

**ADEQUACY ANALYSIS OF PROBLEM-BASED LEARNING (PBL) METHOD ON
ADMINISTRATION COURSE: A Study On The Disciplines: Administration Theory I and II**

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ABSTRACT

The Problem-Based Learning (PBL) methodology is an innovative method that consists on presenting a real or simulated problem and the student looks for a solution through research outside the classroom. The method, centered on the student, awakens skills, positive attitudes and critical thinking, contributing to the student's capacity to build his or her own knowledge. In this work, the goal was to evaluate the PBL methodology adequacy to the teaching of Administration Theories I and Administration Theories II. A Carrefour problem situation and a Havaianas company problem situation were applied with the intent of practicing Contingency Approach. A fictitious Beca company problem situation was also presented to both classes. The conclusion is that the PBL methodology is appropriate to teaching Administration Theories I and II, because it enabled a new way of "thinking" and "building" knowledge, providing students with the opportunity of taking responsibility for their own knowledge.

Keywords: *Problem-Based Learning (PBL), Administration, Knowledge, Skills and Attitudes*

1. INTRODUCTION

The growing availability of Administration graduation courses and undergraduates generates anxiety on recent graduates regarding their employment level. Anchored in Giroletti (2005) and the conviction that education cannot be reduced to a commodity, there are solid movements to improve undergraduate's graduation conditions. In the movement, the adoption of active methodologies gains scientific *corpus* and support from pedagogical commissions from different graduation courses, because these methodologies are supported on actions that promote thinking development, abstraction capability and generalization of student's analytic capacity.

In this sense, starting from the critical reflection on teaching methodologies adopted in Administration graduate courses, arises the interest to evaluate the adoption of active methodologies in the Federal University of Viçosa's Administration course, *Rio Paranaíba Campus*. The adoption of these methodologies can promote learning autonomy (Escrivão Filho & Ribeiro, 2008), making Administration graduates capable of creating new knowledge during their professional path, besides providing conditions for them to follow market changes, as highlighted by Giroletti (2005).

The Problem-Based Learning (PBL) method is appropriate for raising awareness on the adoption of more adequate methodologies to a more autonomous learning process. The PBL methodology is capable of stimulating the capacity of learning to learn, stimulating the student to take an active role in the learning process, as highlighted by Escrivão Filho and Ribeiro (2008), Chakravarthi and Nagaraja (2010) and Duffrin (2013).

PBL allows for a formation that is more adequate to the professional life dynamics and contributes to reducing student alienation in the classroom through eliminating passiveness in the learning process (Escrivão Filho & Ribeiro (2008). Chakravarthi and Nagaraja (2010) highlight that PBL provides bigger learning autonomy, critical thinking and problem solving capacity due to bigger knowledge retention and problem solving practice. Duffrin (2013) highlights that PBL demands a multidisciplinary configuration, which corroborates for the construction of a solid base and aids the student to perform a critical reading of reality when building solutions to proposed problems, that is, social, environmental, economic and ethical matters are considered in the process of problem elaboration. In this sense, PBL methodology allows for the formation of a more complete professional, able to "recognize and examine multidimensional phenomena, instead of isolating, in a mutilating way, each of its dimensions" (Morin, 2003).

It is believed that in the classroom environment, it is necessary to consider the dynamicity of the organizational world and the discussion of problems closer to the organizational reality helps the future administrator's "handon" capacity formation. The PBL methodology implementation helped the creation of conditions for the student to take the subject role in the learning process. In different terms, the adoption of the PBL methodology allowed the development of student's capacities such as identification, research and knowledge application on interpretation, analysis and solution of specific problems, making him or her more capable for better performance.

On the intent of finding subsidies to answer to this project's central question – "Is the PBL methodology adequate to teaching the contents of Administration Theories II?" – one of the programmatic content topics from the Administration Theories II discipline – Contingency Approach – and one of the programmatic content topics of the Administration Theories I discipline – Bureaucracy Theory – were approached according to the PBL methodology concept. The topics – Contingency Approach and Bureaucracy Theory – were approached on the second semester of 2013 and on the first semester of 2014, respectively.

1.1 *The Problem-Based Learning (PBL) method: innovation in Administration teaching*

The traditional teaching method is an economic strategy and an efficient way to transmit knowledge, however, the exhaustion of this method's efficacy is noticed, especially on higher education (Gil, 2005). On higher education, several authors such as Cavalcante (2000) and Gil (2005) point to the need of adapting methodologies to the target audience, which is comprised by youngsters and adults with previous experience and knowledge, besides being independent and avid to live significant and day-to-day related learning.

The PBL method presents itself as an appropriate methodology to the new challenges of Education. The basic fundament of PBL is to teach the student to learn (Araújo & Rodrigues, 2006) because it has its roots on the knowledge theory and the learning process is induced by problem situations that intentionally generate intellectual disturbances (Cyrino & Toralles-Pereira, 2004).

The PBL method has its origins in the 1960's medicine education at the McMaster University, Canada, inspired by the case study method at the Harvard Law School (Ribeiro, 2005). The demand for an active methodology in

the learning process provided the ideal conditions for the PBL method's expansion for teaching other disciplines and other levels of education, as highlighted by Ribeiro (2005).

Despite the adoption of the PBL preponderantly at medicine courses such as Medicine Faculty of Marília, Federal University of Roraima, Federal University of São Paulo, State University of Londrina, there are experiences in courses from other areas, such as the courses of Gerontology, Marketing, Textile and Clothing Technology, Physical Activities Sciences, Environmental Management, Public Policies Management, Leisure and Tourism, Obstetrics, Information Systems, that adopt this methodology since 2005, on the implementation of the University of São Paulo's East Campus. Pettito and Dias (2004) implemented the PBL methodology on computer education to Administration undergraduates and observed an intense engagement from the students, who brought their individual experiences to the problem solving process.

PBL is not a new methodology, since it incorporates concepts from many great educational researchers, such as Bruner, Dewey, Ausubel, Rogers, but it is innovative to the point it is able to operationalize them into a coherent set of activities. Its main characteristic is the use of a real problem related to the students' future professional practice in order to initiate and motivate the learning of concepts that are necessary to the solution. (Escrivão Filho & Ribeiro, 2008)

Because the PBL method is an approach that uses problems to initiate, focus and motivate relevant social and professional knowledge learning (Escrivão Filho & Ribeiro, 2008), this methodology is believed to be able to transform the teaching-learning process on Administration courses.

The capacity for transformation of the teaching-learning process by the PBL method is due to the fact that this method proposes a rupture with the content-based didactical line and revolutionizes the role of teacher and students. The teacher takes a role as the facilitator for the learning process and raises questions around the presented problem, whereas the student works actively in search of answers through research, interacting with their colleagues and market professionals. Chakravarthi and Nagaraja (2010) highlight that PBL stimulates the ability of learning to learn, instigates the need for team work, stimulating the skill of listening to other opinions, besides inducing one to take an active and responsible role for one's own education and that of one's group. Thus, PBL meets administrators formation demands and reveals itself, undoubtedly, as an appropriate methodology to teaching in Administration.

The PBL process starts with the presentation of an open-ended problem, that is, a problem that has diverse solutions and demands relation between knowledge on different disciplines. Due to the fact that it is presented before theories and concepts, it demands research to start the process of solution construction. This way, student and/or self-managed groups need to adopt an active, collaborative and participative stance. PBL promotes a problem-theory inversion, encouraging the student to develop critical thinking, problem solving skills and knowledge on essential concepts for the area in question. (Escrivão Filho & Ribeiro, 2008)

This method has the following advantages: subject comprehension, knowledge retention, responsibility for one's own learning, interpersonal skills and team spirit development, self-motivation, student relationships, interdisciplinarity, establishment of new angles for the teacher-student relationships and long lasting knowledge (Gil, 2006).

Supported by Soares and Araújo (2008), it is possible to infer that a good teaching methodology is one that motivates the student to research and study. In this sense, the authors state that, through the developed problems, PBL is able to make the student an active agent on teaching/learning, fundamental stance for the Administration graduates to search for knowledge throughout their professional path.

2. RESEARCH METHODOLOGY

Methodologically, the project fits as a descriptive and explicative work, as highlighted by Gil (2010). The project development promoted more familiarity with the central theme – PBL Methodology – besides providing conditions for detailed description of the investigation's target audience.

The adopted approach method was the Study Case, wherein the methodological design allows for the understanding of the *locusem* phenomena that happen, as stated by Yin (2010).

Initially, the literature research was used to improve the knowledge on active methodologies, such as PBL. This stage was crucial for the knowledge of the PBL methodology implementation steps in the classroom. After defining the theme to be approached with the PBL methodology – Contingency Approach (ADE 102) and

Bureaucracy (ADE 101) – research was also fundamental for identifying problem situations to be applied in the classroom.

Araújo and Rodrigues (2006) highlight that the PBL methodology has as main components: theme, problem and learning goals. The chosen theme – Contingency Approach (second semester of 2013) and Bureaucracy Theory (first semester of 2014) – is an integral part of the programmatic content of the ADE 102 and ADE 101 disciplines, respectively. The problem – PBL method's core element – was elaborated to evoke a productive discussion in the classroom. Considering the PBL method's main goal is promoting active learning, the problem situation was presented so the students could perform (1) problem analysis, (2) formulate hypothesis and (3) establishing learning goals representing the necessary knowledge for the problem's solution via a report and participation on debate.

Field work was initiated with semi structured survey with the students to identify the profile of each classroom where the PBL methodology was applied. The survey touched questions about: sample's demographic data; evaluation methods, teaching methodology and learning process used so far by teachers. The data was organized in tables with the aid of Microsoft Excel.

3. DISCUSSION OF RESULTS

3.1 ADE 102 student profile:

Analysis of data collected via semi-structured survey allowed the definition of profiles for the students who would be in touch with the new teaching methodology. Class 1 corresponds to full-time students and is comprised by 30 students. Class 2 corresponds to nighttime students and is comprised by 33 students.

On Class 1, 63% of students are females and 37% are males. Class 2 has 59% women and 38% men.

In relation to age, on Class 1, 56% are between 18 and 19 years old, 17% between 20 and 21 years old; 17% between 22 and 23 years old; 7% between 25 and 26 years old and only 3% over 45 years old. On Class 2, 26% are between 17 and 19 years old; 29% between 20 and 22 years old; 24% between 23 and 24 years old; 15% between 25 and 26 years old, 3% over 26 years old and 3% did not inform their ages. It is noticeable that Class 1 has a bigger concentration of younger students, recent high school graduates. On Class 2, we can notice that 42% of students are older than 23 years old, showing a classroom with an higher average age than Class 1.

In relation to the students' place of birth, it was noticed that 33% of Class 1's students are from *Rio Paranaíba*. Completing the *Patos de Minas*' micro region, there are still 2 students from *São Gotardo*, 1 from *Patos de Minas*, 1 from *Matutina* and 1 from *Carmo do Paranaíba*. In this case, the *Patos de Minas*' micro region represents 50% of students on Class 1. The rest are distributed with no particular concentration by region or state.

On Class 2, *Patos de Minas*'s region origin is more expressive and distributed among the cities of *São Gotardo*, *Carmo do Paranaíba*, *Rio Paranaíba*, *Matutina*, *Patos de Minas* and *Tiros*, representing 79.4% of the classroom, which, in absolute numbers, is equivalent to 27 students; the rest come from other cities in the state of *Minas Gerais*.

After defining demographic characteristics, the study aimed to solve other questions in order to actually verify the adequacy of the new methodology for the ADE 102 classes.

On Class 1, in relation to where students attended high school, it was observed that 27% attended private schools; 67% attended high school only in public schools; 3% attended most of high school in public schools; 3% attended most of high school in private schools, with no scholarship student.

On Class 2, 79% attended public schools; 9% attended high school only in private schools; 3% attended most of high school in public schools; 9% attended most of high school in private schools and there were also no scholarship students.

In relation to paid activities, it was observed that 82% of Class 2 and only 20% of Class 1 work and study. What is observed in Class 2 is true for most nighttime students.

Corroborating with the performed analysis about the amount of working students, the nature of the Administration student's work relation was identified. On Class 1, 33% are self-employed and 66% work for private companies. On Class 2, 18% are self-employed and 61% work for private companies. Still, 14% work on public companies and 7% are interns in companies related to the University.

As to the type of work of the students who declared to perform paid activities, it was observed that students do not necessarily have a position related to Administration. There were findings of students who worked as ice-cream helpers or dentist helpers, showing that, many times, the employment is related to the need for survival income.

Concerning income range, it is observed that on Class 1, 50% of the students who declared to perform paid activities earn up to one minimum wage. From the ones that declared to perform paid activities on Class 2, it was found that 35% have an income of one minimum wage and 57% have an individual income between 1,1 and 3 minimum wages. Data from both classes prove the low paying practice of the region's companies.

Regarding financial aid offered by the University, only Class 1 students declared to receive some sort of aid: two have food aid and one has a scholarship for being a member of the UFV-CRP Choir.

After defining the student's profiles, the goal was to identify the undergraduates' position in relation to the methodology and teaching instruments adopted in the teaching of the many disciplines attended by them so far. In both classes, the teaching methodology is evaluated as affective, in percentages considered high. On Class 1, 93% and on Class 2, 82% of students consider the teaching methodology adopted as effective, which can be verified on Figures 15 and 16. It is noteworthy that no student evaluated the teaching methodology adopted in the University as being ineffective.

On the same line, students were asked to rate the evaluation method adopted on the different disciplines they have attended and the evaluation as effective was emphasized once again in both classes. On Class 1, 80% of students rated the evaluation method as effective and on Class 2, this rating was checked by 84% of interviewees. Once again, the ineffective evaluation was not checked by any of the students and, in this case, it is worth noticing that there are student attending ADE102 for the second time in these classes.

Regarding out-of-class study time, a ruling factor in the PBL methodology, on Class 1 it was observed that 7% of students do not spend any time for out-of-class study. On the other end: over 10 hours spent per week: 3% declared to dedicate themselves to out-of-class study. With close percentages, 43% of student said they spend less than 5 hours per week on out-of-class study; 47% said they spend between 5.1 and 10 hours per week on out-of-class study.

On Class 2, 9% of student said they do not spend any time on out-of-class class study. Despite being only 2 percentage points above Class 1, it is a relevant data, because it indicates that there is a group of students that do not consider dedication to studies to be relevant for learning. It is noticed that the answers were sincere, because most of them work and study at the same time when noticing that 61% of Class 2 students said they spend less than 5 hours per week on out-of-class study. This represents half a shift on the weekend, when they probably do not work. Besides, 30% declared they spend between 5,1 and 10 hours studying per week.

We aimed to identify if students have a vision of their own professional future, thus, they were questioned about what they intend to do after graduation. We can classify the answers into two big groups: performing professionally in the job market or managing an enterprise. On Class 1, 55% of students wish to perform professionally on the job market both in private companies or public sector and 29% declared they will be entrepreneurs in their own or family business. O Class 2, 61% said they want to work on the job market; 31% wish to manage their own enterprise or family business.

3.2 ADE 101 student profile:

A semi structured survey was used to identify the profile of the students attending ADE 101. Class 1 corresponds to full-time students and is comprised by 64 students. Class 2 corresponds to nighttime students and is comprised by 70 students. It is worth mentioning that Class 2 sample is comprised by 50 respondents.

Class 1 is comprised by 26% men and 71% women. In this case, 3% of present students did not inform their gender.

Class 2 has 58% women and 42% men.

Research on age distribution shows that classes 1 and 2 have a bigger concentration of students with age between 17 and 19 years old.

Regarding ADE 101 students' cities of origin, it is noticed a big concentration of students from the *Alto Paranaíba* region. A shy, but with a growth tendency, presence of students coming from São Paulo is highlighted.

In relation to high school attendance, most of Class 1's students attended high school in public schools and 82% of Class 2's students come from public schools.

On Class 1, most students do not perform paid activities. Only 10 students perform paid activities. From this total, 6 have jobs in private companies and 4 work on the public sector.

Regarding paid activities, it was possible to identify that 46% of students enrolled in Class 2 work and study.

Type of work has great variations, both in Class 1 and Class 2. However, it was verified that the type of work performed by those who claimed to execute paid activities is not always related to the graduation area.

Regarding the income range of the students who claim to perform paid activities, there is an accentuated concentration on the salary range up to one minimum wage. On Class 1, 57% earn up to one minimum wage. On Class 2, 54% earn between 1,1 and 2 minimum wages.

In both classes, most students do not receive financial aid from the University.

The evaluation of the teaching methodology adopted in all disciplines was rated as effective for 69% of students in Class 1. 74% of students in Class 2 rated it as effective.

Regarding the evaluation method, most students consider the evaluation effective, a total of 69%. Besides, 6% rated the evaluation method as really effective. Only 20% consider the adopted evaluation method to be poorly effective.

Regarding the evaluation method adopted in the different disciplines attended, Class 2 students' evaluation matches the evaluation performed by Class 1. From all interviewees, 74% consider the evaluation methods to be effective.

In relation to time spent by students on out-of-class study, 44% said they spend between 5,1 and 10 weekly hours on out-of-class study and 43% said they spend less than 5 hours per week.

In relation to out-of-class study time in Class 2, it was noticed that 60% of students declared to spend less than 5 hours per week on out-of-class study; 36% said they spend between 5,1 and 10 hours per week on out-of-class study.

Another approached question was what the students intend to do after finishing higher education. On Class 1, 40% stated they intend to enter the job market, 28% intends to work on a public career, 17% intend on opening their own business, 11% intend on managing a family business and the rest wants to work as teachers or some other activity. On Class 2, 46% of students answered they wish to enter the job market, 26% highlighted their wishes on having a public career and 16% said they will open and manage their own enterprise.

3.3 Evaluation of the PBL methodology adequacy to teaching Administration Theories

Application of the PBL methodology showed adequacy of the methodology with student autonomous learning. It was possible to notice a bigger identification with the methodology on student statements. However, there was the perception that student engagement was proportional to their need to be approved in the discipline than effective interest in knowledge. Maybe the application in only one of the topics worked on in ADE 102 and ADE 101 can explain this perception by the project coordinator and involved students.

Student testimonials show there is a perception on the insertion of practice in building theoretic knowledge in the PBL methodology: “[with the] methodology, I was able to go from theory to practice, allowing me to analyze problems based on acquired knowledge, therefore the methodology is interesting and important” (D3₁₀₁'s testimonial); “[the PBL methodology] provides us better learning in a way that is focused on the market's true reality, not focusing only on theory” (D5₁₀₁'s testimonial) and “[the PBL methodology is] excellent, because this way students learn and experience more” (D1₁₀₂'s testimonial).

The methodology's dynamicity and awakening of interest and motivation are also highlighted. The highlighted testimonials reiterate that the PBL methodology is adequate to teaching the Administration Theories disciplines,

but there is no need to include the methodology through the whole term so the students do not rate it as something ‘overwhelming’ to the process of knowledge construction:

The PBL methodology facilitates learning [...] stimulates creativity and motivation (D4₁₀₁'s testimonial)

The methodology is very efficient, it makes the student go beyond the classroom, that is, it allows a greater interaction in the organizational universe. (D6₁₀₁'s testimonial)

[...] it would be better if it wasn't [applied] at the end of the term, because end of terms are always 'hasty' [...] (D2₁₀₁'s testimonial)

Yes, because PBL motivates (D8₁₀₁'s testimonial)

The students' positive validation of the PBL method also happens because of new generations characteristics, demanding classes that are more dynamic and adequate to the technological reality that surrounds us. D6₁₀₁'s testimonial portrays this in a revealing way: “[...] because it is a method used to acquire new knowledge in an attractive and interesting way, we get rid of the tiring University study routine for a bit”.

Another point that brought us closer to PBL methodology students was the realization of a debate after delivery and evaluation of final reports. According to D8₁₀₁'s testimonial “The debate gave us the perception of different opinions, thus, producing better learning and knowledge”.

The positive student expectancy about the possibility of the methodology's application in other disciplines is also noteworthy. Questioned about this possibility, D1₁₀₁ answered: “Certainly yes” and explains why: “Theory is better absorbed when seen in practice”. In a different way, D7₁₀₁ emphasizes “[...] the method is very dynamic and would awaken our interest on the other disciplines”.

4. CONCLUDE REMARKS

At the first stage, the PBL methodology was applied in order to work through Contingency Approach. For each discipline, a problem situation was presented – Carrefour. Student engagement and participation promoted a rare learning opportunity for both students and people involved in the project.

Initially, there were many doubts about the PBL methodology that were remedied through research and study throughout the construction of bases for the PBL implementation. Based on Ribeiro (2005), it was possible to establish methodology adoption strategies and reach positive results concerning active student participation and learning.

Regarding difficulties and flaws highlighted by students, we identified that the presentation of the stages was not clear to everyone, because after initial instructions, there were still doubts that were only clarified on the third meeting. Besides, student reported difficulties associating theory with the problem situation. Time was also mentioned as a limiting factor to the quality of reports.

As the project involves the methodology's application in two distinct periods, it is believed that the experience of the PBL implantation in ADE 102 will be fundamental to reaching better results at the second stage.

In this study, student participation was active and activities related to the methodology adoption enabled achieving student knowledge development, allowing, thus, the conclusion that the methodology is adequate to teaching Administration Theories.

At the second stage, the PBL methodology was used to work through Bureaucracy Theory. In this case, a fictitious case was presented to both classes in order to subsidize the consolidation of concepts related to bureaucracy and its dysfunctions. In ADE 102, student participation fell far shorter than expected. It is believed that the high failure rate in the discipline added to the fact that the PBL methodology was applied at the end of semester compromised student engagement, as many did not have conditions to reach the minimum necessary to go to the final exam. The first stages – survey, partial report – had a bigger participation, however, at the debate, there was low participation and engagement for both classes.

It is noteworthy that, in both disciplines, it was possible to identify student motivation against the challenge proposed by the problem situations and the interviews showed student identification with the methodology. It is primordial to highlight that the PBL methodology adoption in only one topic may mask the obtained results, that is why we suggest more research considering a larger parcel of the content or a comparative study with acquired knowledge evaluation between disciplines that adopt the PBL methodology and disciplines that adopt passive and traditional teaching methodologies.

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