

Contributions of action research and use of active methodological approaches for the construction of a discipline in management

The contribution of action research

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Abstract

Purpose – The study aims to investigate how the action research contributes to the collective construction of a discipline in management. This issue was the motivation for the present study, which was developed from the experience of master's degree students attending the post-graduate program in management of an institution in the State of Bahia, Brazil.

Design/methodology/approach – The overall objective of this study is to understand the method's effectiveness for this aim, whereas the specific objectives are to identify the commitment of the subjects in the activities proposed and to assess the effectiveness of the use of active methods in the discipline construction. The theoretical background is regarding digital education transformation, active teaching methods and action research. As for the qualitative perspective, the methodological approach of choice was that of participant observation (for data collection) and content analysis.

Findings – It was possible to highlight the awakening of critical sense and the effectiveness of action research in enhancing the protagonism of the master's degree students in the construction of their own knowledge.

Originality/value – This study not only contributes to the field of applied social sciences but also opens a precedent for the experience of collective construction of a discipline in another area of knowledge by means of action research. Another factor demonstrating the relevance of this study is the production of essays and articles by master's degree students in which active methodologies were related to themes of interest.

Keywords Action research, Teaching, Learning, Management

Paper type Research paper

1. Introduction

The classroom environment is beyond a teacher and students. Availability of digital resources and access to information by means of Internet have led the teaching methods to follow new paths with the use of technology. In the teacher's point of view, embracing these resources is more than a trend; it is actually a demand from the teachers, who provided with a smartphone and digital media (which are increasingly present since childhood) are challenged to adopt active methodologies to ensure learning and involvement in this process.

Within this context, the present work results from the experience with collective construction of a discipline, namely, active teaching technology. This discipline was first introduced in the first semester of 2019 as part of the curriculum of the post-graduate program in management of a private higher education institution in the city of Salvador, State

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of Bahia, Brazil. The teacher, who also played a role as a researcher, had autonomy to review the teaching planning and posed a challenge to her students on the basis of the action research and the following motivation: awakening the commitment of the master's degree students in the construction of their own knowledge.

The faculty formation in these times of digital transformation is an issue raising a discussion on the massive use of technology, unlimited supply of information and excessive exposure of youth to video games and social networks. The content consumed from several platforms is concurrent to that "traditionally" given in the classroom, even reaching to the point that active teaching methodologies play a prominent role in terms of the pedagogical view.

The present study is justified by empirically showing an alternative collective construction of a discipline in management based on the contributions of action research and use of active methodological approaches. Therefore, such a contribution aims to provide the academia with experience in didactic knowledge and practice, both theoretically and methodologically, in order to seek solutions by taking advantage of technological resources available for development of the faculty and improvement of the management students' performance.

It is also worth emphasising that the present study not only contributed to the field of applied social sciences but also opened a precedent for the use of the method in other areas of knowledge. Another factor demonstrating the relevance of this study is the production of essays and articles developed by groups of students in which active methodologies are related to themes of interest. Such a production represents itself a scientific contribution, which justifies this project and its empirical potential for the academic division of education and research in management.

With this being said, the present work is grounded on the Michel Thiollent's contribution, which is the theoretical background enabling the collective construction of the discipline. According to Michel Thiollent (2009), the action research consists of a process where the players involved (i.e. the master's degree students) participate together with the researchers in the resolution of collective problems inherent to the reality in which they are inserted in order to solve and experience them.

In the next section, the contributions of the action research and active methodologies will be addressed based on theoretical background and then the methodological procedures will be presented. Next, the results will be analysed, and the findings will be discussed according to previously defined categories before the evidence is presented in the final conclusion.

2. Action research in the evaluation of active teaching methods in face of the digital transformation in education

In the current context, one can assume a range of technological advances, dynamic relations and constant adaptations, which leads to a discussion on the urgent need for changes in the higher education institutions in order to rebuild its social role, among other aspects (Mitre *et al.*, 2008, p. 2135). This scenario shows a process of digital transformation in education, a term meaning systemic and disruptive changes impacting the review of business models, not only technologically but also strategically, which are at risk of becoming obsolete (Miceli & Maróstica, 2019; Grupta, 2019; Rogers, 2019).

The traditional conception of what it is to teach has been undergoing a reformulation as result of the incorporation of technology, including new practices and emergence of new roles. Such a dynamics distance itself from the model in which knowledge was deposited in the teacher who had a passive and non-critical behaviour (Freire, 1987; Abraham & Cohen, 2019). Change comes from the re-signification of the role of the teachers, who had the leading role in transmitting information, since the traditional methods made sense when information was difficult to obtain (Freire, 1981; Morán, 2015).

Students are connected to the Internet, and they can readily obtain any information as data a click only, which demands didactic adaptation to this new era. This scenario of data access makes all students have a wider range of references while posing a challenge to faculty members, who have to adapt the classical theories to this new context and adapt active practices (Schmidt & Cohen, 2013). Peters (2006, p. 154) believes that the teaching process can be easily adapted to the “student learning needs, [...] to the demands of a rapidly-transforming industrial society”. The reflection on future teaching practices becomes even more timely because of the class of future teachers.

This favours the student’s autonomy by awakening curiosity and stimulating decision-making (Borges & Alencar, 2014). The participation of students in the classroom is also a key factor of this new learning dynamics, and since the theoretical contributions brought by the faculty are not taken into consideration by the teachers, this valorisation of the students awakens their engagement, sense of belonging and perception of their competence (Berbel, 2011).

As for adult education, the active methods are also useful and contribute to the learning process based on overcoming challenges (Freire, 1996). In this sense, problematisation becomes one of the strategies used to motivate the students, in which a given problem is proposed in the classroom, and they work on it, thus exercising their reflection and relating the problem to their history of life and re-signifying their findings (Mitre *et al.*, 2008). Solutions for problems, in turn, can be found either individually or collectively (Bastos, 2006).

For example, the choice of an action research for collective construction of a discipline reinforces the harmony between the method and reality-based problem being solved. Therefore, from the reflection on the use of active methodologies and technological resources in the classroom, the students build knowledge and experience practices which can contribute to the adaptation of teaching methods to the students’ learning styles and to the social demands as well.

As explained by Abraham and Cohen (2019, p. 3), the innovative teaching methodologies address the “transforming role played by the teacher because they can raise a self-reflection on how and why he or she acts that way”. Hence, it is crucial that the teacher “takes part in the process of re-thinking the knowledge construction, in which mediation and interaction are the key assumptions for enabling learning” (Borges & Alencar, 2014, p. 120). And, in this context, one can set out an approach to ground the collective construction of a discipline.

The theoretical background of the present study has the seminal work by Lewin (1946) as a historical starting point, followed by other significant contributions for definition of action research and application models in real situations. Authors, like Lodi, Thiollent and Sauerbronn (2018), state that Lewin sought not only to understand the human behaviour but also to find ways of intervening with this behavioural pattern. Therefore, action research has emerged from the need to intervene with reality and overcome an alleged gap between theory and practice (Engel, 2000; Toledo & Jacob, 2013).

For the purpose of this study, the teacher – who has autonomy and whose didactics is based on research (Thiollent & Colette, 2014) – resorted to action research as a method fundamentally because it preserves the leading role of the researchers throughout the process and is guided in function of the problem resolution or transformation objectives (Thiollent, 1986). Studies point that the method is to be applied to the teacher qualification (Thiollent & Colette, 2014).

With regard to the collective experience among the master’s degree students, it is worth emphasising that there is an expected practical outcome: “researchers and social players develop a collective learning process by investigating and acting so that the results found during the process will provide new teachings to all” (Toledo & Jacob, 2013, p. 161). Moreover, the choice of action research is also related to the interest in developing practice, research and teaching skills among the future faculty members, which is respectively related to the following learning dimensions: cognition, skills and attitudes (Freire, 1981).

Although the critics of the method point to a certain methodological inconsistency, those who advocate it highlight the scientifically significant results, which can be applied to several areas of knowledge, beyond the “procedures, significance, originality and validity” (Tripp, 2005, p. 447). Tripp (2005, p. 447) defines the action research complementarily and legitimately as a “type of investigation by using well-established research techniques to inform the action to be taken in order to improve the practice”.

Thiollent (1986) adds that this method is suitable for cases in which not only the players involved can act and express themselves but also the researchers can adopt an active stance towards the facts. From these premises, one can highlight aspects of the action research as a strategy of social research, as can be seen in Table 1.

Therefore, the action research used in the present study was classified as “integral and systemic”, as proposed by Toledo and Jacob (2013, p. 168). The practice consists in the co-authorship of participants seeking knowledge and practice by using an “interactive, collaborative approach” (Franco, 2010, p. 25). The method is aimed at allowing the knowledge expansion of researchers and subjects by means of “action and reflection, theory and practice so that those involved in the situation studied can find practical solutions for the problems they face” (Lodi *et al.*, 2018, pp. 59–60). Therefore, it is from the need to build a new discipline that the players (granted with autonomy) can seek to establish conditions for solving the problem proposed, always in agreement with the didactic demands and technology use challenges.

From a practical point of view, the next step is to define the groups according to a profile proposed in the action research being conducted in the classroom and after a discussion on the methodology and legitimacy of the research in face of the reality experienced by them: “the subjects involved in a given problem form a group with common goals, in which they play several roles, including that of researchers” (Toledo & Jacob, 2013, pp. 158–159).

In turn, Santos, Caliope and Barros Neto (2017, pp. 338–330) deepen the definition of the role of the players involved in the process, in addition to admitting a “cooperative or participative” character in order to equate problems and mediate relations on a careful basis. Lodi (2018) adds that the researcher also needs to be convinced that research and action must co-exist for a social transformation to occur. In this sense, the researcher’s role is more of a mediator than of a player as he/she “participates in this survey and guides the debate, but the reality has to be presented and explained by the players” (Lodi *et al.*, 2018, p. 61). This excerpt illustrates what was performed in the classroom at the first meeting of the groups, in which the challenge was posed by the teacher, and the conditions were defined in conjunction between students and faculty members.

Aspects	Explanations
Interaction	There is a wide and explicit interaction between researchers and individuals involved in the situation investigated
Priority order	The priority order of the problems to be studied, including the solutions to be tangibly identified, results from this interaction
Object	The object of the investigation is not determined by individuals, but by the social situation and problems of different nature found
Objective	The objective of action research is to solve or, at least, clarify the problems found
Decision	There exists in the process [...] a follow-up of decisions, actions and all intents of the players regarding the situation
Action	The research is not limited to a form of action only (risk of activism)
Knowledge	It is intended to increase the knowledge of researchers and the knowledge and “level of awareness” of people and groups involved

Source(s): Elaborated from Thiollent (1986, p. 16)

Table 1.
Aspects of the action
research method

In order to define a model capable of encompassing the experience of this research, we have resorted to that proposed by [Lodi et al. \(2018, p. 61\)](#) in which four interdependent phases are presented, namely “exploratory, analytical, active and evaluative”. In the first phase, the players address the following factors: relevance of the research in scientific terms; relationship with the problem raised and possible solutions given by the players; proposition of the theoretical background; decision on how the research will be carried out; attributions of each participant and definition of the methodological procedures. In the analytical phase, the players conduct a discussion by means of interpretation and learning, which involves formal and informal knowledge. In the active phase, an action planning is defined by setting out strategies and actions, with the latter being performed focusing on effectiveness. Lastly, in the evaluative phase, knowledge is evaluated, and research is announced by presenting the results to the participants or scientific community ([Lodi et al., 2018](#)). The concept of effectiveness “conjunction of concepts of efficiency and efficacy translated into the use of the best action measures to obtain a full result for an expected event” ([Fraga, 2017, p. 63](#)).

In addition to the above-mentioned proposition of models, one can suggest that the phases of action research have a cyclic dynamics, and this is anchored to the step of reflection. We resorted to [Santos et al. \(2017\)](#), who bring a fourth dimension to the model as they define the last phase of action research as being of reflection, which is the “process of evaluation terminating the process when the solution of the problem is found or, otherwise, when a second cycle begins until a solution is found” ([Santos et al., 2017, p. 341](#)).

Nevertheless, it is proposed to adapt because it is corroborated by the thesis that reflection is evidenced throughout the cycle ([Tripp, 2005](#)) and not in the final of it. This perspective reinforces the importance of the method as a strategy of self-training on the part of the student, which is reflected throughout the educational process ([Thiollent, 2012](#)).

In [Table 2](#), adapted models are proposed, including description of the experiences reported in the present study in each of the phases of the method.

By understanding the action research conceptually and being aware of the origin of the approach, part of the discussion on its applicability to several areas of knowledge is conducted. In educational terms, the action research is shown to be a “strategy” for the development of faculty members and researchers so that they can use their research to improve the teaching and consequently the learning of their students ([Tripp, 2005, p. 445](#)).

Lastly, it is worth highlighting that this method is not limited to the field of education. [Toledo and Jacob \(2013, p. 162\)](#) state that action research transits through segments such as “administration, community development, organisational changes, political practices, agriculture, bank business, health, social service and technology generation”. For example, the method can be strategic for the development of cost management technology, as in the case of a department store whose findings are applicable to the decision-making process on an organisational basis ([Xavier, 2015](#)).

Exploratory/ Analytical	Phase in which the first meeting of groups occurs for defining action conditions, roles of each player in the process, objective of the action research and deadlines for construction of the discipline. The players are told about the path to be followed	Reflection
Active	Phase in which research and teaching practice are performed by the groups, who teach classes on active methodologies under mediation by the teacher/researcher	
Evaluative	Phase in which a discussion on experience is performed before presenting the article elaborated by the groups	

Source(s): Elaborated from [Tripp \(2005\)](#), [Santos et al. \(2017\)](#) and [Lodi et al. \(2018\)](#)

Table 2.
Phases of the action research method

Production engineering is another field to which this method can be applied, especially in product development, information system and knowledge management (Gibertoni, 2012). Lastly, a study highlights the social relevance of the method by stating that “at moments in which academia is shown to be away from the society and unaware of its real problems”, the use of action research in “field studies on management and accounting sciences can serve to make them more relevant” (Lodi *et al.*, 2018, p. 66).

3. Methodological procedures

For the purposes of the present study, it was opted to follow the qualitative path, which entails descriptive data, inductive analysis, commitment to the understanding of the process and concern with the meaning (Santos *et al.*, 2017). From the perspective of the learning process resulting from this experience, the researcher intended that the students developed the research, practice and teaching skills.

For such, the teacher-researcher agreed with the subjects on the purpose of this experience of discipline construction at the very first face-to-face meeting. This was done to establish, in conjunction with the pairs, which “ground rules” would be followed. Tripp (2005, p. 449) points that “we have to be clear about what we are doing as well as about why we are doing so”, and this was an exercise of all players involved in the process.

At the following meetings, the groups taught classes on active methodologies by using technological resources and playing their leading roles in the building of their own knowledge and teaching practice, thus pointing to solutions for the limitations of the use of the methods. Such an effort by the master’s degree students corroborates with what Lodi *et al.* (2018) propose, since practice and theory lead to the formulation of possible pathways towards the solution of the problem raised in the research.

In total, 21 master’s degree students were divided into seven groups, and they were responsible for the following process: to perform a literature review on the active methodology chosen by the group (*just-in-time teaching, design thinking, peer instruction, problem-based learning – PBL, flipped classroom, team-based learning – TBL and gamification*); to elaborate a lesson plan and teach the classes and present an article or a final essay relating the methodology to the theme of interest.

Based on the premises of action research, the teacher assumed a pro-active stance towards the groups in order to put aside the fear of intervention. Among her attributions, one can cite the following stances: “to plan and organise, together with the group, the proposals of intervention; to adequate the proposed actions to the time available for their implementation and to the final project; and to present the findings of the research and possible suggestions” (Lodi, 2018, p. 161). Therefore, the teacher responsible for the group of students carried out the activities in the light of the action research method.

In the present research, the problem to be solved was as follows: how does the action research method contribute to the collective construction of a discipline in management? As a general objective, it was intended to understand the effectiveness of the method regarding the expected aim. With regard to the specific objectives, it was intended to identify the commitment of the subjects in the activities proposed and to analyse the effectiveness of the use of active methods in constructing a discipline.

With the aim to clarify the ground rules, the problem raised in the research was presented to the subjects in order to enable pair collaboration for meeting the objectives proposed by the researcher. The purpose of each group was defined as previously mentioned in order to equate the collective construction of the discipline (Santos *et al.*, 2017).

The data collection technique used was that of participant observation, which was performed by a master’s degree student who attended all meetings with the groups in order to record them in audio (which was then transcribed), including dialogues relevant in the

classroom, and annotate reactions and resources used (e.g. technology and teaching practice). The teacher researcher not only formed a parallel group to write the present article but also was responsible for presenting the results of the data analysis to the groups in a seminar format.

The content of the slides shown by the seven groups of students and the printed activities were considered additional data. By means of this method, the researcher seeks to develop a scientific understanding of the group by collecting data, participating in the meetings and observing the situations experienced, which ensures the integrity of the research (Lodi, 2018).

The data collected between May 20 and July 3 of 2019 were interpreted by using the content analysis technique, which, according to Ciccarino and Soares (2018, p. 1), is a qualitative method “preserving the flexibility of its application”. The aim of this data treatment technique is to produce replicable inferences and practices based on these data and focused on the context (Bauer & Gaskell, 2002).

Therefore, the present study used the analytical steps proposed by Roesch (2005), namely pre-analysis, consisting in the definition of the procedures to be followed; exploration of material, addressing the implementation of these procedures; and data treatment and interpretation, consisting in the establishment of categories of analysis to allow inferences to be made regarding the data.

4. Analysis of the results

This section was performed from the following thematic categories set out to verify how the action research method contributes to the discipline construction, namely application of the objectives of the action research; adherence to the theme proposed; use of active methods and technological resources; critical approaches on the use of methods; adherence to the format of the class; identification of seminal authors and relationship between research and theme of interest.

4.1 Application of the action research objectives

Therefore, based on field notes, lesson plan, presentation slides and support material used by the groups for the practice of active methodologies, one can then perform the content analysis. The intent was to develop an emancipatory and critical instrument from the data collected (Kemmis & Wilkinson, 2002). Then proceed to the first point of this analysis, has to do with the fulfilment of the objectives of the action research.

According to Tripp (2005), these points should be agreed by the players involved, and this actually occurred in the first meeting with the groups, that is, on May 20 of 2019. In addition to sharing a commitment to the research, there was an active voluntary participation of the players involved as well as definition of the procedures to be adopted. In this exploratory phase, there was also a discussion on the relevance of the study on active methodologies in the didactic field. The master's degree students discussed on and defined the active methodologies to be studied, thus revealing their leading role in the course of the events (Thiollent, 1986; Thiollent & Colette, 2014).

In the analytical phase, the researcher and the subjects jointly decided on formation of the groups, activity schedule and themes to be addressed. Next, in the active phase, the master's degree students prepared the classes based on content production meetings and taught them. As in the evaluative phase, the subjects reflected on their experience in a face-to-face meeting and revealed their perception on the findings (Lodi *et al.*, 2018).

4.2 Adherence to the theme and use of active methods

With regard to the second category of analysis, the adherence to the theme proposed, all the groups resorted to efforts to highlight the contributions of each methodology chosen for the

construction of the discipline of active teaching technologies in management, which represents the active phase of the action research being applied (Lodi *et al.*, 2018). As for the just-in-time teaching, it was shown that this method contributes to the understanding of the students' needs and to the provision of content in the right measure.

The importance of using active methods in the classroom was also an issue to be discussed in the group addressing the flipped classroom method because it allows the student to have information for holding a discussion in a structure way. This practice is in accordance with the experience of collective construction of the discipline, since the teacher is not the only source of information and the student is encouraged to play a leading role. The other groups discussed on the characteristics of the design thinking, peer instruction, problem-based learning (PBL), team-based learning (TBL) methods and gamification.

With regard to the active methods and technological resources, one of the categories of this analysis, we mapped which active methodologies were applied in practice and which ones were only presented theoretically during the lessons taught by the students (Morán, 2015; Abraham & Cohen, 2019). There were cases in which methodologies were the theme of the class for a given group, but during the explanation, its members resorted to other active methods.

From this experience, the intent of the researchers was to make the active methodologies be understood, used and explored by the students. Although in some cases the method had been presented on a theoretical basis only, one cannot state that the teacher's objective was not achieved. Only one group justified the non-practical use of active methodology, since the group of students had to be previously prepared for applying the flipped classroom method successfully, which was not the case. The other groups who did not resort to active methodologies had, in fact, already planned their application, but they could not control time effectively for doing so.

In the case of the just-in-time method, in addition to having to read a text and raising possible doubts, the members of the group resorted to techniques, such as storytelling and surveys, in order to call attention of the students. The survey technique was also used during the design thinking methodology, which was applied in the practical way even after a two-hour lecture class. Assertiveness regarding the lesson plan was endorsed by the teacher, who commented as follows: "I really liked that, this group made us stand up." And a student also completed: "now it's become active methodology".

The simulated technique was applied within a 30-min interval with two groups of students, who were challenged to identify problems related to the course before presenting possible solutions (paper rolls, letter-size papers, post-it papers and markers pens were used for this activity). Despite the fact that no digital resource was used, the effectiveness of the technique is unquestionable if one considers the potential of commitment of the students to discussions, identification of problems and suggestion of solutions.

Another group opted for a bolder strategy in which the class of oratory was taught without revealing which active methodology is chosen eventhough the dynamics mobilised the group. Initially, questions on oratory were distributed among the students, who had to answer them in pairs. Then, one student was invited to speak about his trajectory in the master's course and the group evaluated him by filling out a worksheet. Next, the group distributed cardboard sheets lettered with A, B, C, D and E, which were used by the group to answer the questions. As a technological resource, a video showing a Barack Obama's speech was used, and his speaking performance was discussed in the classroom. After one hour of class, a member of the group raised the following question: What has oratory to do with active methodology? And he also gave the answer: "Oratory was just a theme to be addressed in the class, but the methodology used was that of Peer Instruction".

The TBL method was also used in the classroom. The students were divided into groups of five or six each, and questionnaires were distributed among them to be answered

individually on the basis of a previous text. In the second step of the activity, the groups discussed the correct answers and arrived to a consensus. The students responsible for teaching the class released the answers and raised a new task: to jointly discuss a solution for the case. The content application activity, which is the last step, was not performed because a new class would be necessary, taking up to four hours to be taught.

As expected in terms of progressive evolution of the master's degree students and based on the experience observed during the classes taught (Tripp, 2005; Santos *et al.*, 2017), the last group outperformed the others regarding the use of resources and methodologies by using theoretical background on gamification and, also, by applying two active methods in which one was analogue (i.e. a game of conceptual questions printed and attached to a bulletin board for being answered in groups) and the other was digital (i.e. Socratic quiz, a kind of space race to be used on smartphones). Both dynamics could be considered assertive as they contributed to the effort of learning and to the commitment of the students.

4.3 Critical approaches to the use of methods

Theoretically, as the purpose of the action research is to produce a collective knowledge and allow the pairs to reflect on the process, it would make no point to present the methods without stimulating the critical sense. Therefore, as parts of this classroom environment, the researchers conducted the discussion in order to know which negative factors exist in the use of these active methods.

Both just-in-time and TBL methods demand that the students participate in the activities prior to the classes. This also demands greater effort from the teacher, who has to prepare quality material for planning the classes and create strategies for awakening the interest of the students. Based on their empirical experience, both teacher and subjects pointed that students tend to be more resistant to adhering to practices in which commitment to extra-class activities is previously required.

In a critical approach to the use of the PBL method, a student said he brought his contribution to the finding that only one lesson would not be enough for the application of the methodology, which was considered by the students as a limiting factor. The issue of the need for a pro-active attitude on the part of the students can also be seen as a challenge by the teacher because this methodology can only be successfully applied if the student searches for knowledge, which is crucial for the process as there is a relation with self-guided knowledge.

In the opinion of the subjects, this is a factor that can compromise the efficacy of the method if there is no commitment, which also applies to other active methodologies. However, the findings by Vendramin, Araujo, Lima, Farias and Gilberto (2015) point to a scenario where the accounting undergraduate students prefer the PBL method over the traditional class, in addition to recognising its importance for the development of competencies in solving problems. Therefore, this finding demonstrates the applicability and commitment of the students in the use of the methodology for didactic aims, which can empirically reduce this limiting factor. Another critical issue raised by the subjects is the fact that technologies can only be used depending on the access to suitable tools, and in many educational institutions, their remote teaching platforms are deficient in resources.

When the flipped classroom method was addressed, the group involved raised a series of challenges faced by the teachers regarding the use of the methodology, and in this sense, a key factor is the fact that they have to be open-minded to new things. This methodology also demands patience as the students tend to reject it, meaning that it is also necessary to know their profile in order to apply the best technique and adapt it as many times as needed. The group of students also brought a reflection on the fact that technology is a means to an end, and as such, it cannot alone ensure the result.

In this case, a limitation would be a teacher being given a lesson plan with methodologies already defined by other faculty members, meaning that no autonomy for change is allowed. The flipped classroom method, for instance, may be inadequate for introductory disciplines as prior reading and knowledge are needed for a successful class, which corroborates the findings by [Bohn, Wojahn and Domingues \(2018\)](#). Another issue has to do with the use of videos, which can lead the teacher to question his or her professional identity or make the students consider the teacher “disconnected” for having a didactic approach based more on resources and less on lecture classes.

With regard to gamification, there are limitations regarding this method, such as the necessity for a digital apparatus for use on online platforms. This is the case of virtual settings used for learning or availability of Internet access in the classroom, including a clear definition of the ground rules. Badly-defined rules can lead to inefficient learning practices, and the scoring should not be more important than the acquisition of knowledge.

However, not everything is about limitations when we address gamification, since this method was presented by the group as a possible solution for obstacles such as previous reading, for example. Therefore, it is possible to state that this methodology can interact with other ones in order to awaken the commitment of the students ([Berbel, 2011](#)).

4.4 Format of the class and seminal authors

Another category of this analysis is the adherence of the groups to the format of the class, a model proposed as a discipline’s rule. The intent was to evaluate to what extent the seven groups understand the mission of teaching classes on active teaching methods by using technological resources. It should be emphasised that only the members of the parallel group, who had the results of the analysis, had the task of presenting them in a lecture format.

Also based on the expectation that the students would tend to evolve in each meeting, one can state that this tendency was evidenced and is anchored to the premise that action research is a cyclic process. Thus, the students reflected and evaluated their learning experiences in each class by reviewing strategies predicted in the explorative and analytical phases ([Tripp, 2005](#); [Santos et al., 2017](#); [Lodi et al., 2018](#)).

The first group performed a presentation instead of a class, mainly due to the imbalance between amount of theoretical data on the slides and use of technological resources or dynamic practices. The second group, on the other hand, used the design thinking method in the second part of the class despite using a lecture format in the first part, which corroborates the aim of the discipline. The strategy of merging oratory and peer instruction method was different from the other ones, which brought the class closer to the objective proposed. And, lastly, the class on gamification finished the cycle satisfactorily, in which there was a mix of technologies and active methodologies and use of digital and analogue resources.

In addition to the teaching practice and pair learning in the classroom regarding the field of research development, one of the objectives of this discipline was also to identify seminal authors. Because of the rigour in selecting studies to be evaluated for preparation of the classes and essays or final articles, the groups went to perform a scientific research.

The groups resorted to the contributions of Confucius (1500 BC), Harvard (by the end of the 19th century), Ohio School of Medicine, School of Medicine of Marília and School of Medicine of Londrina for conducting studies on active methodologies. Lesson plans were prepared by using other authors such as [Berbel \(2011\)](#), [Bergmann and Sams \(2016\)](#), [Bourdieu \(1989\)](#), [Brown \(2010\)](#), [Fadel, Ulbricht, Batista, and Vanzin \(2014\)](#), [Eastwood and Sadler \(2013\)](#), [Hung \(2006\)](#), [Manzur \(1997\)](#), [Novak, Patterson, Gavrin and Christian \(1999\)](#), [Oliveira \(2014\)](#) and [Vianna, Adler, Lucena and Russo \(2012\)](#).

Another expectation of the researchers was that the groups of students could relate the methodologies chosen for classes to the themes of interest, which were addressed in essay or

article to be delivered in the last meeting. It was possible to observe that this factor was not present in all classes because this relation was not previously planned to be addressed, since the initiative was particular and limited to the thesis theme supported by a given member of the group, which was out of our scope.

Only two groups revealed, on a structured basis, which themes of interest they would address in their essay: one who decided to write on “Design thinking as an action teaching methodology and the perception of the master’s degree students in management” and the other who addressed the commitment and leadership of faculty in using the gamification method. Lastly, another group informally revealed their theme of interest and explained their curiosity about the experience in using the PBL method in the course of medicine at the State University of Santa Cruz, state of Bahia, Brazil.

4.5 Evaluation of the subjects

The final phase of the action research was evaluative and was held at the final meeting of the groups for presentation of and discussion on the results, including individual evaluation of the learning and sharing of experiences orally (Lodi *et al.*, 2018).

Three statements by the master’s degree students are emblematic as they express the perception of the group regarding learning and allow a critical review of the empirical experience. This is still a clear manifestation of the evaluative phase of the action research, showing how reflection is a process enabling the cyclic characteristic of the method and possible adjustments in the teaching practice either in our experience or in future application to another group of master’s degree students.

The first subject emphasised that the objective of the discipline was achieved in terms of commitment as there was an involvement of the group as a whole, regardless of the theme being addressed. Due to the fact that the student played a leading role in selecting the methodology to be studied and that there were research, teaching practice and preparation of essay or article under mediation of the teacher, the other students concluded that there was really a collective construction of the discipline throughout the process (Thiollent, 1986; Borges & Alencar, 2014; Thiollent & Colette, 2014; Morán, 2015; Mineiro *et al.*, 2018).

The second subject brought a theoretical contribution to this experience by proposing the term “pedagogical goal” to describe the technique used for teaching this discipline, which used an active methodology to speak on active methodologies. According to him, the outcome was very satisfactory as an issue was raised, research was performed (self-guided exercise) and content was compiled and brought to the classroom. Then, the groups widened the knowledge and revised their hypotheses in the elaboration of essays and articles (Tripp, 2005; Toledo & Jacob, 2013; Lodi *et al.*, 2018).

It was found that the researchers used the approach in practical terms and also had a reflexive stance regarding the process (Abraham & Cohen, 2019). This is corroborated by the contribution brought by the third student, who pointed to the importance of research in the group’s learning process. According to him, the search for science formalises learning, and the teaching method is viewed in a superior way, no matter the idea one can have about what an active methodology is.

Finally, the discussion on the experience of collective construction of the discipline allows verifying that our purpose was achieved. According to the master’s degree students, there was cooperation for the solution of problems, which was agreed at the first meeting. The challenge proposed was solved by using the action research to build collectively a discipline in management, in addition to awakening the commitment of the pairs to active methods. That is, it is possible to redefine the “current situation for achieving a desired reality” from the knowledge, experience and interaction between researchers and subjects (Santos, Dellagnelo & Vann Bellen, 2018, p. 14).

5. Conclusions

The present study presents findings that attest that action research contributes to the collective construction of a discipline in management as it enables the researcher to play an intervening role among the subjects, which legitimates the process and ensures assertiveness in the achievement of the academic goals, in addition to ensuring the respect to the leading role of the student, since he/she is a player in action and research. This was evidenced with the quality of the classes taught by them and by their effort in producing essays and articles. Lastly, there was the participation of a parallel group in the data collection and research itself, which supports the methodological procedure and scientificity of the process.

As for the specific objectives, one could identify the presence of commitment of the subjects in the proposed activities by observing stimulation for pair participation throughout the process, which allowed co-authorship and awakening of commitment. With regard to the analysis of the effectiveness of the active methods in the discipline construction, it was found that some analogue methodologies were alternatively used in the classroom and produced satisfactory results. This demonstrates that in the view of situations where Internet and electronic devices are not available, for example, the faculty members can resort to non-digital active methods with equivalent efficacy.

On the basis of the content presented by the groups, it is possible to state that the active methodologies converse with each other and can be used simultaneously or at different moments of the same discipline depending on the learning objective. Active methods (e.g. flipped classroom) demand that the student enters the classroom with information enough for having a consistent discussion, which, in the opinion of the subjects, represents a limitation. This would mean that this teaching methodology is not recommended for introductory disciplines.

Gamification was also a method addressed regarding its applicability to the didactic setting in view of the extensive use of smartphones in this digital era, although technological devices and access to Internet are necessary for achieving the pedagogical goal. Badly-defined rules and focus on the points to be achieved may overcome knowledge acquisition, which would be the main objective of the classroom practice.

Future studies might replicate our experience in groups of students attending the same post-graduate course or courses of other areas of education, including those of other institutions, so that comparisons and analyses could be made.

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