

A IMPORTÂNCIA DA AVALIAÇÃO POR PARES E AUTOAVALIAÇÃO EM ABP APLICADA A UM CURSO DE ADMINISTRAÇÃO

THE IMPORTANCE OF PEER ASSESSMENT & SELF ASSESSMENT IN PBL APPLIED TO AN ADMINISTRATION COURSE

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RESUMO: A aprendizagem baseada em projetos (PBL) é uma metodologia de aprendizagem ativa que coloca o aluno no centro da aprendizagem, forçando o professor a assumir um papel de facilitador e coadjuvante. Esta nova postura docente não é menos importante, porque exige muitas mudanças que devem ser promovidas por estes, em particular, relacionadas à coordenação e à organização do projeto de aprendizagem. Uma tarefa importante neste planejamento está relacionada ao método de avaliação, que deve estimular o comportamento discente que promova sua motivação à aprendizagem. Esta foi a preocupação em um programa de graduação em Administração de uma instituição privada na cidade de Campos dos Goytacazes, no Brasil. Esta metodologia exigiu mudanças substanciais nos métodos de ensino/aprendizagem, assim como abordagens de avaliação focadas na presente pesquisa. Este artigo apresenta uma visão geral dos conceitos PBL e da metodologia de avaliação adotada para esse curso específico. Além disso, discute os resultados do novo método de avaliação. Esta foi uma experiência inovadora que confirmou os resultados positivos da experiência PBL dos alunos e também a importância da avaliação por pares nesta metodologia de aprendizagem.

PALAVRAS-CHAVE: Métodos de avaliação. PBL. Aprendizagem em administração. Modelos de aprendizagem.

ABSTRACT: *Project-Based Learning (PBL) is an active learning method that puts students in the centre of the learning process, having the teacher perform a facilitating role. This new position of the teacher is not less important because it demands a lot of changes that must be promoted by the teachers, particularly, related to the coordination and organisation of the learning project. An important task in this organisation is the one that has connection with the assessment method and how this should promote students' behaviour that support their learning motivation. This was the concern in a Business Administration undergraduate program of a private institution in Campos dos Goytacazes city, Brazil. This method required substantial changes in the teaching and learning methods, as well as in the research's assessment approach. This paper presents an overview of the PBL concepts and the adopted assessment method for this particular course. Furthermore, it discusses the outcomes from the new assessment*

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method. This was an innovative experience that confirmed the positive results from the students' PBL experience and the peer assessment relevance in this learning method.

KEYWORDS: *Assessment method. PBL. Administration course learning. Learning model.*

Introduction

Active learning methods intend to “create excitement in the classroom” as Bonwell and Eison (1991) argue in their book. Nevertheless, these imply changing practices in the classroom, namely, the assessment practices that could be many. A common classification of such practices are in summative and formative assessment, being the first more focused on providing grades, while the second on providing feedback to improve learning. The recent growing interest in the formative assessment approach is related to the changes that began at the end of the 20th Century. Traditional approaches focusing on summative assessment did not necessarily promote learning, since the focus is on the outcome and not necessarily on the learning process. In the best cases, summative assessment has been used by teachers as a single approach for students’ feedback. Educational institutions and students themselves concentrate on how much information can be memorized.

In active learning environments, as promoted by PBL, formative assessment approaches assume a more relevant role as students are also encouraged to assess activities and colleagues’ behaviors and attitudes. For instance, in PBL teamwork students are called to evaluate their peers in a peer-assessment approach that could be implemented in different forms along the years for the same project (FERNANDES et al, 2012; 2014; ALVES et al, 2015; 2017; MOREIRA et al, 2017). This is always difficult to manage in the project coordination (ALVES et al, 2016). Nevertheless, it is worth to manage as peer assessment is a valuable employability skill needed for the undergraduate and graduate students by the professionals (PAUL et al, 2013).

Contextualizing this research, the Brazilian research council (CNPq) has sponsored a teacher training program in partnership with the Finnish government called Vocational Education and Training (VET) Teachers for the Future in the late-2014s. Since 2015, after the VET teacher experience in Finland, one of the authors has been applying the acquired training expertise to promote changes in the Brazilian higher education regarding pedagogical approaches and assessment, in his own educational institution.

During the VET training in Finland one of the author of this paper developed some pedagogical experiments in higher education classrooms seeking for alternative paths to the traditional chalk-and-talk teaching approach. From this experimental research, an empirical background related to assessment methods has been acquired and brought into this paper.

Based on the empirical background from the experience in Finland, one of the author of this paper together with other researchers have perceived the need of mapping students' classroom reality. The first perception was that in the traditional learning approach, students passively listen and memorize information on how to make a business plan. Self-assessment used to be unthinkable by then.

In the late-2014s students had the opportunity to experience a business plan developed under a Project-Based Learning (PBL) approach, throughout an entrepreneurship class of an administration course in a Brazilian private college.

The PBL approach adopted in the classroom had been unusual. The traditionally lecture-centered classroom approach had always been used within that context. Students had always memorized the business plan parts and had only been evaluated through a summative approach. A great motivation to change the learning approach was the possibility to blend a new learning approach and maintain the same traditional evaluation method. Therefore, the adoption of the peer assessment approach was considered. The challenge of changing the learning process and assessment in the classroom has required the development of a specific method described in this paper.

Based on this, the goals of this paper are to present the experimental research on how a student formative approach was developed and implemented in this program as well as the formative assessment approach applied within this context.

Project-Based Learning (PBL)

The Project-Based Learning (PBL) approach is not a recent phenomenon. It comes from the idea that learning is more effective when students have the opportunity to experience the theory brought into practice. PBL can be identified as a student-centered approach that promotes engagement among students in an investigative, collaborative and experiential learning way (KNOLL, 1997, MORGAN, 1983; KRAJCIK et al, 1999).

Learning with PBL becomes more significant since the internal learning ambiance of academia connects with the external ambiance of social, political and environmental processes by “real-world” and motivating learning tasks. These concepts come from the Constructivism proposed by John Dewey focused on a learning-by-doing approach, since teaching is not a knowledge transfer from teacher to students but students’ self-knowledge construction guided by the teacher. From these concepts, collaboration and group work are the core of PBL students’ learning activities (HARMER; STOKES, 2014; BIGGS; TANG, 2007; HICKMAN et al, 2009). So teamwork is the most challenging element of a student’s project work (VON KOTZE and COOPER, 2000; STAUFFACHER et al, 2006; FRANK; BARZILAI, 2004), enabling students to recognize their strengths and weaknesses (ALVES et al, 2012b).

Additionally, the advantage of PBL to students’ learning is that they are provided with deep learning, using the application of theoretical concepts and principles to solve real problems, developing critical and proactive thinking since students need to formulate plans and assess solutions (BLUMENFELD et al, 1991). Further advantages are improvement of socialization, communication, collaborative skills among students (HADIM and ESCHE, 2002) and active learning promotion among students since they need to create realistic products or presentations from prior knowledge (FELDER et al, 2000; JONES et al, 1997; THOMAS et al, 1999).

The PBL acronym is also adopted to describe the Problem-Based Learning approach but it is not the same as in Project-Based Learning. Some differences between them are related below:

Table 1: Project-Based learning and Problem-Based learning comparison

	Project-Based Learning	Problem-Based Learning
Outcomes and Learning goals	Previously settled	Jointly settled between students and teacher
Duration	Long or medium	Short
Development steps	General	Specific
Learning Environment	Authentic tasks in a real-world problem	Scenarios and cases less related to real-life
Subject	Multi	Single

Source: Campbell (2014)

Thomas (2000) has identified a set of five criteria to capture the uniqueness of Project-Based Learning. The criteria are: (a) Centrality - This criterion has two corollaries. The first one is the idea that PBL is not a part of student's curricula but it is the curricula as the central teaching strategy. The second is the idea that projects where students acquire knowledge outside their curricula cannot be considered PBL; (b) Driving question - that means PBL has been thought around thematic units or the intersection of topics/disciplines, but also aims at driven questions that make the student's learning process from PBL really useful for an intellectual purpose; (c) Constructive investigations - despite the goal-directed process involving inquiring (decision-making, problem finding), PBL must promote new understanding and skills in students. In other words, if PBL activities represent no difficulty to the students or there is no development of new skills, it is not PBL but only tasks to be accomplished; (d) Autonomy - PBL is not a teacher-centered learning approach or a packaged learning process; (e) Realism - PBL promotes real-life challenges in comparison to other learning approaches that are more close of academic-scenario or scenario-challenges and because of it, PBL increases the student's feeling of authenticity (THOMAS, 2000, p. 3-4).

Additionally, there are some models or structures that could be adopted by a PBL approach related to the driving question referred in the second criteria by Thomas (2000). Alves et al (2015) represented three types of these models: (a) a small project or projects in a course, (b) a course, totally or almost totally, based on a project and (c) a project supported by different courses. According to Harmer (2014), these models share some key features: (a) learning by doing; (b) real world problems; (c) role of the tutor; (d) interdisciplinary; (e) collaboration and group work; (f) an end product.

The PBL is characterized as a Complex Learning Environment and as consequence it has some complex aspects such as retro activity and recursivity that are important elements to promote student's autonomy. Retro activity is the sense that learning development is not a linear path and, as a consequence, the curricula themes do not need to be discussed among teacher and students in a linear way. Recursivity means that because of retro activity the recent-acquired knowledge can affect old knowledge and promote new knowledge in a rebuilding process. It breaks disruptively an old sense that only knowledge from the past can promote new knowledge. (UEBE MANSUR, 2013; PUNTAMBEKAR; HÜBSCHER, 2005; CHOO et al, 2011).

Assessment Approaches

According to Boud (1995), in education, when it comes to assessment methods, it is more common to have bad practices and ignorance than significant issues. The effects of these bad practices are one of the most potential aspects in the learning process since they increase students' obstacles for those who want to graduate and cannot escape bad assessment effects as they are able to do with bad teaching effects. Some bad effects on students are the loss of confidence and self-esteem when they dislike a subject.

Scriven (1967) has proposed a distinctive concept between formative assessment and summative assessment. In his opinion, the first one is support to feedback during students' learning efforts, such as the class aspects, and the second is a summative judgement for accreditation or certification. In a different way from Scriven's dichotomous point of view, Boud (1995) reinforces that both assessment concepts are inseparable. Black and Wiliam (1998, p.7-8) define formative assessment as “[...] encompassing all those activities undertaken by teachers, and/or by their students, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged.”

Assessment is a feedback message about students that should be about learning. Consequently, students will adopt different approaches in different studying circumstances. Therefore, good assessment is not only an issue of finding an “appropriate” method but it is about the tutor and students' engagement in a relational process as learning in its whole (BOUD, 1995; RAMDSEN, 1987).

Usually, assessment methods are focused on the scope of how much content a student can memorise as if it were the most important issue in the learning process. According to Boud (1995, p. 2), “The perceptions and interactions of a student are more important to learning than what staff take for granted as the ‘reality’ of the assessment. These perceptions cannot be assumed: they are only available from the students themselves.”

Aslo et al (2007, p. 160) state that self-assessment is a

[...] process of formative assessment during which students reflect on and evaluate the quality of their work and their learning, judge the degree to which they reflect explicitly stated goals or criteria, identify strengths and weaknesses in their work, and revise accordingly.

Self-assessment differs from peer assessment since the former is not mandatory and requires students to provide feedback to their peers.

Meanwhile, Falchikov (2007, p. 132) wrote:

Peer assessment requires students to provide either feedback or grades (or both) to their peers on a product or a performance, based on the criteria of excellence for that product or event which students may have been involved in determining.

Spiller (2012, p. 2) reports that the growing interest in peer assessment “[...] is partly driven by changing concepts of teaching and learning”. The author considers that these changing concepts come from needs to drive the educational process towards a more constructivist approach using dialogical, collaborative and co-constructive student behavior. In this way, designing student-centered assessment opportunities is an important classroom learning asset, since designing and implementing assessment tasks are usually neglected. This negligence results in a nonsense tending of the teacher's ownership assessment despite a student-centered classroom learning design (SPILLER, 2012).

In a PBL learning process or Project-Led Education (POWEL; WEENK, 2003) the peer assessment assumes a particular role as project works depends strongly on team effort and on how the team perform as a team. Also, this mechanism could be used to avoid the free-riding phenomenon and contribute to a fair treatment between team members when well interpreted by the students (KAUFMAN; FELDER, 2000). Another important issue in this process is the peer review where one team assess and grade the work of another team (POWELL, 2004). Such example was implemented in Industrial Engineering and management program through the use of PBL, which can be seen in Alves et al, (n.d.) where one team assessed and graded a preliminary report from another team. This was an experience valued by the students because it allowed them to see another type of report and to develop critical thinking skills.

Research Methodology

As explained in the Introduction section of this paper, the research aims at showing the results of a pilot experience concerning assessment methods in a Brazilian Administration Program. The research question that drove this study was: Are the assessment approaches satisfactory in relation to the presented PBL experience?

Two different kinds of assessment were applied to the students: a formative and a summative in which the students' business plan quality was verified. The research methodology is focused on the formative assessment once it brings personal students' information related to their personal learning perception (self-assessment) also their collaborative learning perception (peer assessment). The questionnaire was answered by all 25 students in the middle of the semester, since the summative assessment was carried out in the end of the same semester.

The questionnaire brought students' feedback concerning their learning perceptions over PBL experienced and their perceptions related to the skills acquired throughout the project demands as detailed below. Evidence of aspects were analyzed within the students' answers for peer assessment data.

For the summative assessment the analysis consisted in pursuing evidences related to the business plan quality aspects according to IACBE (n.d.). Since the research goal concerns exclusively the analysis of formative assessment, this summative assessment analysis is not presented. Regarding the method development some steps are presented: (a) The student-centered learning approach - The Project-Based Learning (PBL) has been chosen as a possible student-centered learning approach. Another possibility would have been Problem-Based Learning. As explained by Uebe Mansur et al (2016) in the case of the presented research, Project-based learning is more suitable to the learning situation since students of an Entrepreneurship course need a very complex learning experience which gives them access to leadership experience, teamwork, conflict managing and other situations that would not be possible in a Problem-Based Learning approach; (b) The classroom profile and the group choice - In an attempt to change the existing pedagogical scenario, a pilot experiment was carried out, involving 25 students from different ages. Somehow the fact that the class presented similar students' profile (age, profession, etc.) it became favorable for this research pilot group; (c) Students' confidence promotion - As an initial step, students were invited to freely organize themselves in seven teams without a predetermined number of members. The number of seven teams was mandatory since it is the same number of parts as in a business plan. After this initial step, students had the opportunity to decide which strategies could be used for the business plan development. The team members decided that each team would be responsible for a different part of the business plan and for the oral presentation; (d) Assessment rules definition - Since students were informed that the assessment method would happen in a formative and summative approaches they

were free to decide about the assessment steps. They also decided that a peer and self-assessment would take place only after delivering the business plan and making the oral presentation. The tutor informed the students that since the formative assessment would occur through a peer and self-assessment approach, the summative assessment would occur through a quality analysis of the business plan content. e) Formative assessment instrument development - The development of a questionnaire to carry out the formative assessment was empirical since it was not possible to find a model that really matches the demands of the research. Because of this challenge, the final questionnaire model came from the expertise gathered out of different studies according to Shamsan and Syed (2009), Andersson and Palm (2015), Rupp and Leighton (2017). Further contributions came from the VET-Finland Program know-how acquired by the author.

The peer assessment model questionnaire is structured in four columns: (a) Criteria - refers to the criteria related to the teams' tasks as a whole; (b) General Score - the team would assess how their involvement in the tasks in a scale from zero to 10 happens. This score would be the same for all team members despite the fact that the students had their own questionnaire; (c) Self Engagement - the personal commitment of each team member in a percentage scale from 0 to 100%. The percentage could differ among team members; (d) Learning Details - the personal testimony about learning experience according to the first column criteria.

The criteria were arranged in rows, adding up to twelve: (a) Planning - if the team thought about the Planning of the tasks and used management technical tools for that; (b) Organization - if the team distributed the tasks among the team members according to individual profile of each team member; (c) Management - if the team decided about which checkpoints were necessary to the control process and which management tools would be adopted to do it; (d) Control Steps - if the team accomplished the tasks in time and the accomplishment met the expected percentage of tasks; (e) Whole view of Business Plan - if the team members had a view of the business plan as a whole, since it may be split in parts to its development); (f) Understanding Marketing Concepts - if the team members acquired some knowledge concerning the Marketing theory from the experiential process of business plan development; (g) Understanding Accountability - if the team members acquired some knowledge concerning the Accountability theory from the experiential process of business plan development; (h) Understanding Operations - if the team members acquired knowledge concerning the Operation/Logistics theory from the experiential

process of business plan development; (i) Teamwork effort to report writing - if the team members collaborated to the assignment of writing the report, (j) Teamwork effort to final conference - if the team members collaborated to team's final conference, (k) Participation in the development of activities - if the team achieved the common tasks proposed to the teams throughout the learning process, (l) Participation in the meetings - if the team participated in the meetings proposed to the teams during the business plan development.

The questionnaire was answered by the students in one single day in November 2015 and took them 2.5/3 hours. The peer assessment process in the second column deals with psychological aspects since the teams should make a self-assessment of each activity presented in the first column of the questionnaire. This step had them deal not only with group ethics but also with morality, since the team made an oral presentation of their part of the business plan to the cohorts. In the third column the students had to self-assess, the same ethical and moral aspects which were considered by the students but this time from an individual point of view.

Peer assessment result Analysis and discussion

The result analysis is made by searching for evidences based on Thomas' (2000) five criteria to capture uniqueness of PBL and also of Uebe Mansur's (2013) retroactivity and recursivity criteria. Considering students who had participated in the assessment, nine of them were from the Marketing team, two students were from the Strategic Planning team, five of them were from the Finances & Accountability and ten students were from the Operation team. One student who was responsible for the executive summary did not participate in the peer assessment. Students assessed themselves ranging from 0 to 10. The score "6.0" was the minimum breakpoint.

Only nine students were scored although there were 10 students in the Operation team. This happened due to the fact that one of them did not assess him/herself in the global score. It is possible to notice that even though students were free to assess themselves in the maximum score, the score concentration occurred between 8.0 and 8.5. Although, team members from Marketing and Finance & Accountability groups scored values 9.5 or 10.

Some aspects of students' commitment to peer assessment can be highlighted concerning the seriousness of their purpose to develop it. Taken a student's assessment

as example, it is noticeable that when the student was enquired about her/his team performance she/he peer-assessed positively the group performance, but self-scored on a poor engagement in the same related item. In the item “Teamwork for final report”, the same student presented a 10% engagement in this task even though the team as a whole self-assessed at the maximum score (10). The student's explanation for this low self-scoring was “I did not have a good participation in this teamwork task”. Concerning the item about “Public Presentation”, the student informed a 30% engagement declaring that “I participated addressing several people showing a little about the project”. In the item related to the “Participation in the Development of Activities” the student self-attributed 20% of engagement, declaring: “I participated a little in the general development of the business plan”. Finally, the student self-scored as 7.0 in the global score and 10% of engagement in item related to the “Participation in the Class Meetings”, declaring “I was not very participative, but I knew what was going on and I was watching [...] However, I knew what was going on. I paid close attention”. The presence of the word “however” in the student's sentence highlights her/his mindfulness of her/his lack of engagement in the team. Somehow, she/he needed to confront the conclusions of this reflection that caused her/him uncomfortable feelings. It is an evidence observed by Thomas' (2000) Constructive Investigation criterion once new understanding is promoted among students.

According to Thomas' (2000) criterion of Autonomy, it is possible to perceive that students self-acknowledged their commitment to the project and were somehow embarrassed to give themselves a score far from the engagement perceived by the team as a whole. The results indicate that the PBL approach applied to an entrepreneurship class was productive, as well as the effectiveness of the peer assessment method.

It is also possible to identify in their results that some students concluded that their engagement could aim at higher scores. The main appeals from students to ask for high scores were engagement in the tasks and time dedicated to the project. According to the first claim, one student declared: “I do not consider myself 100%, but I have tried since I was present in all the project's steps. For the oral presentation I developed a short animation and I cooperated in other parts too”. The other one declared: “Due to my engagement in the project, in all the teamwork and the time available addressed to the project I believe that I deserve 10”.

The global scores self-attributed by the students were not decreased at any time by the tutor. However, in two different cases, the global score was increased by the tutor

once the students' commitment was notably higher than the global score requested by her/him.

The recursivity was noticeable from the fact that in a first moment some students self-assessed in a global score that later was shifted by themselves. This fact highlights Uebe Mansur's (2003) retroactivity criterion once the assessment process did not happen in a linear way as it does in a conventional assessment. In one rare example, a student member of the marketing team self-assessed in an 8.5 global score and later decreased it. Another example comes to a student that increased her/his global score from 6.0 to 7.0.

Some reasons for the overall score that students obtained came from their understanding that the overall score would be their formative assessment final score. Since they were committed to the self-assessment stage, they would not take advantage from it. This aspect highlights Thomas' (2000) Realism criteria since students had the perception of an immersive learning experience.

Conclusion

This pilot experiment has been a first try on the formative assessment in this entrepreneurship course and presented satisfactory outcomes. In the resulting analysis it was possible to find evidences related to Thomas's (2000) criteria about the uniqueness of Project-Based Learning and Uebe Mansur's (2013) criteria about complex learning environment and student autonomy.

Kaufman and Schunn (2010) report in their studies that negative perceptions from students to peer assessment were evident. In the present research, it was not possible to identify any issue related to the negative aspects reported by Kaufman and Schunn since students were comfortable with the assessment method according to their statements reported in the Result section.

One of the proposals of the summative assessment concept is the student's perception for accreditation or certification (SCRIVEN, 1967). The present approach brought an upgrade in the assessment of the student's learning process since the summative assessment is the traditional way within Brazilian classrooms. The formative method of peer assessment and self-assessment made constant feedback possible and promoted a more adaptive and effective learning process to meet students' needs.

The assessment method from this experiment needs improvements since there is no way to convert the qualitative analysis made by the students about themselves into a quantitative global score. As a result of this absence, the final score was defined empirically by the students after self-analysis.

It can be concluded that this first peer and self-assessment experiment was satisfactory. Other experiments need to be performed, bringing improvements to the questionnaire. Application to other courses and programs is also recommended for a comparison of results.

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