the teacher's degree, the number of teachers for that year, and the average experience time in years they possess in the educational environment were identified.

In 2011, out of a total of 18 professors, more than 60% obtained the master's degree with the highest average number of years of experience in relation to the others of the same year. In the year 2012, although the master's degree again stood out (10 professors), the average experience in years was highlighted with only baccalaureate professors - two students, with twenty-four years of experience. In that year, a professional holding a Ph.D. was part of the teaching staff at the institution. In 2013, then, two more teachers were hired with a master's degree, increasing from ten to twelve. The number of graduates with an average teaching experience was maintained at 11%; Post-graduate at 9.00%; Master's and Ph.D. degrees at 7.56% and 8.13%, respectively. In 2014, the number of post-graduates rose from five in the previous year to eight, however, the experience of post-graduate teachers fell from 9.00% to 6.25%. In that year, although the number of teachers dropped (compared to the previous year), the teaching experience in years of this profile increased. The professional holding a Ph.D. was maintained, increasing his teaching experience.

4.3 On the Results of the Test of Means

Table 3 presents the means and standard deviation of the students' grades between 2011 and 2014, based on the survey of the grades registered for the disciplines that became active at the HEI.

Table 3:

Mean, Standard Deviation and T-Statistics – Grade Variables

| Year | Discipline | Group | | | | | | F test variance | T test for average |
| | | Control (before Active Method) | | | Treatment (after Active Method) | | | | |
		N (grade)	Mean	SD	N (grade)	Mean	SD	p-value	p-value
2012	Organizational Behavior	30	64.55	21.21	102	66.87	13.70	0.044	0.478
	Management Accounting	24	74.56	8.53	60	62.72	17.11	0.134	0.002***
	Controllership	46	70.66	12.62	77	65.10	7.82	0.226	0.003***
	Philosophy and Ethics	25	71.78	7.77	87	70.20	14.19	0.318	0.595
	Accounting Laboratory	46	93.63	5.92	77	77.94	16.85	0.000	0.000***
	Mathematics	40	74.40	11.48	129	74.27	15.34	0.120	0.962
	Research Method	40	67.72	22.13	121	65.02	18.21	0.197	0.444
	Total 2012	**856**	**67.99**	**17.55**	**199**	**69.47**	**15.55**	**0.168**	**0.275**
2013	Accounting for Agriculture	67	72.85	13.14	58	79.86	14.03	0.998	0.005***
	Economics	70	66.23	19.49	89	72.26	12.75	0.111	0.020*
	Basic Statistics	71	63.75	23.14	96	67.49	19.10	0.163	0.255
	Social and Labor Legislation	50	70.82	6.75	59	73.58	9.46	0.045	0.088*
	Accounting Systems	55	75.79	17.12	63	65.62	12.88	0.012	0.000***
	Accounting Theory	50	66.90	13.02	60	64.60	12.80	0.987	0.354
	Contemporary Topics in Accounting	67	69.65	11.16	56	66.77	12.92	0.795	0.187
	Advanced Accounting	97	65.29	18.31	38	58.86	18.07	0.704	0.067*
	Total 2013	**745**	**68.54**	**17.48**	**435**	**70.70**	**14.09**	**0.004**	**0.028****
2014	Statistics and Actuarial Accounts	97	70.26	18.58	42	72.55	13.72	0.338	0.473
	Public and Private Law Institutions	94	75.50	14.17	37	80.73	8.81	0.326	0.039*
	Business Administration Theory	121	63.00	17.14	52	62.29	21.27	0.420	0.815
	Organizational Sociology	97	74.44	15.66	38	80.45	10.74	0.176	0.032**
	Introductory Accounting I	123	73.17	24.80	52	66.66	19.18	0.113	0.092*
	Introductory Accounting II	112	61.39	24.24	50	57.68	18.99	0.294	0.339
	Commercial and Financial Law	95	68.23	16.02	37	72.24	10.67	0.662	0.162
	Cost Accounting	96	62.21	22.95	36	78.22	9.38	0.014	0.000***
	Total 2014	**458**	**68.07**	**16.30**	**882**	**68.72**	**17.06**	**0.314**	**0.502**

*, **, *** significant at 10%, 5% and 1%, respectively.

Source: elaborated by the authors.

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Through the results, it can be identified in a general analysis that only those disciplines that received the active methods in the year 2013 presented a significant difference of means, at the level of 5%, in the comparison of their treatment and control averages. When observing per individual discipline, we noticed that, of the 23 active subjects, we obtained twelve significant results at 1, 5 or 10% of significance. However, of these results, six subjects presented average results of lower grades when the classes were taught using active teaching methods, four of these at 1% of significance.

In this way, it is understood that students' grades, when submitted to the disciplines with active teaching methods, dropped when compared to students in traditional methods. The disciplines that had lower grades result when administered with the active methods were: Management Accounting, Controllership, Accounting Laboratory, Accounting Systems, Advanced Accounting and Introductory Accounting I.

Of the disciplines that obtained better results with the active methods, only two directly involve Accounting: Agribusiness Accounting and Cost Accounting, both significant at 1%. The others, which produced better results when applying the active methods, at the level of 5 to 10%, were: Economics, Social and Labor Legislation, Public and Private Law Institutions and Organizational Sociology.

Despite presenting these results, the regression model was constructed to understand the behavior of students' grades when they received the active methods, and when not, during the time period studied with the inclusion of control variables.

4.4 Regression Analyses

To develop the regression model, variables were used that, as presented in the course of this chapter, can influence the performance of the students who participate in classes using active teaching-learning methods.

The premises that validate the regression models were satisfactory: in the general adjustment using F statistics (p-value), test of independence (Durbin Watson) and normality of the residues.

4.4.1 Analysis for 2012 till 2014

Through the results presented in Table 04, we noticed that, during the years of the research, students' scores, regardless of the association with active methods, were already falling, indicating a drop in students' performance before the implementation of active methods in the disciplines. This statement can be validated by observing the Dummy "Time" in the years of the survey. It is evident that, as from the years studied, the students' scores dropped regardless of the method applied.

Analyzing the 2012 regression model separately, we saw based on the Dummy results of "Active Discipline" that, when the disciplines received the active methods, student scores increased and that, as from 2013 and 2014, performance dropped. However, when we associate the disciplines that received the active methods over time, related by means of the Dummy "Time" * Dummy "Active Discipline", it turns out that, as from 2012, when the disciplines were taught with the new methods, the Students' scores dropped more than when they were taught only traditionally. Based on this result, we can assume that, as of that year, the disciplines with active methods reduced the performance of Accounting students even further, with the greatest drop in performance after its adoption among all years.

As from the following year, concerning the results of the model for 2013, we saw that, when the time was associated with the active disciplines, students' scores were not statistically significant. Nevertheless, in a general analysis, as from that year, we observed that for the Dummy variable "Active Discipline" and the Dummy "Time", the students' scores decreased again. However, we can assume, based on the figures obtained, that, starting in 2013, the disciplines that received the methods that are active as a function of time are on the same level as those that did not receive the traditional methods, that is, for that year, the students' performance with the active methods, may not have worsened in the disciplines, but it did not improve either.

Specifically for the students who failed, we saw that, as from 2013, regardless of the method applied, the students who failed received better grades, even though they did not pass the subjects. However, when they received the active teaching methods, the average grade dropped in the same proportion, according to the Dummy interaction of "Active Discipline" * Dummy "Fail" * and Dummy "Time", based on which we reaffirm that, for this model, the active methods did not improve the performance of the students, and the drop was equivalent to that of the performance without the active methods.

For the 2014 model, when the disciplines taught with the active methods were associated with the Dummy "Time", we noticed an increase in the performance of accounting students. However, regardless of the time, when the subjects were actively taught, as presented by the Dummy "Active Discipline", performance dropped. Also, through the Dummy interaction of "Active Discipline" * Dummy "Fail" * and Dummy "Time", we identified a drop in the performance of the failed students who received the active methods as of that year.

For the 2014 model, we can show that the application of active methods in the classrooms did not lead to improvements in students' performance. Comparing the figures of this model with those of 2013, we saw that the students' scores, even those who failed, who received the active teaching methods, remained constant, and that the scores verified by the traditional disciplined continued to fall.

Although performance has not improved in the past year, it has not worsened with the use of the methods. As a result, we evidence that, in the course of the process, the active methods have gained maturity in their applicability, and that, for this reason, in 2014, the general scenario has improved.

Based on the findings by Cornachione Junior, Cunha, De Luca and Ott (2010), which identified that most Accounting students consider their own effort as one of the causes of a successful performance, the researcher again performed a linear regression test, now considering the variable % of absences (control variable that contributed to the above results).

Table 4:
Multiple Regression Results

Regression Model – Dependent Variable Grade			
	2012	2013	2014
	B/p-value	B/p-value	B/p-value
Constant	75.092***	74.322***	74.063***
Dummy Active Discipline	1.872*	-0.852*	-1.460***
Dummy Time (Before and after)	-2.031***	-1.552***	-42.436***
Dummy Fail	-48.731***	-42.755***	-42.436***
Dummy Time (Before and after)*Dummy Active Discipline	-2.872***	0.305	2.160***
Dummy Time (Before and after) *Dummy Fail	11.134***	3.599***	2.774**
Dummy Active Discipline *Dummy Fail	3.348	3.599*	7.632***
Dummy Active Discipline *Dummy Fail * Dummy Time (Before and after)	-4.474	-5.746**	-7.336***
Dummy Gender	0.560*	0.525*	0.589*
Dummy Fies	0.092*	-1.711***	-1.801***
Dummy Municipal Grant	-0.091	-0.191	-0.101
Dummy Prouni	6.100	6.026***	5.942***
Dummy no grant	-0.511	-0.440	-0.474
Dummy Teacher Degree	-1.210***	-1.583***	-1.627***
% Absence	-0.349***	-0.362***	-0.367***
Age	0.092***	0.109***	0.117***
Teaching Experience	-1.060***	-1.450***	0.650

*, **, *** significant at 10%, 5% and 1% respectively.

Source: Elaborated by the authors.

The goal is to discover the students' behavior using the active teaching methods as well by means of the variation in the percentage of absences, as their attendance in class can be considered of interest when active teaching methods are applied. Hence, we use the above regression model, in which the dependent variable is now "% Absence", while "Grade" turns into a control variable.

4.5 Analyses for 2012 till 2014 % Absence as Dependent Variable

When we assume the variable "% Absence" as the dependent variable in the model, we were able to capture the following effects: as from the year 2012, through the interaction Dummy Time * and Dummy Active Discipline, we realize that, by receiving the disciplines with the active methods, the students' absences dropped compared to the students who received only traditional classes. Also, when we associate the Dummy Variables of Active Discipline *, Dummy Disapproval * and Dummy Time, which present the failed students who received the disciplines with active methods as from the year 2012, we identify that their absences also fell, that is, when they participated in the classes with active methods, we can assume that, as from 2012, the number of students in the classroom increased, even though they failed due to their grade.

With the interaction Dummy Time * and Dummy Active Discipline, we saw that the of students' percentage (%) absences also decreased, implying that when they received the active methodologies from that year, the average percentage of students' absences also decreased . The Dummy Interaction of Active Discipline *, Dummy Disapproval * and Dummy 2013 demonstrated that the absences of failed students who received active teaching methods as from the year 2013 also dropped.

Regardless of the time, in the 2014 model, we saw, through the Active Dummy, that the students who received the active methods reduced the percentage absence in those classes. With the interaction Dummy Time * and Dummy Active Discipline, we realized that, when students received the subjects with active teaching methods, as from 2014, their absences decreased compared to students who did not receive these subjects. In the 2014 model, we also saw that, regardless of the year, through the interaction Dummy Active Discipline * and Dummy Fail, the failed students and those who received the active methods increased the percentage absence in class but, when we associated the variable time, through the Interaction between the Dummy Active Discipline *, Dummy Disapproval * and Dummy Time, we again witnessed that, even when they failed, the percentage absence of these students dropped when they received subjects with active methods.

Table 5:

Multiple Regression Results

Regression Model – Dependent Variable %Absence			
	2012	2013	2014
	B/p-value	B/p-value	B/p-value
Constant	14.651***	15.082***	15.924***
Dummy Active Discipline	0.650	0.101	-0.427*
Dummy Time (Before and after)	0.579**	0.382	-0.479*
Dummy Fail	8.318***	6.031***	4.947***
Dummy Time (Before and after)*Dummy Active Discipline	-1.655***	-1.343***	-1.114**
Dummy Time (Before and after) *Dummy Fail	-2.427***	0.827	4.540***
Dummy Active Discipline *Dummy Fail	1.209	1.691	-1.755**
Dummy Active Discipline *Dummy Fail * Dummy Time (Before and after)	-6.596***	-9.763***	-9.775***
Dummy Gender	-0.736***	-0.737***	-0.768***
Dummy Fies	-0.589*	-0.601*	-0.779**
Dummy Municipal Grant	-0.586	-0.579	-0.492
Dummy Prouni	0.615*	0.661*	0.664*
Dummy no grant	-0.846***	-0.837***	-0.831***
Dummy Teacher Degree	-2.289***	-2.349***	-2.425***
% Absence	-0.141***	-0.144***	-0.146***
Age	0.125***	0.124***	0.114***
Teaching Experience	-0.530***	-0.86***	-0.410***

*, **, *** significant at 10%, 5% and 1%, respectively.

Source: elaborated by the authors.

Figures 1 and 2 illustrate the behavior of the students' grades and percentage absence in the accounting course before and after the adoption of the active teaching methods, as described earlier.
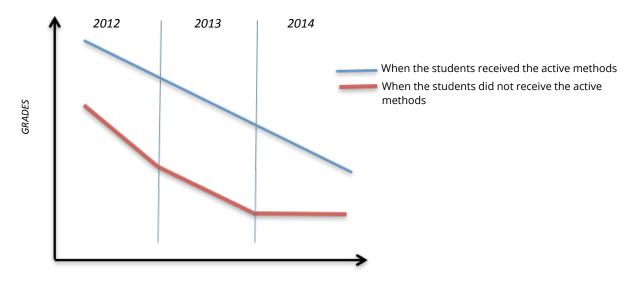

Figure 1. Behavior of students' grades during research period.
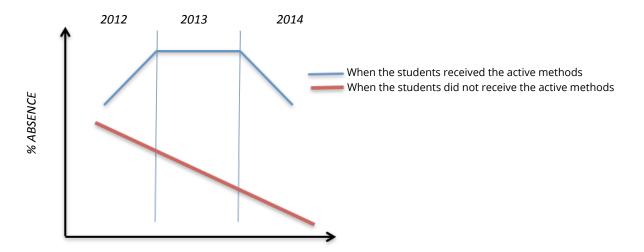
Source: elaborated by the authors.

Figure 2. Behavior of percentage absence of students during research period.

Source: elaborated by the authors.

After presenting the results of the Regression tests, based on the literature, we can state that the results found in this study can be explained by factors such as: student control; the effort that it exerts on the activities; mood; difficulty to perform tasks; disease; and instability (that the student's interest can change over time), as these are determining factors for students to succeed or not in student performance (Weiner 1982, Cornachione Junior et al., 2010) .

Bzuneck (2005) further states that motivational problems are linked to student learning and are related to their success. The classroom environment, teacher actions, student non-involvement and misuse of learning strategies may also be related to the findings in this research, as confirmed by Guimarães (2003); Ruiz (2005); Zenorini and Santos (2003).

Regarding the better performances of female students in relation to male students, both in the grade and in the percentage absence, Zenorini and Santos (2003) affirm that female subjects are more learning--focused as a goal. For Glewwe, Hanushek, Humpage, and Ravina (2011), students in the business area, whether in Accounting or related areas, who achieve good results in the classroom, tend to obtain good professional performances, such as increased income and higher productivity.

Due to the need to understand the learning process, several researchers in psychology seek explanations for what may affect student performance. Thus, there are some answers, such as optimism, student motivation, personality, work experience and psychological variables (Miranda, Lemos, Oliveira & Ferreira, 2015).

Regarding students who failed, even though they have access to active methods, Zenori, Santos, Monteiro (2011) affirm that the teaching-learning process cannot be reduced to simply aiming for "good grades", since not always getting a good grade means the students' true learning.

Setton (1999) also permits discussing that, with the expanded access to undergraduate education in the country, there was a range of economically, socially and culturally different populations, influencing the teaching-learning process. However, it is important to consider that, in the Brazilian educational system, problems are met such as lack of suitable teacher training, poor infrastructure and methods used, especially in the public network, reflecting a dilemma of how to prepare students from public secondary education (large majority in this study) for higher education (Zenori, Santos, & Monteiro, 2011). For Zenori, Santos and Monteiro (2011), that shortage is already witnessed in high school, when one perceives students of so different natures migrating to higher education - sometimes even minimally literate.

5. Final Considerations

The general objective in this study was to verify if the adoption of active teaching methods in the Accounting course at a private Higher Education Institution located in the region of Zona da Mata, Minas Gerais, contributed to the students' performance in this course. In order to reach the general objective, all the variables provided by the HEI were used as performance proxies.

The contribution of this study to the academy and society gains relevance when expanding research in the area of accounting education on the use of active teaching-learning methods in undergraduate Accounting courses, given the need for new discussions about Accounting education (Stanley & Marsden, 2012).

Concerning the active methods, Bandura (1977, apud Miranda et al. (2015)) and Ribeiro (2000, apud Miranda et al. (2015)) corroborate that behavioral psychology has shown that teacher performance is linked to task control and that, the more he feels in control of the activities to be performed, the more chances there are that he will persist until the completion of the tasks.

The results found show that, when the active methods were implemented, the students' scores in the Accounting course had been falling historically year after year. As from the adoption of active teaching methods, we noticed that, even without the increase in grades, they gained maturity over the period, perhaps due to the evolution or maturity of teachers, students or trainers, so that active activities were transmitted in the classrooms.

Moreover, although the grade of the failed students dropped when the classes were taught with the active methods, the average difference in grades between the passed and failed students also dropped. Another contribution of the active method is related to the percentage of absences of Accounting students, since we noticed that, when this was tested, positive results were obtained with the active method, in the regression model, when there was a reduction in the percentage absence of students who received the active methods - even those who failed - suggesting that they spent more time in the classroom with the new method.

Being in the classroom, for example, may have contributed for the students' grades to remain constant, although not improving, as from 2014. Thus, the results found evidence that the active methods contribute to the Accounting students' performance for the studied period. Based on the results, there are indications to accept the alternative hypothesis (H1), that is, the implementation of active methods at the HEI influences the Accounting students' performance.

It is a fact that this research has limitations, such as: the analysis period, the education received before graduation (Mainardes & Domingues, 2010), the relation of the students with accounting practice (Mamede et al., 2015), as the active method bring the students in very close contact with the professional reality (Gasque, 2008; Mitre et a., 2008; Lapina & Slaidins, 2014) and the individual characteristics of each profile (Neves Junior & Rocha, 2010).

It is worth emphasizing that, for these active teaching methods to be applied in undergraduate courses, there are some structural - academic and administrative - challenges and in teachers' and students' beliefs, which need to be involved in this process (Wall, Prado & Carraro, 2008). Thus, it is necessary for the individual to engage in thinking, reasoning, observing, and reflecting independently on which way will be used to provoke active learning (Barbosa & Moura, 2014)

It is suggested that new research be performed, considering other control variables at the investigated HEI or at educational institutions that are part of STHEM Brazil, or at other institutions that use the active methods in traditional classes, so as to discover new results in course in Accounting or other educational areas.

References

Barbosa, E. F. & Moura, D. G. (2014). Metodologias ativas de aprendizagem no ensino de engenharia. *Anais International Conference on Engineering and Technology Education*, Cairo, Egito, 13.

Berbel, N. A. N. (2011). As metodologias ativas e a promoção da autonomia de estudantes. *Semina: Ciências Sociais e Humanas*, *32*(1), pp. 25-40. doi: http://dx.doi.org/10.5433/1679-0383.2011v32n1p25

Bonwell, C. C. & Eison, J. A. (1991). *Active learning*: creating excitement in the classroom. ASHE-ERIC higher education reports. ERIC Clearinghouse on Higher Education, The George Washington University, Washington, DC.

Bzuneck, J. A. (2005). A motivação dos alunos em cursos superiores. In: Joly, M. C. R. A., Santos, A. A. A. & Sisto, F. F. (Orgs.). *Questões do cotidiano universitário.* São Paulo: Casa do Psicólogo, pp. 217-237.

Cornachione Junior. E. B.; Cunha, J.V.A. da; De Luca, M.M.M. & Ott, E. (2010). O bom é meu, o ruim é seu: perspectivas da teoria da atribuição sobre o desempenho acadêmico de alunos da graduação em Ciências Contábeis. *Revista Contabilidade e Finanças*, *21*(53), pp. 1-24. doi: http://dx.doi.org/10.1590/S1519-70772010000200004

Cyrilo, E. G. & Toralles-Pereira, M. L. (2004). Trabalhando com estratégias de ensino-aprendizado por descoberta na área da saúde: a problematização e a aprendizagem baseada em problemas. *Caderno de Saúde Pública*, *20*(3), pp. 780-788. doi: http://dx.doi.org/10.1590/S0102-311X2004000300015

Dancey, C. P. & Reidy, J. (2006). *Estatística sem matemática*: para psicologia usando SPSS para Windows. Porto Alegre: Artmed.

Freire, P. (1996). *Pedagogia do oprimido*. São Paulo: Paz e Terra.

Gasque, K. C. G. D. (2008). O papel da experiência na aprendizagem: perspectivas na busca e no uso da informação. *TransInformação*, Campinas, 20(2), pp. 149-158. http://dx.doi.org/10.1590/S0103-37862008000200003

Glewwe, P. W., Hanushek, E.A.; Humpage, S.D. & Ravina, R. (2011). School resources and educational outcomes in developing countries: a review of the literature from 1990 to 2010. *National Bureau of Economic Research*.

Goñi Zabala, J. M. (2006). El espacio europeo de educación superior, un reto para la universidad. *Revista Interuniversitaria de Formación del Profesorado*, *20*(3), pp. 323-324.

Guimarães, S. E. R. (2003). *Avaliação do estilo motivacional do professor*: adaptação e validação de um instrumento. Tese de Doutorado, Universidade Estadual de Campinas, Campinas, SP, Brasil.

Gwee, M. C.-E. (2009). Problem-based learning: a strategic learning system design for the education of healthcare professionals in the 21st century. *The Kaohsiung Journal of Medical Sciences*, *25*(5), pp. 231-239. doi: 10.1016/S1607-551X(09)70067-1.

Heagy, C. & Lehmann C. (2005). Is PBL an improved delivery method for the accounting curriculum? In: Schwartz, B. & Ketz, J. (Eds.). *Advances in accounting education teaching and curriculum innovations*. London: Elsevier. pp. 221-251.

Lapina, G. & Slaidins, I. (2014). Teaching open innovation at the universities in Latvia. *Journal of Business Management*, (8), pp. 198-207.

Madruga, A. *et al.* (1996). Aprendizagem pela descoberta frente à aprendizagem pela recepção: a teoria da aprendizagem verbal significativa. In: Coll, C., Palácios, J. & Marchesi, A. (Orgs.). *Desenvolvimento psicológico e educação*. Porto Alegre: Artes Médicas. pp. 68-78.

Mainardes, E. W. & Domingues, M. J. C. S. (2010). Atração de alunos para a graduação em Administração em Joinville–SC: estudo multicaso sobre os fatores relacionados ao mercado de trabalho. *FACEF*

Pesquisa-Desenvolvimento e Gestão, *13*(1), pp. 32-47.

Mamede, S. P. N., Marques, A. V. C. & Rogers, P. (2015). Psychological determinants of academic achievement in accounting: evidence from Brazil. *BBR – Brazilian Business Review*, Vitória, *12*(5), pp. 50-71. DOI: http://dx.doi.org/10.15728/bbrconf.2015.3

Meyers, C. & Jones, T. B. (1993). *Promoting active learning*: strategies for the college classroom. Jossey-Bass. Inc.

Miranda, G. J.; Lemos, K.C. S.; Oliveira, A.S. de & Ferreira, M. A. (2015). Determinantes do desempenho acadêmico na área de negócios. *Revista Meta: Avaliação*, *7*(20), pp. 175-209.

Mitre, S. M.; Siqueira-Batista, R.; Girardi-de-Mendonça, J.M.; Moaris-Pinto, N.M. de; Meirelles, C.A.B.; Pinto-Porto, C.; Moreira, T. & Hoffmann, L.M.A. (2008). Metodologias ativas de ensino-aprendizagem na formação profissional em saúde: debates atuais. *Ciência & Saúde Coletiva*, *13*(2), pp. 2133-2144. http://dx.**doi**.org/10.1590/S1413-81232008000900018.

Neves Junior, I. J. & Rocha, H. M. (2010). Metodologias de ensino em Contabilidade: uma análise sob a ótica dos estilos de aprendizagem. Anais Encontro da Associação Nacional de Pós-graduação e Pesquisa em Administração. Rio de Janeiro, RJ, Brasil, 34.

Nihalani, M. & Shah, S. (2012). *Stress free environment in classroom*: impact of humor in student satisfaction. Recuperado em 20 junho, 2014, de <http://www.grin.com/en/ebook/192216/stress-free-environment-in-classroom-impact-of-humorin-student-satisfaction#inside>.

Ruiz, V. M. (2005). *Aprendizagem em universitários*: variáveis motivacionais. Tese de Doutorado, Pontifícia Universidade Católica, Campinas, SP, Brasil.

Setton, M. G. J. (1999). A divisão interna do campo universitário: uma tentativa de classificação. *Revista brasileira de estudos pedagógicos*, *80*(196), pp. 451-471.

Silberman, M. (1996). *Active learning*: 101 strategies to teach any subject. Boston: Prentice-Hall.

Silva Souza, C., Iglesias, A. G. & Pazin-Filho, A. (2014). Estratégias inovadoras para métodos de ensino tradicionais–aspectos gerais. *Medicina (Ribeirao Preto. Online)*, 47(3), pp. 284-292.

Soares, M. A. (2008). *Aplicação do método de ensino problem based learning (PBL) no curso de ciências contábeis*: um estudo empírico. Dissertação de Mestrado, Universidade de São Paulo, São Paulo, SP, Brasil.

Soares, M. A., Araújo, A. M. P. & Leal, E. (2008). A. Evidências empíricas da aplicação do método Problem-Based Learning (PBL) na disciplina de contabilidade intermediária do curso de Ciências Contábeis. Anaias do Encontro da Associação Nacional de Pós-graduação e Pesquisa em Administração, Rio de Janeiro, RJ, Brasil, 32.

Souza, R. R. (2000). *Aprendizagem colaborativa em comunidades virtuais*. Dissertação de Mestrado, Universidade Federal de Santa Catarina, Florianópolis, SC, Brasil.

Stanley, T. A. & Marsden, S. J. (2012). Problem-based learning: does accounting education need it? *Journal of Accounting Education*, 30(3-4), pp. 267–289. doi:10.1016/j.jaccedu.2012.08.005

Sthem Brasil (2015). *O consórcio*. Recuperado 7 setembro, 2015 de <http://sthembrasil.com/site/o-consorcio/>.

Wall, M. L., Prado, M. L. & Carraro, T. E. (2008). A experiência de realizar um estágio docência aplicando metodologias ativas. *Acta Paul Enferm*, *21*(3), pp. 515-9. doi: http://dx.doi.org/10.1590/S0103-21002008000300022

Weiner, B. (1982). An attributional approach for educational psychology. *Review of research in education*, *4*(1), pp. 179-209. doi:10.3102/0091732X004001179

Zenorini, R. P. C. & Santos, A. A. A. (2003). A motivação e a utilização de estratégias de aprendizagem em universitários. In: Mercuri, E. & Polydoro, S. A. J. (Orgs.). *Estudante universitário*: característica e experiências de formação. Taubaté: Cabral Editora e Livraria Universitária.

Zenorini, R. P. C., Santos, A. A. A. & Monteiro, R. M. (2011). Motivação para aprender: relação com o desempenho de estudantes. *Paidéia*, *21*(49), pp. 157-164. doi:http://dx.doi.org/10.1590/S0103-863X2011000200003

REPeC – Revista de Educação e Pesquisa em Contabilidade, ISSN 1981-8610, Brasília, v.10, n. 4, art. 2, p. 371-388, Oct./Dec. 2016

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