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Group Learning Strategies. Student and Teacher Perceptions

Abstract

The learning process in higher education was marked by certain changes in the way we are presenting the study. The student becomes a correspondent of his own learning. Through this article, we seek to understand what study strategies students use to develop learning on the part of the first year students of the Human Resources Management and Marketing and Public Relations courses, which started in 2016, and their teachers, especially in the subject of Mathematics..The study assumed a methodological design of case study and the qualitative approach was based on the comprehensive and interpretive paradigm. The results led to the conclusion that the learning strategy that students use most is group study, where they solve exercises and consolidate a subject together, but it is the responsibility of each student to study more individually, depending on level of assimilation of the learning material. Group study can enhance learning and develop the self-regulation process, but for this, there are additional conditions such as student and teacher responsibility, commitment and focus.

Keywords: Study strategy; Learning; self-regulation.

1. Introduction

The research was carried out within the scope of the doctoral program in educational sciences. The aim of the investigation was to identify the study strategies that students and teachers use to develop learning. As a way to operationalize the main objective, we proposed some questions that guided the research: what study strategies do students use? Do the learning strategies help the student to self-regulate?

The planning of the work followed the following sequence: in the first phase, we give an overview where we show the research problem, the problematization, the objectives and the bases that justified them; then we bring the conceptual panorama and theories related to the reserch, we present the methodological design of the investigation and its justification, we characterize the participants, we present the instruments and procedures as well as the data treatment; we present the analysis and discussion of the data obtained and finally we have the conclusion, where we present the synthesis of the answers to the research questions raised, taking into account the triangulation of the results of the self-assessments, the discussion groups, the interview with the teacher, documentary analysis and recording of class observations as well as a literature review.

We consider the study relevant, since, at the moment, the focus of learning is centered on the student himself and the teacher takes the role of facilitator and advisor of this learning. It becomes pertinent that the student can conceive of strategies that facilitate learning. Our study can be considered exploratory and descriptive, as it assumes a semi-inductive and comprehensive character, which is limited to the interpretive paradigm and fits in the epistemology of understanding that is supported by the individual and specific aspect of the relationship between a subject and an object "whose existence is independent and asserts itself in the existential mutuality, therefore unique for each concrete situation" (Paszkiewitz, 1997, p. 213).

We adopt a qualitative approach, in the case study modality, because it is more concerned with understanding in depth the complex relationships between the fact or phenomenon, using the description of the experiences in context.

2. Methodological option

The study adopted the methodological design of a case study, according to Yin (2003). We chose this design because we intend to study the problem in relative depth, listening to a considerable number of subjects, observing the practices and analyzing a set of different normative and pedagogical documents, referring to a specific reality of a class, in a Mozambican university, in the year 2016 academic year.

The questions asked guided our study to have an especially qualitative approach, based on the comprehensive interpretive paradigm, but we also used a quantitative approach to analyse some of our data. In view of these data, it was important to employ adequate statistical analysis, for which we used the SPSS software (Statistical Packege for Social Sciences), version 24.

In order to ensure the consistency and reliability of the information collected, it was decided to triangulate our methods and instruments, as well as the respective sources. Triangulation assists in

resolving issues of validity, as the use of different instruments and techniques for data collection entails a variety of measures for the same phenomenon (Lesserd-Herbet & Boutin, 2010; Yin, 2003). Therefore, more than one method and instrument was used, specifically self-assessments, interviews, discussion groups, document analysis and observation of classes. The sources were more than one, the students, the subject teacher and documents.

For this, we rely on Yin (2003), who suggests the use of various instruments and sources to collect the same type of information, considering, on the one hand, that it helps to collect a series of information on historical issues, attitudes and behaviors, on the other hand, the conclusions and results extracted tend to be more consistent and more convincing, since they come from the summoning of various sources and perspectives.

2.1 Study participants.

The concept of theoretical saturation from the perspective of Guerra (2006), helps to justify the non-use of samples in studies with a qualitative approach, although it is an important element. In this work, all students in the class were involved. It was not theoretical saturation that led to the decision to involve this number of participants.

In the specific case of this research, the number of subjects who collaborated was 41 participants, 40 students from the first year of the Human Resources Management course, and Marketing and Public Relations who had enrolled in 2016 and the professor of Mathematics. There were 30 students from the Human Resources Management course and 10 from the Marketing and Public Relations course, making a total of 40 students. Of the 40 students we had 15 females and 25 males. The average age of the subjects was 20 years, where we have the minimum age for females at 16 years and maximum 24 years. For males, we have a minimum age of 17 years and a maximum of 28 years. The 34-year-old math teacher was 34 years old and had 9 years of teaching experience. The method of inviting the participants followed all the criteria and norms of research ethics.

2.2 Data Collection Tools

The data collection instruments used were the learning self-assessment form, with the aim of giving the student the necessary time to reflect on his/her answer, to experience a self-assessment and also to obtain his/her opinion about this strategy. The form aims to assess the degree of students' understanding of the self-assessed subject, as well as to evaluate both the study methodology they employ and the different ways of using metacognition, according to Jacob and Héber (2000).

The script for the individual interview is organized into different categories that seek to explore the meanings that the math teacher attributes to self-assessment in the learning process. We used the semi-structured interview, in order to allow greater interaction in our study and, consequently, assist in the acquisition of possibly more information. But we know that semi-structured interviews have the disadvantage of admitting deviations. In this situation, we had to redirect the questions without discarding the interviewee's ideas.

The script of the discussion group was also semi-structured, which allowed us to analyze our problem in depth from a dialogical reading, crossing several aspects and points of view at the same time (Flick, 2005).

Document analysis is one of the important data collection techniques. There are many school documents that contribute to the construction of ethnographic studies: medical records, guidelines, evaluations, diaries and such documents reveal interesting aspects of school life (Viegas, 2007). In our case, we used the general regulations of the college, a written guide to the Faculty, student assessments, guidelines, records of absences, because these documents helped us to understand some aspects of our research questions.

For the recording of observations, we took written notes which allowed us to identify the situations that we considered important for our study, such as the classroom climate, relationship with the teacher, the feedback system on the part of the teacher, the student interaction when carrying out the activities, the level of support. These elements, combined with our theoretical framework, constituted an important source of information.

2.3 Analytical procedures

The methodology used in this work allowed us to explore and analyze data in different ways. For some purposes, we explored the qualitative data, such as questions related to data understanding or to deepen the interrelationship between some facts. For other purposes, we favoured quantitative data specifically for issues related to differences between participants and the relationship between some variables.

For the qualitative data, we assigned codes for each subject and created a table that contained the 5 dimensions of metacognition according to the perspective of Figari and Acchouche (2001). The individual interview was transcribed in full and all material was carefully analyzed. For discussion groups, we assign codes to texts linking them to their groups.

Regarding quantitative data, the SPSS software, version 24, was used, using the Wilcoxon test for paired samples and Spearman's correlation.

We thus combined qualitative and quantitative data as a way to confirm the main results of the research. It should be noted that the combination of these was not intended for one part to validate the other, but for the integration of different sources of information, in order to obtain greater richness and depth of understanding.

3. Presentation and Discussion of Results

In this phase, the results obtained were presented and discussed, through the process of analyzing all the data, organized into categories and subcategories. In the course of the process of presenting and analyzing the results, the results obtained were triangulated for each of the questions with our sources of information.

From the learning category, the following subcategories emerged: study strategies; planning of study time, spaces and environments as we have just described.

3.2.1 Study Strategies

Rosário, Nunez and Gonzalez-Pienda (2006) define learning strategies as a systematic plan guiding school work to achieve the intended school objectives. These strategies, according to Rosário (2004), cover the behaviors and thoughts used by students, in the learning process, with the objective of influencing their codification process. Goliath and Libâneo state that the learning strategies are based on the need to understand the learning process and to improve the product of that learning. This process leads to the retention of data, information, attitudes.

Thus, there is a determined conscious effort that the subject must undertake to understand and internalize the learned contents. It is not enough to just hear or listen to the teacher's explanation. It is essential to work with the acquired information, to repeat what has been learned in order to consolidate the learning (Donaciano, 2006). The author considers that different subjects show different ways of learning depending on the method they adopt. Therefore, we asked the participants about the study strategies they used to carry out application exercises, tests and exams. To answer the question, we considered the observations in the classroom, the testimonies of the focus groups and the interview with the teacher.

From the observations made of the math classes, we found that the application exercises are done in groups, with the support of the teacher in the joint elaboration technique. Students sit in groups of 5, making up 8 groups. The teacher visits each of the groups to give support and resolve any doubts if necessary. In case the teacher finds that doubts are common to many groups, he interrupts the exercises and explains the problem to the whole class.

Students, too, claim that the study strategy they use most relates to group study, as we can see in the excerpts that follow.

"We usually study in groups, in groups we solve the exercises and discuss the problems, we do the modeling, but each one of us afterwards on a personal level will be exercising alone, if you have problems you can bring the problem up the next day to try to discuss it, if we can't, we go ourselves to the teacher to explain "(Subject 9).

"In the case of mathematics, the teacher distributes a form that contains exercises, and these forms are worked on in groups, the teacher explains the steps we must follow to model the problem. For tests, we often begin to review exercises from older materials to remember and finally the most recent materials "(Subject 16).

"In the case of tests and exams, when the teacher gives us the exam matrix, for example, in groups we solve the exercises of the subjects that are in the matrix, we invent or produce questions or problems and we solve them in a training way, which has helped a lot, since, so far we have no problems with this strategy "(Subject 8).

"The more a particular subject is exercised, the easier it is to understand, the secret is to exercise right after the subject is given, not to leave it for later, because in the end there is a large volume of material to study and it becomes more complicated to study and understand everything "(Subject 22).

As can be seen, from the responses of the students, they discuss the problems collectively at the group level, they model the problem, which consists of organizing the data of a given problem and transforming that data into the mathematical symbolic language. They solve the exercises given by the teacher, thus consolidating the subject together. However, it is up to each one, individually and depending on the level of assimilation, to exercise the material. Exercise makes learning more effective. This process is in line with the idea of Mwamwenda (2005): "the longer the student is in contact with the material to be learned, the better his / her ability to perceive, interpret and judge" (p. 237).

The teacher echoes the students' responses, saying that the exercises are mostly in the form of problems. The student is obliged to transform the problem into symbolic mathematical language and for that he must use the procedures that mathematics itself indicates, in order to find the solution and then interpret the solution in the context of the problem. The fundamental technique is modeling, and this activity is usually done in groups.

"Students can work in groups in this modeling activity, they analyze the exercises at home, they solve group activities even in the classroom, we always advise them to stay in groups and to discuss presenting the possible ideas for later in common to find an outlet. So the strategy is group study" (P.M).

Of the exercise resolution strategies, the most chosen by students is modeling, which consists of accommodating the problem in mathematical symbolic language. For this, it is necessary to compare their results with the results of their colleagues so that, in the end, they can have a joint conclusion, and this process enhances the interaction between students. We can confirm that collaboration is the method most used by students in solving exercises.

"In this context of modeling, it is necessary to compare the results, is it possible that what I thought is the same as what João or Joana thought? So at this point, you will have to compare your ideas or your conclusions with the conclusions of other colleagues and then there is that interaction, which is group study. So, due to the nature of the exercises, students end up preferring group work. It may be in groups not formed in the classroom, but groups of friends among them, or close colleagues, so they work more in groups "(P.M).

In order to do the modeling, it is necessary to compare your conclusions with those of colleagues, hence the need to work in groups. Therefore, group work is the mother strategy for students. With regard to the preparation of tests and exams, the strategy remains group study. When taking the examinations, they start with the simplest questions and then have more time for the most complex ones.

The content of the interviews indicates that self-regulation takes place, within their study strategies, insofar as the students, through these strategies, acquire knowledge, skills and attitudes that are necessary to optimize learning. In addition, they also make adjustments to their procedures, there is regulation of the behaviors considered important for learning (Fonseca, 2012), and this happens in the strategies of the students, as we can analyze in the excerpt below.

"The more a particular subject is exercised the easier it becomes to understand it, the secret is to exercise right after the subject is given, do not leave it for later, because in the end there is a large volume of matter to study and it becomes more complicated to study and understand everything "(subject 16).

Therefore, we can say that students are able to adjust and promote their learning strategies.

3.2 Planning study time.

The planning of study time was one of the contents that emerged in the course of the discussion groups. Given the relevance that content has, in the context of study strategies, we consider it important to present this work. Since the inclusion of this theme in the present study was not previously planned, it was not intentionally addressed in the interview with the teacher nor did it appear spontaneously in his speech.

From the responses of the subjects we can see that the planning of study time must be done with responsibility. There are references to the need to plan and distribute tasks and the time allotted for each task or activity and the need to comply with the plan. Some students said that planning study time is a challenge, as they have many subjects and the volume of content is also very large, making planning time for study a difficult task.

"Planning the study time according to the tasks, is not an easy thing, because all the teachers give a lot of work, and at the same time. For me, it becomes a little difficult, due to the volume of work" (Subject 3)

"Most of the time is allocated to academic tasks that occupy the whole morning, and the rest is shared according to priorities, giving more priority to studies and then to other activities" (Subject 2).

In the perspective of Mwamwenda (2005) and Trigo (2012), time is a crucial issue in teaching, and it can be divided into several moments, such as: the time allocated, instruction time, attention time and academic time. The allocated time is the planned time for each topic that has to be covered. The more time you spend on a given topic, the more and better learning you hope to accomplish. Instruction time is considered as the time for class management procedures. Attention time is the time during which the student pays attention in class. Finally, academic time refers to the extent to which students experience success with their learning (Trigo, 2012). In this context, we can conclude that students manage their time divided into allocated time, instruction time as well as attention time. The academic time mentioned here is at odds with the time that the students mentioned. Students manage their time according to the activities, they do not consider the various time provisions that the authors mentioned above consider, as we can see in the responses below.

"Our time is usually filled with academic activities, in the morning we are in classes, in the afternoons we have been studying in different groups, normally most groups, if not all groups in our class, on Wednesdays, they meet, others have debates in university pastoral groups, others are in different groups of extracurricular activities, so the Wednesdays are lighter. Then we have the weekends, which we often also reserve Saturdays for studies, mainly during the weeks of tests and exams" (Subject 11).

For the question raised, if the time available for studies was sufficient, most students said yes. But, for that, it was essential that there was good planning and compliance with it, having responsibility in time management taking into account the objectives to be achieved.

"The problem of time is related to the issue we talked about earlier, which is the planning of activities. If we can come up with a good plan and distribute the time according to the activities, I think that time will be enough. What makes our time not enough is the poor distribution of it, we spend hours and hours doing things that are not priorities, for example, we spend a long time on Facebook, Whatsap, Instagrams, etc., chatting

with friends and to see what is happening with the celebrities, I don't say it's not good, but our objective at the moment is classes, our training, so our academic activities should be priorities and we should dedicate most of our time to the academy and we should reserve a shorter time with social networks. (for example on weekends, we could give social networks more time "(Subject 3).

There were participants who did not agree with the statement that the time was sufficient for learning, as long as good planning was done. However, they converge on the idea that time should be used for academic activities.

"Time is never enough for us, even on test days we want more time. To say that time is sufficient I would not say that because we have many disciplines and the volume of activities is greater, however, I consider it favorable as long as we have self-discipline and responsibilities, we can make better use of our time for college activities "(Subject 15).

Thus, for this category, it can be concluded that time is a resource that, well managed and used, does not constitute an obstacle to the learning process. It is necessary for the student to self-regulate by making an activity plan and a good distribution of time, depending on the tasks to be carried out, and to be faithful to this plan so that he can comply with the planned objectives.

3.2.3 Spaces and academic environment

The spaces and the academic environment were also themes that emerged from the responses of the discussion groups and from the observations made, and we consider it important to incorporate these contents in this research, assuming that is has value in the context of the learning strategies. On this issue, what interested us to know was whether the spaces and the academic environment acted as facilitators or if they hindered learning. To answer this question, we analyzed the responses from focus groups, the interview with the teacher and the notes we took while we observed classes.

Clifford (1991) says that teachers can take advantage of the school environment and create didactic means such as slides, films, television, slogans, simulations ... as strategies that can serve as meaningful experiences for the student, as well as scientific conferences, social evenings, lectures, seminars ..., which can enrich and complete students' current experiences. In the same vein, Krause & Coates (2008) reinforce the idea saying that educational institutions have a responsibility to create environments that make learning possible, providing different opportunities for their students, but the ultimate responsibility rests with the students themselves. It is their choice whether or not to use the resources that educational institutions make available to them.

From the responses of the students as well as those of the teacher, we conclude that the spaces and the academic environment act as facilitators of learning, since one can find a library with a lot of literature and information, airy and well-lit classrooms, computers connected to the Wi- Fi, with the possibility for students to have access to research, through their own computers and celphones.

Students characterized the academic environment as a facilitator of learning, since scientific conferences, national and international congresses are held, which increases the range and horizon of knowledge. The following excerpts report the opinion of the study participants.

"Here we have computers in the library, a photocopy centre to make copies, we don't need to leave the faculty to make copies of a book, we have internet, despite it being weak, but it is our reality, from the classrooms, the courtyards and the corridors, the whole environment is a facilitator of learning, I think. (Subject 35).

"I also consider the space we have as a facilitator, since here at the university lectures are held that address various themes of social life, because of that you have the opportunity to increase your range of knowledge in different areas, in addition to your area of expertise in your training. (subject 26).

"From my point of view, the study spaces facilitate learning very well, the rooms are wide, well ventilated and with good lighting, the teachers are accessible and available to the students. The environment favors learning a lot, we have no reason to complain about this point, we notice a lot of difference with the other colleges that don't even have classrooms in good conditions. And not only that, our library also opens on Saturdays, which already helps a lot "(Subject 18).

"We noticed all the difference between the school environment that we had in the secondary school in relation to the environment we have here, the environment makes us adopt the rhythm, of going to the library, participating in lectures or conferences, discussing problems that the teacher leaves, when you go home a little early, you feel like you're missing something. That is why the college environment helps students to change their behavior "(Subject 9)

The teacher also considers that spaces and the environment are great facilitators of learning:

".... The classroom provides a very good environment in fact, for mutual respect, we try to transmit this to the students ... that among them they also respect and value the opinions of other colleagues (P.M).

From the observations that were made in class, it was found that the teacher used different didactic means in the classroom. He used overhead projectors, where he projected the slides with the contents, the whiteboards, where exercises were performed, and the blackboard for important information. The rooms are large, airy and well lit.

For practical classes or for solving exercises, the teacher arranges desks so that students are seated in a group. With that, we noticed that it facilitates group interaction and the teacher has the facility to be interacting with all groups, monitoring and supporting their learning.

We also observed a feedback system that we consider to be positive and comprehensive, since from devices, such as cell phones, they communicate through a WhatsApp group created by the class. It can also be seen that they create discussion forums, where the teacher uses a Moodle platform, which allows students to have discussions and feedback from the teacher.

3.2.4 Self-regulation of learning

Self-regulation of learning refers to the set of thoughts, feelings and actions that the individual plans and adapts to their learning needs (Zimermen, 2002). This concept, applied to higher education, concerns the different strategies and processes that students apply in light of the objectives, organization and recovery of the material learned, within a work environment, which favors academic performance, taking into account the management of the time and the help needed to reach the objectives (Rosário, Ferreira & cunha, 2003).

For Pintrich (2000) and Pintrich and Zusho (2002) self-regulated learning is the application of general models of regulation and self-regulation to academic learning issues, carried out in the school context and in the classroom context. Self-regulated learning is like the process of self-direction, through which students transform their mental and academic skills (Rosário, Nunez and Gonzalez-Pienda, 2006)

Since the basis of the self-regulation process lies in the choice of strategy and in the control of its learning process, the opinions of students were unanimous for this subcategory, stating that learning strategies help in the student's self-regulation process.

"It is your learning strategies that will determine your behavior. For example, If you study with the group, and you consider that group study makes it easier for you to understand the subject, the attitude you should take is to be present in the group and participate effectively in the group, giving suggestions, solving questions, answering questions and explaining to the others, isn't it? ... So, you learn to self-regulate according to these activities, that's why I say that yes, the learning strategies make the student self-regulate "(Subject 40).

"Depending on the strategies you use, you will have to shape your behavior in order to comply. If, for example, your study strategy consists of repeating the exercises done in the classroom, then you will have to regulate yourself, regulate your behavior in order to comply with the strategy, in this case the repetition of the exercises. (Subject 16).

From the excerpts above, we can say that it is the learning strategies that shape the students' behavior and, consequently, help in the self-regulation process.

4. Conclusion

As we aimed to understand the issues related to learning, the concern was to know which study strategies were used by the students. In this work it was found that the study strategy, which is most used, is group study, where problems are discussed collectively, at the group level; the exercises given by the teacher are resolved, at the group level, and the matter is consolidated jointly. But, it is the responsibility of each student, to go more individually, depending on the level of assimilation of the subject.

The teacher also echoes the students' responses, saying that the strategy that students use consists of group study, since most of the exercises are in the form of problems, where students are forced to transform the problem into symbolic mathematical language. For this, the modeling procedure is used, which is an activity that is usually done in groups, since the modeling process necessarily involves confronting your conclusions with those of colleagues - hence the need to work in groups.

Group study can enhance learning and develop the self-regulation process, but for this it is necessary to guard against certain conditions such as: the responsibility of the student and the teacher, commitment to the teaching and learning process, focus on the objectives to be achieved. If these conditions are taken care of, group study can be a great ally for the development of learning, and if they are not taken care of, group study can be more time wasted, as it will not develop any self-regulatory skills or the development of learning.

As it is a case study, which focused specifically on students in the first year of Human Resources Management, and Marketing and Public Relations courses, in the subject of Mathematics, it would be interesting to replicate it in students from other areas of training and from other units of curricula with different characteristics to those of these students who were subjects of this study.

For future research, a study on metacognitive strategies in teaching is recommended.

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