REPeC, Brasília, v. 9, n. 4, art. 5, p. 417-438, Oct./Dec. 2015
Available online at *www.repec.org.br*
DOI: http://dx.doi.org/10.17524/repec.v9i4.1340

Revista de Educação e Pesquisa em Contabilidade
Journal of Education and Research in Accounting
Revista de Educación e Investigación en Contabilidad

Quarterly journal, digital and free published by
Brazilian Academy of Science in Accounting

ISSN 1981-8610

Problem-Based Learning in Management Accounting Teaching: Report of a Brazilian Experience

Abstract

This study aimed to report on the operation of the PBL method in a management accounting discipline in the Accounting course of a Brazilian Higher Education institution. The research technique used was the case study, involving a descriptive approach to PBL classes, whose purpose was to present the properties of the classes, how to act and the profile of the students and teachers. The field research took place in 2013. The data were collected through interviews with teachers, participant observation and document analysis. The empirical analysis in this research rested on the studies by Araújo and Arantes (2009), Dochy, Segers, Bossche and Gijbels (2003), Duch, Groh and Allen (2001), MacDonald and Savin-Baden (2004), Ribeiro (2008), Schmidt (1983), Sockalingam and Schmidt (2011), among others. The results show that the integration between academics and businesses based on the use of practical and real problems the students brought from the work environment offered gains, such as: the student broadens the potential to solve practical and professional problems; and the company is benefited, as it can receive qualified professionals in the future, who are able for research and the proposal of solutions to problems. Teachers also gain as they are exposed to a contemporary setting, providing major updates in terms of use of concepts and theories, because of the contextualization. The PBL helps to engage Generation Y students, given that the desire for participation and communication in an interactive environment using technological tools are the main marks of that generation. The skills developed in the PBL approach are similar to those required from the management accountant.

Key words: Problem-Based Learning; Management Accounting; Management Accountant Competences.

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Published in Portuguese, English and Spanish. Original Version in Portuguese.

Received in 9/30/2015. Ask to Revise on 10/31/2015. Resubmitted on 11/20/2015. Accepted on 11/21/2015 by Dr. Valcemiro Nossa (Editor). Published on 12/30/2015. Organization responsible for the journal: Abracicon.

1. Introduction

The Bachelor course in Accounting is designed to prepare students to enter the labor market, able to meet the various situations involving changes in the political, socioeconomic and cultural scene. Soares and Araújo (2008) point out that the legal, social and professional requirements of accountants, by affecting business management, require that the accountants' skills go beyond the mastery of technical and scientific knowledge in accounting, including problem-solving ability, critical and reflective thinking, creativity to identify strengths and weaknesses, adaptability to change and autonomy to build their own learning. The literature appoints Problem-Based Learning (PBL) as a method that allows students to assimilate the competences (knowledge, skills and attitudes) required for professional accounting conduct significantly in a realistic context. The proposal to insert not only the necessary expertise, but also the professional skills and attitudes the market requires into accounting education, promotes changes in the teaching and learning process.

PBL is a teaching method focused on the student as an active subject in the teaching and learning process. It is characterized by the use of real problems in society, which are contextualized so that students develop critical thinking, problem solving skills and the acquisition of scientific and technological knowledge on the research subject (Ribeiro, 2008). PBL allows Accounting faculty to stimulate the student to meet the needs of society through their professional services as it promotes integration between society and the academy to solve problems from social practice in the classroom (Frezatti & Silva, 2014), since the foundation is focused on constructivist educational methods, which seeks to approximate the theory to practice and the academy to the labor market (Ribeiro, 2008).

The main element of the PBL method is the act of making the student able to learn how to learn, working in cooperative groups in search of solutions to real-world problems. These problems are used to arouse curiosity and initiative. PBL develops in students critical and reflexive thinking and makes them find and use the appropriate resources for learning (Duch, Groh & Allen, 2001). It should be noted that, according to Frezatti and Silva (2014, p. 34), PBL allows "the student's approximation to practice through the insertion and intervention in reality in the training area."

Note that the shift from a passive stance to student-centered learning requires paradigm breaking work for many students and teachers. These elements are highlighted in the research by Wood (2003) and Ribeiro (2008). With regard to students, it is observed that information overload makes them insecure regarding the accomplishment of self-directed study and selection of useful and relevant information, being forced to walk at the pace of the group, creating the possibility that they will not adapt to this environment of self-directed and collaborative learning, because of their different learning styles. In addition, more time is demanded from the student for after-school studies. In this sense, work is needed with the students so that they know the method and its benefits, making them aware of how cooperative learning and self-regulated and independent study take place.

O papel do professor é alterado no ambiente educacional com o PBL, deixando de ser o detentor do conhecimento ou aquele que controla o aluno e o conhecimento, e de exercer o papel de transmissor de conteúdo como é comum nas aulas expositivas e nas metodologias tradicionais (Dochy, Segers, Bossche & Gijbels 2003). Ribeiro (2008) afirma que no PBL o professor é visto como o facilitador ou tutor, minimizando o caráter de autoridade e o poder sobre os alunos e sobre o que é necessário aprender, pois não visa à passividade, à transmissão de conteúdos e à memorização, mas, sim, ao diálogo entre professores e alunos, e entre os alunos. Soares e Araújo (2008, p.7) enfatizam que o "PBL não é um método que se adapta a todo professor". Nesta perspectiva, faz-se necessário desconstruir a relação de poder do professor para com os alunos e construir a relação de facilitador.

The teacher's role changes in the educational environment with PBL, no longer serving as the holder of the knowledge or who controls the student and the knowledge and as the content transmitter, as is common in lectures and traditional methods (Dochy, Segers, Bossche & Gijbels 2003). Ribeiro (2008) states that, in PBL, the teacher is seen as the facilitator or tutor, minimizing the authority and power over the students and what is necessary to learn, as it is not intended for passivity, content transmission and memori-

zation, but rather for the dialogue between teachers and students, and among students. Soares and Araujo (2008, p.7) emphasize that "PBL is not a method that adapts to every teacher." In this perspective, it is necessary to deconstruct the teacher's power relationship with students and build a relationship as facilitator.

Stanley and Marsden (2012) emphasize that the implementation of the PBL is a lengthy process, especially in the development phase of PBL, because it is a new method in Accounting teaching. For its innovative nature as a teaching method, many teachers may choose not to adopt it out of fear of how to proceed in this little known universe, opting for the traditional approach, failing to add value in the training of students (Escrivão Filho and Ribeiro, 2008; Park, 2006). Given this context, the aim of this study is to report on the applicability of PBL in an Accounting course in order to investigate how the method is implemented in a Management Accounting discipline at a Brazilian Higher Education Institution (HEI). The question used in this research was: **How to implement the PBL method in Management Accounting discipline at a Brazilian Higher Education Institution, granting the participants freedom to choose?**

The justification for the research is linked to the range of alternatives to apply the PBL in the various areas of knowledge and at several international and national HEI. The contribution intended with this study is to demystify the Problem-Based Learning method for teachers of accounting, most of whom do not hold a teaching diploma and tend to reproduce the teaching models they experienced as students or in practice. The study findings can serve as an agent provocateur for the multiplying effects of this active teaching approach to be actually perceived in Accounting teaching.

2. Literature Review

2.1 Fundamentals of PBL

PBL has spread around the world at various universities. Initially, it was applied to the medical school as from the 1960s, at McMaster University (Canada), has expanded to the Aalborg University in Denmark (1974); Universiteit Maastricht, the Netherlands (1976); Linköping University, Sweden (1986); and University of Delaware in the United States of America (1992). In Brazil, the method was applied at the medical school of the State University of Londrina, only in 1997, and spread to other areas after 2005, with its implementation at the School of Arts, Sciences and Humanities of the University of São Paulo (Eachusp) called USP Leste. The implementation of PBL in the Accounting course occurred as from the 1990s in the research by Johnstone and Biggs (1998), Breton (1999), Milne and McConneell (2001), Hansen (2006), Wilkin and Collier (2009) Pinheiro, Sarrico and Santiago (2011a, 2011b), Manaf and Ishak Hussin (2011), Stanley and Marsten (2012), among others. In Brazil, after 2007, the PBL was covered in accounting education, being used only in isolated disciplines in traditional curricula, as evidenced in the research Rodrigues and Araújo (2007), Soares and Araújo (2008), Soares, Soares-Batista, Morch and Siqueira-Batista (2009), Benjamin Junior and Casa Nova (2012), Frezatti and Silva (2014), Frezatti, Martins, Borinelli and Espejo (2014), Martins, Espejo and Frezatti (2014) and Martins and Espejo (2015).

PBL is a "teaching method that provides students with appropriate knowledge for problem solving" (Schmidt, 1983, p. 11). In PBL, the problem is used to start the process of teaching learning and to integrate teaching into real-life events. The researchers Savery (2006) and Hansen (2006) share the proposal by Duch, Groh and Allen (2001, p. 6), in which the goals of PBL are: to develop critical thinking and the ability to analyze and solve complex and real problems; find, evaluate and use the educational resources of learning appropriately; work cooperatively in small groups; demonstrate communication skills; and use the knowledge and intellectual skills acquired at university for continuing education.

Frezatti and Silva (2014) point out that PBL is the bridge that approximates teaching to business practice, promoting the preparation of recently graduated accounting professionals who are more concerned with the solution of social problems and furthering the integration between scientific research and population interests. This reduces the distance between theory and practice in the academic context

(Enemark & Kjaerdam, 2009). Students in PBL work as a team in a collective learning, collaborative and cooperative environment in order to solve, with the help of technology and research resources, real problems that emerge in society (Araújo & Arantes, 2009).

According to Schmidt (1983), the teaching-learning process with PBL consists of seven steps: (1) clarify the terms and concepts not understood; (2) define the problem; (3) analyze the problem; (4) detail the proposed explanations; (5) formulate learning goals; (6) collect information outside the group; (7) integrate the acquired knowledge with the group. Ribeiro (2008) points out that there are four different ways of achieving the gradual transition from the formal education system to PBL, which can be applied across the curriculum, hybrid, partially or post-holding (when used occasionally at some point in conventional disciplines). According to Dochy, Segers, Bossche and Gijbels (2003), the method will only be considered PBL when it presents the following six characteristics: (1) learning is student-centered; (2) learning takes place in small groups of students; (3) teachers are facilitators or guides; (4) the direct problems and stimulate learning; (5) problems are the vehicle for the development of professional practice; and (6) the new information is acquired through self-directed learning.

In addition, the teaching-learning process in PBL takes place through the union of three key elements, namely: the problem, the student and the teacher. The problem is the central element and triggers the process of teaching and learning in PBL (Sockalingam and Schmidt, 2011). The problem in PBL is the didactic material and should be presented through academic challenges, scenarios or real problems (Ribeiro, 2008). In this approach, the students need to present the solution of the problems described in situations future professionals in real-life contexts (Hmelo-Silver, 2004; Sockalingam & Schmidt, 2011). In addition, the problem should have a degree of complexity, consider the prior knowledge of the student, promote interdisciplinary and cover the proposed content (Ribeiro, 2008). Sockalingam and Schmidt (2011) investigated the perceptions of students about the characteristics of a good problem in PBL and listed eleven elements, which were classified into two categories: features and functions. The first covers the problem of elements (problem format, clarity, familiarity, difficulty and relevance), and the second, besides the fact that a good problem arouses learning issues, considers the skills developed by the students to perform academic activities through problems (critical thinking, self-directed learning, teamwork, interest and ability to solve problems).

The PBL learning-teaching process is focused on the student and not the teacher. Students in PBL work in small teams, in search of the solution, and take responsibility for their own learning (Schmidt, 1983). It should be noted that the students' lack of preparation to conduct research is quite evident. The student is not used to take an active role in the classroom that promotes the construction of knowledge, which is seen as a creation process in PBL and not a repetition process. In PBL, students do not only participate in the knowledge construction process, but also develop skills and attitudes required by the labor market in the 21st century. Research by Wood (2003), Ribeiro (2008), Martins and Espejo (2015) suggests that resistance by the students is a barrier that prevents the implementation of PBL.

One of the great challenges of PBL is to promote in the teacher a new attitude in the classroom, because teachers in PBL assume the role of mentors, tutors, co-apprentices and facilitators of knowledge construction in the teaching and learning process. That is, teachers assume the function of directing students across the stages of PBL, following the process of the groups and promoting reflexive activities that enable students to identify their own learning needs. In addition, teachers work in teams that include other members of the HEI, value the students' prior knowledge, seek to encourage the students' initiative, delegate authority with responsibility to students and do not encourage a single correct answer to the problems (Hmelo-Silver, 2004; Ribeiro, 2008). Not every teacher adapts to this less controlling and more challenging scenario though, as the research by Wood (2003), Ribeiro (2008) and Stanley and Marsten (2012) appoints.

Research of Wood (2003) and Ribeiro (2008) present several advantages and disadvantages of this process of change in the roles of students and teachers in PBL. Among the positive points of PBL, they show that the method is student-centered, so that they acquire knowledge in a more meaningful and lasting way; develops skills and desired attitudes in future professional activities; promotes integration between different subjects of the curriculum, requires that all students engage in the solution process of the problem and use their prior knowledge.

In that sense, the study by Enemark and Kjaersdam (2009, p. 18-19) shows that PBL promotes the integration of the three key elements in the training of future professionals, which are the university, the company and scientific research. It is appointed that the real problems guide the search for new knowledge and promote interdisciplinary, innovative and creative solutions. Through the group activities, students develop communication skills and effective learning, while creating social ties both within and beyond the university environment. Ribeiro (2008, p.41) adds that, due to the "group work, there is more communication among students, and these establish more partnerships with one other, and, in later years, with the faculty." The choice of group members happens freely, being chosen by the group, unlike the approach by Kanet and Barut (2003), in which teachers define the function in groups of different psychological styles. The argument for this is the legitimacy and the fact that they chose an elective course, a group with which they know how to work and a theme they consider interesting and relevant for the group. The leader is the member of the group that brings some organization to be the body of research. The group members choose the secretary and both the leader and the secretary can be changed along the course, if the group so desires.

On the other hand, among the disadvantages of PBL, Wood (2003) states that there is resistance by teachers who cannot exercise their power and their role as knowledge holders directly, for many teachers like to pass on their own knowledge and understanding. Therefore, they are unable to adapt to the role of facilitator in PBL. In this approach, more human resources and investment in the institution's structure are required, involving additional spending on building spaces for group work because students need access to computer resources simultaneously. In addition, students are deprived of access to a particular teacher like in the traditional curriculum, because there an information overload, students need to decide which information is relevant and useful. Many students become uncertain about self-directed and autonomous study.

For Enemark and Kjaersdam (2009, p. 19), teachers in PBL do not need to decide what students should learn, but need to be up-to-date, as students demand answers to questions about new theories that are on the Internet or those that arise from independent studies. In PBL, it is not known what the students' questions will be. Complementing, Ribeiro (2008, p. 42) indicates that the PBL "tests the teachers in various ways, so they should keep an open mind to face its challenges", stating that "the tutors cannot always 'know everything' and recognizing the need to direct them to other teachers can be a psychological stress factor".

According to MacDonald and Savin-Baden (2004), the evaluation process in PBL aims to support learning, as the ability of future professionals to act in a real situation of the labor market is assessed and the need is recognized for apprentices to acquire new skills. In PBL, several different evaluators and assessment tools are used. The evaluation takes place by the students themselves, by peers, teachers and also by the external community. It should be noted that in this approach, the teacher and the instructional method are also evaluated. The authors show that, in this approach, a variety of evaluation instruments is used, namely: Group presentation and/or individual plans based on case studies, portfolio, self-assessment, peer assessment, oral examination, reflexive diaries, tutor assessment, reports, among others.

2.2 Competences of the Management Accountant and PBL

The accountant's skills are explored more broadly in the PBL approach than in the traditional teaching-learning process, as the latter only covers the technical and scientific knowledge, white the former develops in addition to the knowledge, skills and attitudes. It is highlighted that the regulators of the accounting profession - the Accounting Education Change Commission (AECC, 1990), the International Federation of Accountants (IFAC, 2012), the American Institute of Certified Public Accountants (AICPA, 2005), the Institute of Chartered Accountants (ICA, 2009) emphasize that the accounting education should address the knowledge, skills and attitudes necessary for students, upon completion of the stage of university education, to be able to enter the labor market.

The PBL method enables the development of skills, taking into account the requirements proposed by international and Brazilian entities, presented in the National Curriculum Guidelines for undergraduate degrees in Accounting, through Resolution CNE / CES 10/2004. In addition, it permits the educational objectives proposed in Law No. 9.394 / 1996 to be included in the academic setting. It is noteworthy that the documents issued by both international and national entities present the core competencies to be developed in the IES in order to prepare accounting professionals trained to work in the labor market.

In the same sense, the research by Cardoso, Mendonça Neto and Oyadomari (2010) and Cardoso, Riccio, Mendonça Neto and Oyadomari (2010) investigated the competences of the management accountant who operates in the Brazilian business environment. Among the key skills and attitudes that make up the profile of the accountant, the following stand out: critical thinking; ability to identify, analyze and solve problems; team work; leadership; communication skills; and knowledge and application of the technical content of the accounting practice. It is observed that these skills are listed by Duch, Groh and Allen (2001), Hansen (2006) and Savery (2006) among the elements that make up the goals of PBL.

3. Methodological Design

In this study, the methodological approach to the research problem was qualitative. The field research was undertaken between February and July 2013 in an actual classroom context. The classes took place normally so that the investigated routine actually took place, that is, the routine of the subjects involved in the research did not change in function of the research, as the intention was to verify the actual conditions in which the PBL method was implemented in an elective Management Accounting discipline in an undergraduate Accounting course at a Brazilian public HEI. This discipline was offered for the first time in 2011 and was already conceived to use PBL as the methodological approach. The class of 2013 was the third to learn with that method. The theoretical background on the implementation of PBL permitted the development of the theoretical propositions that guided the case study and are listed in Figure 1.

Propositions	Description	Theoretical Background
Proposition 1:	The difficulties in the implementation process affect the teaching-learning process;	Soares e Araújo (2008), Araújo e Arantes (2009), Ribeiro (2008).
Proposition 2:	The students' active participation in the accounting classes with the PBL approach help to develop the management accountant's competences;	AECC (1990), AICPA (2005), Soares and Araújo (2008).
Proposition 3:	PBL classes contain traits of the traditional methods;	Dochy, Segers, Bossche and Gijbels (2003), Ribeiro (2008)
Proposition 4:	The lecturers' posture differs from the traditional approach;	Wood (2003), Hmelo-Silver (2004), Soares and Araújo (2008), Ribeiro (2008).
Proposition 5:	The PBL updates the lecturers and the actual problems confronts them with challenges;	Wood (2003), Enemark and Kjaersdam (2009), Ribeiro (2008).
Proposition 6:	The objectives, characteristics, process, elements and assessment of the PBL in the Management Accounting classes are distinct from a traditional teaching approach;	Schmidt (1983), Duch, Groh and Allen (2001), Wood (2003), MacDonald & Savin-Baden (2004), Hmelo-Silver (2004), Savery (2006), Hansen (2006), Ribeiro (2008) and Sockalingam & Schimidt (2011).
Proposition 7:	The objectives of PBL are achieved at the end of the discipline; and	Duch, Groh and Allen (2001), Savery (2006), Hansen (2006), Ribeiro (2008).
Proposition 8:	The competences of the management accountant can be developed in the course of the discipline using a PBL approach.	Duch, Groh and Allen (2001), Aicpa (2005), Savery (2006), Hansen (2006), Cardoso, Mendonça Neto and Oyadomari (2010) and Frezatti and Silva (2014).

Figure 1. Theoretical propositions

The case study on the PBL discipline in Management Accounting was led by two professors from the HEI and involved 38 students. Both teachers hold a Ph.D. in Accounting, one of whom already had background in teaching with the PBL approach. It is noteworthy that the discipline was offered at night and most of the students that attended were in the final year and had a maximum of 25 years, with only 3% over 35 years. In this group of students, 82% were employed. The perception of students on the development of the components of PBL was surveyed by means of the assessment tool, which includes self-assessment, peer review and evaluation of the instruction method.

The research technique used was the single, intrinsic and holistic case study, involving a descriptive approach to PBL classes in accounting. According to Stake (1995), the everyday situations of education professionals are possible studies addressing a classroom, such as curiosity about new procedures or a program being reformed. In the intrinsic and/or holistic case study, the goal is to understand the point of view of people who are being studied in order to preserve the multiple realities, the different and even contradictory points of view about the phenomenon studied (Stake, 1995). In order to provide for the triangulation of data, the different points of view could be collected through three sources of evidence: the teachers (semi-structured interviews); the researcher (participant observation); and the students (documentary analysis, mainly the open questions in the evaluation instrument).

It is highlighted that the semistructured interview is flexible. Researchers can follow, or not, the prepared script and allow new questions to be asked at the time of the interview, as well as changes to be made in their order and wording (Bryman, 2012). In order to bring the PBL adaptation elements to Brazil and the Accounting area, four interviews were held with teachers who used PBL in their classes. The first interview took place in April 2013, with a lecturer from the Singapore Institute of Management University who investigates the problem in PBL (interview 1) - held at the time of the lecturer's visit to Brazil to discover how the PBL method is being spread in the country. Respondent 2 is a PBL researcher in Brazil, who worked on the implementation of the curriculum with the PBL approach at Eachusp and is a professor at that HEI. This second interview was conducted in May 2013. The third interview took place in October 2013, with the lecturer responsible for the discipline investigated in this study (respondent 3), who holds a Ph.D. in Accounting and preliminary experience in the adoption of the method. In November 2013, the fourth interview took place with the Accounting professor who taught the discipline for the first time and at the time was also serving as the course coordinator (respondent 4). The interview results were used, which were addressed through content analysis, to understand the operation of PBL in a discipline in the management accounting area, isolated in a conventional curriculum of a Brazilian public HEI.

It was decided to carry out participant observation in the classroom, as the researcher participated directly in all classes of the discipline and the students knew about her presence. Thus, the risk of atypical activities by the persons observed was eliminated. Observations in the actual classroom setting took place during the first half of 2013 in order to check the conditions and implementation of PBL in a discipline in the Management Accounting area.

The sources of evidence of the qualitative data include documents and didactic teaching materials prepared by the lecturers and researcher for the implementation and operation of the discipline. Bryman (2012) points out that the documents used for the collection of data should be readable in order to permit their understanding by the researchers; should not be produced specifically for the purpose of the research; their features should be preserved to permit their analysis; and the documents are relevant to the objectives of social researchers. The researchers, when analyzing documents, need to understand the context they were produced in and which was the intended audience (Yin, 2001).

The documents used in this research were: the program and the lesson plan of the discipline, the presentations (slides), reports and materials produced by the students, the attendance and academic assessments. These documents support the case experiments in question and meet the four quality criteria for use of documentary research presented by Scott (1990 cited by Bryman, 2012, p. 544), because the documents need to be authentic (equal to the original), have credibility (not present distortions or errors), be representative and provide clear and understandable evidence.

It is highlighted that the discussion on the operation of the PBL in Management Accounting teaching took place through the perception of the lecturers, students and research on its application, to the detriment of the option to assessing the performance of the students exposed to the PBL, according to Stanley and Marsden (2012, p. 285).

4. Analysis and Discussion of the Elements of PBL in Management Accounting Teaching

4.1 Structure of PBL

The investigated Management Accounting discipline corresponds to 32 credits during 16 two-hour class meetings per week, in line with the model adopted at USP Leste. According to Interviewee 2 and the description by Araújo and Arantes (2009), this discipline uses the Project and Problem-Based Learning approach.

It is highlighted that the partial PBL model was implemented (Ribeiro, 2008), with the lecturers and researcher intervening several times, using conventional approaches, such as lectures. The implanted PBL model includes teamwork with a single problem in the course of the semester.

According to Respondent 3, the lecturer responsible for the discipline, the fact that a discipline from an active learning perspective is elective is an advantage, because

> Fragment 1. Interviewee 3
> ... I think this is the best of all worlds. Because the student is not required, he will attend the discipline because he needs credit and that discipline is offered at a feasible time, or because he liked the lecturer, or he thinks the topic is an interesting topic.

On the opposite, Interviewee 4 affirms that

> Fragment 2. Interviewee 4
> The timing to offer the discipline is when most of the students are in the second half of the course towards the end. So I wasn't convinced that the students were completely interested in the discipline for the sake of the discipline, perhaps many of them were there because they needed the credit.

Experiences show the impact of PBL for the students because, for 100% of the students, this was the first experience with the method, confirming proposition 1 (**the difficulties in the implementation process affect the process of teaching and learning**) confirmed:

> Fragment 3. Students
> "I really enjoyed the course. It was not what I expected when I enrolled, in a good sense! I hope to have other disciplines involving the students as much as this"; "In my opinion, the new method was the biggest challenge, because the traditional learning method of was more rooted in my conception of learning"; "I think the question that we discuss and not have so many lectures caused a certain discomfort at first."

The subject in question aimed to identify, analyze and solve emerging Management Accounting problems of Brazilian companies. It was observed that, in the PBL structure developed, students sought to identify in the companies, i.e. in their professional experiences, a problem to work with within the theme of the discipline, which addresses **the impacts of the artifacts and management information on the organizational management**. In this regard, it was noted that the PBL objectives proposed by Duch, Groh and Allen (2001) were achieved as, through the structure in which the PBL was developed in the discipline, in which the students chose the actual problem, instead of the lecturers and researcher, in their first activ-

ity in PBL, they could develop critical thinking and the ability to identify, analyze and solve complex and actual problems, which supports proposition 2 (**the students' active participation in accounting classes with the PBL approach helps in developing the skills of the management accountant**).

Although the PBL discipline permitted strong interdisciplinarity (Ribeiro, 2008), in this case, it occurred autonomously and independently with regard to the curriculum integration in the Accounting course. It is noteworthy that, if there were integration with other disciplines with the PBL approach, this would reduce the characteristic of an independent and autonomous class in the Bachelor of Science curriculum in Accounting at this HEI. The lecturer responsible for the discipline points out that one of the elements that influence the teaching and learning process in PBL is the following fact:

> Fragment 4. Interviewee 3
> I don't know if I can call it a disadvantage, but the comparison with other disciplines, in the sense that you don't have a clear answer, is something that needs to be explained, as people need to understand that dimension and that is not so obvious.

The lecturer considers that the main characteristic of the discipline

> Fragment 5. Interviewee 3
> ...is called context. The student's context, it truly becomes part of learning, as he brings a problem he experiences in the company, it is relevant to him. [...] this learning consists of two parts: the project he is going to developed which should have a certain degree of depth, and his exposure with regard to the other colleagues' projects. And these two parts present an important differential in the learning proposal.

In addition, he affirms that the main objective in this discipline is

> Fragment 6. Interviewee 3
> ...integrate the students' experience in something practical and prepare a more pragmatic professional to understand a problem, organize the solution and truly contribute to this solution.

On the other hand, Interviewee 4 emphasized the learning of the method itself. It is expected that the PBL PBL

> Fragment 7. Interviewee 4
> not only helps the student during the course, but it is a method that will help the student to solve problems in real life, at his workplace. So the expectation was that, at the end of the course, the student would understand in a practical way how he can deal mainly with the problems in the management control area, using the steps of the method. The student knew what the method was and how to apply it in future situations. The student knew how to be autonomous to apply the method alone.

The disciplines followed the seven steps presented by Schmidt (1983), but with some adjustments. In the first classes, it was necessary to clarify the concepts about the topic in the discipline, and explain the functioning of PBL to the students since, as previously mentioned, the students who attended this course had never participated in classes with this approach. In this sense, proposition 3 (**there are traces of traditional methods in classes using PBL**) is present in some lectures, in order to standardize the language of the students.

At the same time, the students in the discipline defined the problem the group was to address during the semester, which was detached from the reality they live in. The third step is to analyze the problem, i.e., based on knowledge of the world and the life experiences of each team member. At that time, the group reports the first idea about the problem chosen, its structure, its context and the rationale for its choice.

The next step was to draw up the relevant hypotheses that can solve the problem. Students present what is known and what is not known about the subject. This fact is linked to the fifth step, which is the formulation of the learning objectives. This element needs to be more emphasized in the discipline, so that students, at the end of the discipline, have the certainty of the educational goals developed. Next, the first tutorial session in which the lecturers and the researcher provided some references for the groups, as the phase of independent and self-regulated study begins, in which students seek information outside the group. All groups conducted searches in the literature and conducted some interviews with experts inside and beyond the companies.

In the seventh step, the students discussed and integrated individual knowledge through the partial report. The newly acquired knowledge, in confrontation with the prior knowledge, was presented to the class through the socialization of the partial results. This corresponded to the presentation of each group for all students, with the opportunity to comment, initially by one particular group, and then by the whole class and the lecturer. Thus, the groups had time to return to the analysis of the assumptions made and the identification of the facts. The final tutorial sessions were aimed at discussing possible solutions to the problem. This phase is also shown in the research by Hmelo-Silver (2004). Thus, it was verified that the PBL in this discipline resents a well-defined process, which was built during the course. Each class was responsible for one of the seven steps presented by Schmidt (1983), which was complemented by the proposal of Hmelo-Silver (2004) in which, after the first analysis, the students returns to the hypotheses of the problem before proposing a final solution.

4.2 The elements of PBL: the problem, the student and the lecturer.

The key elements that guide the teaching-learning process in PBL are: the problem, the student and the lecturer. Regarding the problem, the lecturer responsible for the discipline argues that the reason for the student to choose the problem in this Management Accounting discipline is related to the context. The teacher responsible for the discipline reports that

> Fragment 8. Interviewee 3
> the legitimacy is the key point of the discipline, because the student opted for the discipline, he chose the group, he chose the theme.

From this perspective, the student also chose the problem, that is, first you have the context, and then the problem. After all, the purpose of discipline would be different if there were one problem per student in a room with sixty students room. In that context

> Fragment 9. Interviewee 3
> ... the experience would be equally profound. From the point of view of the actual project. What happens in practice is that it purports to deal with the knowledge, skill and attitude, and this grants the group very great wealth.

In the same sense, Interviewee 2 points out that the principles of this approach are

> Fragment 10. Interviewee 2
> *... the changing role of the student and the teacher in the classroom, that's what matters. [...] And the link with reality.*

Interviewee 4 complements the presentation by interviewee 2 when he states that PBL

Fragment 11. Interviewee 4
"Really takes the focus off the teacher and strongly goes to the focus on the student. So, like, one of the big advantages is to understand and accept that, in fact, the method allows for approaches different from the traditional" ; "Help students solve real-life problems."

Interviewee 1, in turn, highlights that

Fragment 12. Interviewee 1
... all PBL approaches have the same concept: learning for prosperity and collaborative learning. Making students think critically, without memorization through repetitive contents.

Next, we discuss the presence of the six features that address the three elements of PBL (problem, student and lecturer) submitted by Dochy, Segers, Bossche and Gijbels (2003), in the subject investigated in the management accounting area. It was noted that **learning was student-centered** in approximately 77% of the classes, either in the process of solving the problem or presenting the results. **Learning took place in small groups of students** who met all classes to develop the project in order to find a possible solution to the problem. It is noteworthy that the group involved the participation of 38 students. Seven compound groups were constituted of six students at most and with the advice of the lecturers and the researcher.

Thus, the fact was evidenced that the **lecturers and the researcher act as facilitators or guides**, as five lectures were partially held (covering less than 38% of the class hours) in order to present the PBL method and the topics to be addressed in the theme of the discipline. In addition, in one of the classes, the concepts of scientific method had to be addressed, given the students' difficulty. However, by serving as tutors – the faculty questioned the students about aspects they should be asking themselves in order to better understand and manage the problem. In addition, during the tutorial sessions, the lecturers and the researcher intervened and interacted with the groups in order to synthesize the knowledge built each class, and also sought equal participation for all in the course of the discipline. That is the spirit of Proposition 4 (**the position of the lecturers is different from the traditional approach**), which requires an adaptation of the teacher to conduct the discipline. According to Respondent 4, teachers learn to use PBL in practice, stating that

Fragment 13. Interviewee 4
teachers need to have the experience. That's what happened to me, I just started to have motivation because when I went to the discipline and I could practice.

The students valued the participation of the lecturers and the researcher as one of the aspects that contributed to the teaching-learning process, reporting, among other things, that

Fragment 14. Students
"... it was the first discipline in the history of my course that the tutors were monitored more closely. There was estrangement, a first-moment impact."; "In tutorial classes, it was possible to discuss my ideas with classmates and teachers with faster feedback"; "The discussions in the group during the tutorial sessions permitted the exchange of knowledge and experiences."

Although the whole emphasis of learning turns to the students, when they are exposed as facilitators, the lecturers and the researcher are encouraged to seek specific literature for the groups, which were not related to its focus, granting conditions to update the knowledge and increase the assertiveness in relation to the concepts and theories. This occurred when a group brought motivational issues to develop a budget.

In addition, the lecturers and the researcher learn when addressing the issues in a contextual and contemporary way. This occurs, for example, in a situation where students bring the context of the organization that does not have an integrated system, and the problem requires the generation of basic cost information for example. In this way, the lecturer approaches both the learning and the user's environment, gaining recycling and sensitivity about the things taught, a fact that comes to support the proposition 5 (**PBL updates the lecturers and the real problems make the lecturers face challenges**).

Similarly, participant observation revealed that the students and lecturers assumed the roles proposed by Wood (2003), supporting proposition 4. Lecturers as mentors aimed to encourage the participation of all group members; keep the focus of the group on the developed project; measure performance; check student comprehension; and ensure that the group reaches the learning objectives. The lecturers and the researcher, in all classes, especially in the tutorial sessions, met with each group for about 15 minutes (100 minutes of class divided into seven groups) because, in PBL, learning takes place through reflection, dialogue and exchange of experiences between the lecturer and the student, where both share the process of knowledge construction (Decker & Bouhuijs, 2009).

In this discipline, it was observed that **the problem directed and encouraged learning**, because neither the students nor the lecturers and the researcher knew the problems, and its solution represents a challenge for both. The problem was the focus in the integration of information from multiple disciplines and drove the learning of at least one content on Management Accounting for each team. In addition, the problems were the vehicle for the development of professional practice, as they were taken in their original form from the professional reality of seven students, who were considered the team leaders, and who were also responsible for the integration and development of the academic project with the company. With support from the research by Ribeiro (2008), problems were used that needed a solution to respond to an existing requirement in the organizations; the solutions are potentially applicable in their original contexts.

Corroborating the findings by Frezatti and Silva (2014), the process of finding a real problem inserted in the business reality that would fit the theme of the discipline, elaborating its hypotheses and seeking specific theoretical framework were considered the most difficult elements for many of the people taking part in the discipline. A fact confirmed by numerous reports, such as:

> Fragment 15. Students
> "the main problem was to find the problem"; "choosing an actual problem"; "outlining a problem and the hypotheses"; "finding specific literature on the theme"; and

> Fragment 16. Students
> ... the lack of academic maturity was a crucial difficulty in the discipline. Distinguishing a problem and turning it into a question is a highly complex process for us from a course that is mainly focused on the students' capacity to interpret figures in isolation, beyond an economic and social context, as we are 'obliged' to do in a discipline with PBL.

Proposition 6 (**the goals, characteristics, the process, the elements and the assessment of PBL in Management Accounting classes are distinct from a traditional teaching approach**) became very evident in the development of the discipline. Following a proposal presented in Hmelo-Silver's research (2004), it was observed that the discipline in PBL gave students experience with the resolution of a true problem, complex and drawn from the business world, supporting the view of Duch, Groh and Allen (2001) and Hansen (2006). It was observed that students absorb and better apply the knowledge in a real context. In addition, it was noted that cooperation among all members of the group was needed to solve the problem, given that the issue was complex and that the students were mostly enrolled in the last year and worked. This fact is also observed in Hansen's research (2006).

Several students identified a gap in the teaching and learning due to the absence of the application of simpler problems the lecturers and the researcher presented to illustrate to the students the operation of the PBL method before working directly with a problem extracted from the reality they were inserted in. Some students highlighted this assertion as follows:

> Fragment 17. Students
> "... I believe that, if an earlier work were presented at the beginning of the course which the teachers considered complete, it would help us to prepare our work"; "Show an example of the application of PBL from the construction of the problem until the solution"; and "exercises in class about PBL."

Interviewee 4 agrees with the students' opinion, suggesting a greater hour load and working with

> Fragment 18. Interviewee 4
> ... Two simultaneous problems, a single problem for the whole class, which would be the baseline problem for the student to learn how to work with the method, like in medicine, the teacher brings the problem and all students focus and discuss the problem. I think that would create more interest because it generates debate. And each group will have its parallel work that has to be completed by the end of the discipline.

Finally, it was noted that new information was acquired through independent learning because the lecturers provided some references to the groups, so that students had to learn from their knowledge of the world and their accumulated experience, because of self-directed learning, that is, the students researched, worked together, discussed, compared, analyzed, shared and discussed what they have learned, as do the professionals working in the labor market.

Some students highlighted the self-directed research in search of new knowledge and the self-regulated work elements as aspects that contributed to learning, like in the following statements:

> Fragment 19. Students
> "...an incentive to get out of one's comfort zone because of the need to investigate material and socialize the results", "it permitted envisaging different learning opportunities and seeking our own knowledge", "relating the literature with the problems experienced in daily reality".

The HEI offered all resources needed to develop the academic activities. Teamwork took place in a conventional classroom. The lecturer responsible for the discipline emphasizes that, for PBL to work, the following is also necessary:

> Fragment 20. Interviewee 3
> ...a structure different from the traditional structure: room, place for meetings, time for meetings, more people involved. As only one lecturer in the classroom is complicated, after a while it may even be simple, but at first it is not.

For Interviewee 4, this was his first experience as a lecturer in a discipline with the PBL approach and he complements that

> Fragment 21. Interviewee 4
> "...this is a discipline in which, when one works with more than one lecturer in the classroom and you have this exchange of ideas, it is important. [...] So that produced some very interesting work"; "the idea of working together is very welcome" and "[...]it is not very easy for you to operate that alone in a discipline".

Regarding the students' active participation, it was noted, through participant observation, that all students approved in the discipline accounted for more than 70% of attendance. But one of the elements that hindered the development of the discipline was that the groups did not fully participate in the classes concurrently, complicating the consistent targeting of groups in achieving their goals. Only the leader was highlighted in the groups and one of the major difficulties of the students was to work with a permanent group for all classes. Multiple tasks were required from the students and, because it was the first experience with PBL, the activities were original and furthered continuous learning of the problem as well as of PBL for the students. At the end of the discipline, the students understood the functioning of the PBL approach better, a fact that will enhance the students' performance in a new experience with PBL.

Students reported that

> Fragment 22. Students
> ...the systematics of being obliged to work with an actual case in view of the limited skill we have developed, as we are normally working in theory.

On the other hand, as a contribution to learning, some students emphasized the fact

> Fragment 23. Students
> ...of seeking information without being provided by a lecturer.

It should be evidenced that the study and the individual search for knowledge, as well as the proximity with reality, were elements the students highlighted. The lecturer responsible for the discipline evidences that

> Fragment 24. Interviewee 3
> ...the balance is an importance aspect to find among the elements of PBL.

As, according to him

> Fragment 25. Interviewee 3
> ...the student who is not accustomed to the discipline will take some time to understand that there are different logics. The lecturer, who somehow has to look for the material, has to produce material for the problems that come up and he does not know what the problems are. On the other hand, he cannot make all the material available, otherwise the student does not learn how to research.

It should be highlighted that the report of Interviewee 3 supports the assertion of proposition 5, previously presented (**PBL updates the lecturers and the actual problems confront the lecturers with challenges**). That is extremely important in an environment in which teacher preparation is costly, cumulative and has a strong impact in the students' development. In addition, it gradually allows the lecturer to perform his activities from more than one perspective, increasing his eclecticism. Anyway, it is also important to observe the lecturer's side, as the practical focus approximates him to the organizations and legitimizes his work in the area.

4.3 The Assessment Process

Also regarding proposition 6, the assessment process reported in the interviews, as presented in Figure 2, are complex and distinguished in terms of the different assessment tools, as well as the objectives to be achieved in each approach.

Interviewee 1	Interviewee 2	Interviewee 3
• Knowledge test; • Lecturer observation; • Individual presentation; and • Reflexive evaluation (self-evaluation and peer review).	• Partial and final scientific report; • Socialization in seminars; • Participation; • Self-evaluation; and • Peer review.	• Diagnostic evaluation; • Individual test; • Partial and final report; • Partial and final socialization in seminars; • Self-evaluation; and • Peer review.

Figure 2. The assessment tools

Based on the experience of Eachusp, Interviewee 2 affirms that

Fragment 26. Interviewee 2
...does not apply a test because no content is assessed.

In addition, the tools were listed that serve to assess the skills and attitudes while, in the international experience Interviewee 1 reported on, the assessment tools evidenced in Figure 2 address three components – content, practice and current competences (critical thinking, creativity, collaborative work, how the students work independently and the leaders' activities and other functions). In this Management Accounting group, the assessment process included the tools presented in Figure 2 through Interviewee 3's report, which were applied throughout the semester at different times and continuously.

It should be highlighted that the partial and final scientific reports promoted the development of *written communication skills*, as well as the application of knowledge on Management Accounting and the Scientific Research Method. These tools contained the contextualization of the problem, the problem itself, the hypotheses formulated by the group, the development of the theoretical research and the proposed solution to the problem chosen.

The presentations, in turn, permitted the development of *oral communication skills*. The reports and socializations were used to measure mainly the skills, as these are the assessment tools that evidence the result of the *teamwork,* the *creativity,* the *integration with the company* and *with the other course disciplines,* the *critical analysis,* among others. Concerning the contents, these assessment tools measure the group's mastery of the references investigated and of the theme the team problem addresses within the large area Management Accounting.

Through the knowledge test, it was observed that approximately 75% of the class is able to explain the tasks and problem-solving strategies, although only 24% of the students presented four of the elements that represent the importance of the method in the teaching-learning process. In the part that contained the questions about the projects developed in the teams, integration was observed among the team members, as more than 70% of the class reported on the main hypotheses their team proposed and presented the relevance of the research problem and the benefits the solution of the problem can grant to the company coherently. It was verified that approximately 89% of the students understood the roles of the participants in the PBL; and around 30% mixed up the theme of the discipline with the problem the groups chose, besides observing that one of the main difficulties the class appointed was the identification of the problem. Only 27% of the class correctly reported on the process used in the discipline to select the problem, thus ratifying the reports the students presented. Next, 37% correctly elaborated the hypotheses for a new problem and 47% correctly described how the field research would be accomplished. Concerning the Management Accounting knowledge, the students presented a high level of performance.

Interviewee 3 highlights that, in the course of the assessment process,

Fragment 27. Interviewee 3
The students do very well in the presentation of the projects and the recommendations. That was very good in my opinion! A perception of pride, of showing that you know it. We are often unable to grant value.

On the other hand, there is

Fragment 28. Interviewee 3
Frustration with the test, because we tried to understand what they learned about the technique. It is frustrating, because I'd truly expect greater knowledge. But, for me, that actually reflects the way of the generation.

The diagnostic evaluation occurred before the start of the classes and only 63% of students took it. It is noteworthy that the implementation of this evaluation was optional for the students because it was not linked to the student's pass or fail grade. There was a major concern of students with respect to the element "knowledge", with the lecturer as the holder of knowledge, that is, the one who teaches classes in order to pass on the knowledge (the focus of the traditional approach), as several students emphasized the following as a learning perspective

Fragment 29: Students
"Acquire knowledge to work on my profile as a manager", "gain knowledge on how to identify and solve a management control problem that furthers the integration of the knowledge obtained in the course thus far."

In addition, students also expect that the lecturers

Fragment 30: Students
"Master the curricular content of the disciplines", "pass on the theoretical and practical knowledge of the area"; "Address content with good teaching and in an enlightening way."

The students' lack of preparation in terms of the prerequisites for the discipline was also observed, as well as the heterogeneity of the class and the lack of commitment to their own learning in approximately 30% of the students, even before the start of the discipline. Therefore, the diagnostic evaluation before the instruction process was aimed at knowing the student group and driving the course of the discipline (Silva, 1992).

The evaluation tool applied in the final class of the discipline captures the viewpoint of the students involved in the teaching-learning process about the skills and attitudes developed during the discipline and their perception about the instructional method (PBL). Respondent 3 reports that

Fragment 31: Interviewee 3
self-assessment and peer review is no tradition in this school, is a new thing. So we implemented without much knowledge, not only theoretical knowledge but also knowledge of practical experiences someone has already used.

The self-assessment and peer review were addressed in the same evaluation tool, applied in the final class of the discipline. This assessment tool aims to collect the views of students on the development of skills and attitudes of the management accountant, as well as their views on the teaching-learning process with PBL.

In the self-assessment and peer review, the students evaluated each constituent element of the skills and attitudes developed in the discipline by assigning grades from 0 to 10 to themselves and the members of their group. In addition, students had three essay questions that encompassed general comments about the operation and development of the group; the main strengths and weaknesses of the work done; and what could be changed in the way the group worked to promote better learning.

It is observed in the following report that the set of evaluation tools covered the expected learning objectives.

> Fragment 32: Interviewee 3
> There are different looks; you want to capture the knowledge, because somehow it is important. It will always be important. However, skills and attitudes can be captured by monitoring the process, there are some informal or final evaluation subsidies, like the one that happened in this class, that somehow closes off the process.

Thus, it is observed that, through the analysis of the evaluation instruments, it was possible to identify the knowledge, skills and attitudes the students developed in the Management Accounting discipline with PBL.

4.4 The Competences Developed

Proposition 8 (**the skills of the management accountant can be developed in the course of the discipline with the PBL approach**) was achieved, as the discipline was intended to develop the competences, regardless of the issue the students had chosen. With regard to the knowledge, there were the presentation and the development of the content that underpinned the implementation of the PBL method were observed. With regard to the specific knowledge on the theme of the project, the groups worked on a complexity of issues, a fact that required students to develop critical thinking and develop specific research on the content of the problem they intended to solve.

Regarding the knowledge on research methods and tools, the premise was that students seek to accomplish interdisciplinarity with the contents exposed in the discipline on the scientific research method, considering that interdisciplinarity is one of the skills emphasized in Art. 4 of CNE / CES Resolution 10/2004, and, according to Araújo and Arantes (2009) and Ribeiro (2008), the PBL furthers interdisciplinary among the disciplines of the course.

And finally, we evaluated the knowledge on management accounting, which were briefly explained, given that the senior students had already attended the disciplines Management Accounting, Cost Accounting, among others that addressed the prior knowledge required as a prerequisite to take the discipline analyzed in the Management Accounting area. This fact supports the research by Cardoso, Mendonça Neto and Oyadomari (2010), by reporting on the technical skills that encompass the expertise in the management accounting area. As verified, the knowledge acquired by the groups was different but well grounded in the theories the teams investigated.

It was noted that, in approximately 94% of the classes, the operation of PBL happened in groups. So, it is highlighted that group work and communication constitute the key skills developed in this discipline. It is noteworthy that, among other skills, the students develop *independent study, self-directed work, integration with the company* and *critical analysis* because, in between classes, students needed to produce material to be presented to the lecturers and the researcher, thus demanding a high load of research work and extracurricular activities. It was observed that only a few groups were able to show a solution to the problem with clarity and feasibility. In the same sense, the students reported, through self-assessment and peer review, the development of the following skills as a positive point of the approach: *integration with the company* and *communication*. With a little less emphasis, they listed *creativity* and *integration with other disciplines*.

It is noteworthy that the skills *teamwork, communication, problem solving* and *critical thinking* are competences attributed to the management accountant (Cardoso, Mendonça Neto & Oyadomari, 2010; AECC, 1990, AICPA, 2005; ICA, 2009; Ifac, 2012) and fit the goals of PBL (Hansen, 2006; Savery, 2006; Duch, Groh & Allen, 2001). Of these, only *teamwork* and *critical thinking* are emphasized in CNE/CES Resolution 10/2004, while the other skills addressed in the discipline, such as *integration with the company* and *integration with other disciplines*, are listed only in CNE/CES 10/2004 and ICA (2009).

In turn, the negative aspects include the lack of time to conduct independent studies, the lack of planning of the group to perform *self-regulated work*, the difficulty to present a solution to an open problem and mainly the difficulty of students in working with others. On the other hand, some students showed that *self-directed research* in search of new knowledge and the self-regulated work were elements that contributed to learning. Thus, the PBL provided growth and urged students to better develop those elements that contemplated the group of management accountant skills, mainly the elements that comprise the essence of PBL, whose purpose is for the student to develop the ability to learn to learn.

Regarding the attitudes of the management accountant, it was observed that, for a good performance in this discipline, students must present *empathy, respect for the opinions of colleagues, commitment* and have *practical experience*. In turn, the attitudes that stood out negatively were lack of *commitment* and *leadership* by some members of the groups, a fact that was crucial to the *development of the project* and to obtain the *solution of the problem* and consequently the satisfaction with *teamwork*. It was noted that, during the classes, the main attitudes the students presented were: *empathy, collaboration, interest* and *curiosity*.

The attitude *interest* is not shown as a competence of the management accountant in the literature, only with regard to the method. However, this relates to the fact that the problem stimulates the students' interest on a certain topic (Sockalingam & Schmidt, 2011). *Leadership* is the attitude the regulatory body (AECC, 1990; CNE/CES Resolution 10/2004, AICPA, 2005; Ifac, 2012). From this perspective, it should be emphasized that the CNE / CES Resolution No. 10/2004, also presents *commitment* as an attitude to be developed in the course of bachelor courses in accounting.

It can be concluded that discipline achieved its goal of integrating education, research and practice (Enemark & Kjaersdam, 2009), as Proposition 7 (**the goals of PBL are obtained at the end of the course**), a fact that is seen in one of the reports evaluative performed by one of the students on the subject, stating that it

> Fragment 33. Students
> ... permits the application of the theory to the practice experienced in business. But it is also a discipline that provides tools to researchers. It integrates these goals, it encourages students to develop critical analysis needed to be a more proficient professional.

5. Final Considerations and Recommendations

This research aimed to investigate how the PBL method was implemented in the Management Accounting discipline in the undergraduate degree in Accounting at a Brazilian public HEI. It showed that the implementation of PBL in this discipline promoted an impact on the students, considering that, for all the members of the discipline, this was the first experience with a student-centered teaching method, and the results showed that the students were highly influenced by traditional teaching methods. Both the participant observation and the documentary analysis revealed marks of the students' need for lectures with content or theory taught by the lecturer and for a more passive stance towards their own acquisition and knowledge construction. In turn, the authors emphasize the students' appreciation of the lecturers and the researcher's role as a major contributing factor in the acquisition of knowledge and development of the skills and attitudes proposed.

It was also verified that the PBL helps students develop the skills presented in the studies by Cardoso, Mendonça Neto and Oyadomari (2010) and Cardoso, Riccio, Mendonça Neto and Oyadomari (2010), which are necessary for the accounting professionals' work in the labor market. Note, too, that it meets the prerogatives and the desires of the international entities AECC (1990), Ifac (2012), ICA (2009) and AICPA (2005) and national curriculum guidelines presented by means of Law No. 9.394 / 1996 and CNE / CSE Resolution 10/2004, which emphasize the need for accounting education to address, in addition to the content, skills and attitudes.

It should be noted that the PBL method strongly affects Generation Y students; contemplates the benefits of communication and information technology in academic education; allows students a professional application of these technological tools; and encourages interaction among students in an educational environment that promotes communication, collaboration and cooperation with the use of technology applied in the development of research.

Due to the paradigm shift in which the teacher cannot use disciplinary practices, there remains the change in the teachers' attitude, that is, to propose active methods in which the student can use their main features and tools, which in PBL ends up being the main element in the construction of knowledge. It also provides a good relationship between lecturers and students, creating a climate of spontaneous participation, as appointed in the studies by Wood (2003), Enemark and Kjaersdam (2009) and Ribeiro (2008), concerning the advantages and disadvantages of PBL. Therefore, it is important to highlight the possibility of teachers' resistance and the need to prepare them through additional training courses on PBL.

Thus, the findings of this research highlight the contribution of this teaching method so that teachers can communicate with contemporary students, minimizing generational conflicts that sometimes occur in the traditional approach. For the students, it means an opportunity to learn in a meaningful way, combining theory with practice in order to train them for the job market through the development of their different competences (knowledge, skills and attitudes). To academic managers, it represents the challenge of reflecting and promoting significant changes in teaching-learning process of the courses they are responsible for which can address the PBL.

Limitations of this study include the perception of the participants involved in the classroom environment that involved the application of PBL in the Management Accounting discipline in the class of 2013. Another aspect that can be considered as a limitation was the fact that the participating students are already in an advanced stage of the course, which entails the focus of freedom of choice. On the other hand, there are students who already have a vision of what the course can provide, while the former have reached a moment of looking for a job, with less interest in the course. It is suggested that further research be conducted to investigate the main advantages and disadvantages of PBL relative to other teaching-learning approaches in the disciplines in the management accounting area, as well as to investigate the evolution in PBL in accounting education through a longitudinal study.

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