

DEVELOPMENT OF SELF-REGULATED LEARNING IN COLLEGE STUDENTS: A QUALITATIVE STUDY¹

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ABSTRACT. Self-regulated learners manage their academic demands in a flexible and critical way in order to achieve their goals. The aim of this research was to understand the development of self-regulated learning in college students. It was conducted a collective case study, with three undergraduate students interviewed at three different times during their participation in an intervention focused on the promotion of self-regulatory skills. Data were analyzed using content analysis, following theoretical categories based on the self-regulation cycle: anticipation, performance and self-reflection phases. Particular development trajectories were observed and self-efficacy was a motivator to propose objectives and strategies. Self-regulated learning seems to initially depend on external regulators for its consolidation. It was noted the importance of promoting academic feedbacks related not only to the results of the evaluations, but also to the process of studies, thus contributing to building a more autonomous, critical and self-regulated learner.

Keywords: Development; self-regulation; learning.

DESENVOLVIMENTO DA AUTORREGULAÇÃO DA APRENDIZAGEM EM ESTUDANTES UNIVERSITÁRIOS: UM ESTUDO QUALITATIVO

RESUMO. Estudantes autorregulados tendem a gerenciar suas demandas acadêmicas de modo flexível e crítico a fim de alcançar suas metas. Sendo assim, o objetivo dessa pesquisa foi compreender o processo de desenvolvimento da autorregulação da aprendizagem em estudantes universitários. Foi realizado um estudo de caso coletivo, sendo entrevistados três estudantes de graduação em três momentos distintos durante suas participações em uma intervenção com foco na promoção de competências autorregulatórias. Os dados foram analisados por meio de análise de conteúdo, seguindo categorias teóricas a partir do ciclo autorregulatório: fase de antecipação, de desempenho e de autorreflexão. Foi possível observar trajetórias particulares de desenvolvimento, caracterizadas pelo papel da autoeficácia como motivadora para proposição de objetivos e de estratégias. Além disso, conforme esperado teoricamente, o desenvolvimento autorregulatório pareceu depender inicialmente de reguladores externos para sua consolidação. Discute-se a importância de se promover *feedbacks* acadêmicos relacionados não apenas aos resultados das avaliações, mas também ao processo de estudos, para colaborar na construção de um estudante mais autônomo, crítico e autorregulado.

Palavras-chave: Desenvolvimento; autorregulação; aprendizagem.

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DESARROLLO DEL APRENDIZAJE AUTORREGULACIÓN EN LOS ESTUDIANTES UNIVERSITARIOS: UN ESTUDIO CUALITATIVO

RESUMEN. Estudiantes autorregulados tienden a gestionar sus demandas académicas de forma flexible y crítico. Por lo tanto, el objetivo de esta investigación fue comprender el proceso de desarrollo de la autorregulación del aprendizaje en los estudiantes universitarios. Se llevó a cabo un estudio de caso colectivo con tres estudiantes universitarios en tres ocasiones distintas durante su participación en una intervención centrada en la promoción de las habilidades de autorregulación. Los datos se analizaron utilizando análisis de contenido, siguiendo categorías teóricas a partir del ciclo autorregulatorio: fase de anticipación, de desempeño y de autorreflexión. Observaron trayectorias de desarrollo individuales que se caracterizan por el papel de la autoeficacia y la motivación para proponer metas y estrategias. El desarrollo de autorregulación apareció inicialmente depender de los reguladores externos para su consolidación. Se hace hincapié en la importancia de promover evaluaciones académicas relacionadas no sólo con los resultados de las evaluaciones, sino también el proceso de estudios, contribuyendo así a la construcción de un estudiante más autónomo, autorregulado y crítica.

Palabras clave: Desarrollo; autorregulación; aprendizaje.

Introduction

Entering higher education is a challenging experience, as college tends to be more demanding than high school, requiring more effort and autonomy from the student (Fagundes, 2014). It is known that it is not enough for students to enter university, it is necessary remain and build a quality academic trajectory in order to achieve their professional goals. This new academic context promotes, or should promote, a more active attitude of the student when dealing with his/her learning process. However, not all students are able to engage in fulfilling academic demands.

It is up to the student, then, to develop the ability to self-regulate, appropriating his/her learning in an autonomous, critical and motivated way. Learning is a proactive process that requires students to regulate their thoughts, feelings and behavior to achieve certain goals (Zimmerman, 2000). The self-regulated student is guided by goals and strategies, monitors his/her behavior and reflects on his/her effectiveness, which increases his/her motivation to persist in the face of difficulties, constantly seeking to improve his/her way of studying. As a result, greater self-regulation (with greater strategic planning, monitoring and self-reflection) is associated with better academic results and a more active, critical and determined attitude (DiBenedetto, & Zimmerman, 2013; Lau, Kitsantas, & Miller, 2015).

Nevertheless, although self-regulation is important in the academic context due to its relationship with performance, motivation and planning (Sahranavard, Miri, & Salehiniya, 2018), some students may have difficulties in applying self-regulatory skills in academic life. Difficulties in organization, planning and motivation are not uncommon (Beiter et al., 2015). Instead of adopting proactive strategies, students may depend on reactive methods that, in most cases, are not effective in regulating activities (Zimmerman, 2000).

Self-regulation, according to Zimmerman (2000), can be understood through three levels: motivational, behavioral and metacognitive, through a system of anticipation (pre-action), performance (action) and self-reflection (post-action), respectively. In general, the anticipation phase refers to the proposal of objectives and self-motivation beliefs. During the performance phase, students effectively engage in a specific activity and employ different strategies to maximize their learning. Self-reflection, on the other hand, involves the processes that occur after studying and that influence and regulate motivational aspects, completing the self-regulatory cycle (Zimmerman, 2000).

Self-regulation is not a personality trait that the student has or not, since it includes being able to adapt specific processes to each academic demand. Thus, it is understood that self-regulatory skills can be developed throughout life (Weinstein, Husman, & Dierking, 2000). The development of self-regulation involves four processes: a) observation; b) emulation; c) self-control and d) self-regulation. Initially, regulatory skills are developed through an observational level. During this phase, models become important when sharing results, motivational aspects and values (Zimmerman, 2000). Despite the importance of vicarious learning, there is often a need to apply strategies in daily life in order to incorporate them into the behavioral repertoire. Then, in a second moment, called emulation, the student applies a skill in an approximate way to what he/she observed from the model. This process is not a simple imitation, as the student is rarely able to copy the exact actions performed by the model, but can replicate the general pattern of functioning. The behavior will be reinforced or not by the environment, which will interfere with the maintenance of the learned patterns. It should be noted that, for these first two levels of development, the source of regulatory development is basically external and social (Zimmerman, 2000).

Acquiring a competence, in general, involves practicing it in a deliberate and autonomous way, which characterizes the access to the third level of development, called self-controlled level. Here, the student practices the mastery of skills in structured environments that are far from the presence of the model/professor. The behavior is no longer reinforced only by external components, because, now, the student is able to reflect and self-evaluate his/her performance (Zimmerman, 2000). Finally, the self-regulatory level is reached when, in addition to deliberately practicing, the student is able to systematically adapt his/her performance to contextual conditions. The variability of strategies becomes greater and adjustments are made based on the results obtained. The motivation that sustains this level depends basically on self-efficacy (Zimmerman, 2000).

The development of self-regulation does not occur through a static and immutable sequence of four stages. It is assumed that as the student reaches more complex levels with regard to its regulation, he/she will learn more and more effectively. However, even reaching the self-regulatory level, the student may not act in a self-regulated manner due to contextual issues, such as tiredness, lack of interest or lack of commitment (Zimmerman, 2000).

Not all individuals who share the same context will experience the same level of regulatory development. For example, when comparing freshmen and veterans in sports, newcomers have difficulties in reinforcing motivational aspects, leading them to act more reactively than proactively in the face of events. As such, they may fail to set goals and monitor the performance process. On the other hand, veterans demonstrate higher levels of motivation and goal setting, by linking proximal and distal goals, monitor the achievement of goals and adjust the progress of activities, if necessary (Cleary & Zimmerman, 2001).

How to measure self-regulated learning in a more appropriate way has been an increasingly discussed subject. Self-report instruments are still the most used by

researchers and educators (Clearly, Callan, & Zimmerman, 2012). However, such instruments usually measure the phenomenon in a static, timeless and decontextualized way, which is not consistent with the definition of self-regulated learning. Thus, as an alternative, microanalytical techniques have been developed to access the self-regulated phenomenon while respecting its dynamics and development. For example, in the area of music development, new protocols related to music practice have been used to accompany the students' self-regulated learning process (McPerson, Osborne, Evans, & Miksza, 2019).

Understanding that the promotion of self-regulation is a dynamic and contextualized process, we sought to understand how the development of self-regulated learning occurs in college students. To this end, three cases of college students who participated in an intervention focusing on self-regulatory aspects are presented, seeking to describe different trajectories of regulation and changes over time. It is important to emphasize that the proposal of this study does not involve the assessment of the intervention. The intervention was adopted, here, as the context shared by the participants.

Method

Design

It is a longitudinal and collective case study (Stake, 1994), whose purpose was to describe the process of development of self-regulated learning in college students throughout an intervention. The case study strategy was adopted because it allows a better understanding of the phenomenon, not following a saturation criterion.

The intervention program consisted of three meetings, one per week, lasting 02 hours each. The activity was organized as follows: in meeting 1, motivational aspects were worked on, especially career development; in meeting 2, the motivational aspects related to academic self-efficacy and achievement goals were explored, in addition to the focus on learning strategies and monitoring of the study process; in meeting 3, a process of reflection on the study process and the intervention carried out was carried out. The intervention was carried out with students from engineering, physics, chemistry and mathematics programs, due to the greater number of failures and academic difficulties that these usually have.

Participants

Three undergraduate students participated in this study and were part of an intervention aimed at self-regulated learning. It was decided to invite only students participating in all intervention meetings, since it was assumed that they would be more sensitive to potential self-regulatory changes, thus allowing to identify and understand the process of self-regulatory development in greater detail.

Instruments

Three semi-structured interviews were conducted with each participant, individually, in order to investigate the possible changes occurring during the intervention period. The interviews were organized in the same way in the three moments of investigation, and the parameter adopted was the student's relationship with his/her academic activities in the previous week. Three self-regulatory phases (anticipation, performance and self-reflection) were investigated through the following aspects related to the study process: objectives

outlined and results achieved, strategies used, level of satisfaction, next goals, etc. (Cleary, Callan, & Zimmerman, 2012). Such interviews aimed to identify aspects of the self-regulatory process occurring during academic activities, which is different from retrospectively assessing the perception of the effectiveness of the intervention performed. Thus, a microanalytical measure was sought, with open questions, in order to facilitate students' reports about what they thought and how they acted during the learning moments (Clearly, Callan, Malatesta, & Adams, 2015).

Procedures

The research was approved by the Ethics Committee (opinion nº 790,311) of the Institute of Psychology of the university where the intervention was developed. During the first meeting, the objectives of the research and its longitudinal character were explained. Those who showed interest and willingness to participate in the interviews were subsequently contacted. In the first interview, the Free and Informed Consent Term was signed. The interviews were scheduled after each meeting: interview one was held after the first group meeting; interview 2, after the second meeting; and interview 3, after the third meeting. The interval between interviews was one week. All interviews were audio recorded and transcribed for analysis. The cases that completed all three intervention meetings were kept. It is noteworthy that the students participated in different editions of the intervention. In total, five editions of the intervention were carried out over the ten-month period. The invitation process to participate in the qualitative study occurred in the same way in all editions, however it was possible to count on only three participants who showed interest and who concluded the meetings in their entirety.

Data analysis

Data were analyzed based on theoretical categories defined a priori: anticipation - performance - self-reflection (Braun & Clark, 2006; Cleary, Callan, & Zimmerman, 2012). The anticipation category involves the processes that precede the action of studying, which may include setting goals, self-efficacy and vocational self-concept. The performance category covers the processes occurring during the action and that affect its development, which, in this case, includes learning strategies and self-monitoring. The self-reflection category includes the processes that occur after studying, which may include self-assessment, causal attribution and self-satisfaction. It is noteworthy that these processes occur simultaneously, their division being only theoretical for a better understanding of self-regulatory development.

Results

Cases will be presented individually and briefly. Within each phase presented, there is a description of the three interviews conducted.

Case 1 (A.)

Student A., 21 years old, was studying mechanical engineering and, at the time, was, according to his own definition, approximately in the fourth semester; had five failures, evaluating his academic performance as 'poor'; reported that he had already thought about

abandoning the course, and sought intervention in order to learn new strategies and better organize himself to deal with academic demands.

Anticipation/motivation phase

For A., studying was seen as an obligation to meet external deadlines, such as tests and assessments. His organization was due to the urgencies. He referred to discouragement and lack of interest in the course due to the difficulty of performance, including considering abandoning the course. In the second interview, he indicated changes in his planning, stipulating times and objectives of studies. He felt more determined to follow his schedule, including adding new activities, such as gym and nutritionist. Finally, in the last interview, he evaluated that he had managed to follow the proposed objectives, but he had failed in one of the evaluations. This result interfered with his motivation to move forward and even to stay on the course.

Performance/behavioral phase

Initially, A. described that he used a spreadsheet to organize himself, especially with regard to the hours, but did not specify the contents to be studied. He used to read, write summaries and exercises. If he felt any difficulty, he resumed the contents. In turn, in the second contact, he reported that there were two changes in strategy: 1) he started to schedule what to study and 2) he asked his research advisor for help to solve an exercise. In the last interview, he mentioned the maintenance of study hours, including Saturday, if necessary. In addition, he distributed his leisure time and family time. He started to control distractors, especially social networks.

Self-reflection phase

Initially, A. did not show satisfaction with his study process and perceived procrastination. Despite having study strategies, he was unable to apply them. In turn, in the second moment, he identified that disorganized schedules were his major difficulty and it was in this focus that he had been working. He was feeling happy with the changes perceived in his motivation and in his behavior, he evaluated his study process as positive, despite not having had the feedback of his evaluations yet. Finally, in the third moment, he evaluated that he had a good week of studies. However, he felt upset with the negative feedback of one of the tests and understood that he needs to pay more attention during the evaluation, because he missed one of the questions due to the confusion between units of measurement and attributed that the test was above his level of knowledge, something not seen in class.

Case 2 (C.)

Student C., 20 years old, was studying electrical engineering; she was approximately in the second semester, having three failures, she evaluated her performance as 'reasonable', but reported that she had already thought about leaving the course due to difficulties related to her studies. C. sought intervention as a last alternative to deal with failures and her lack of motivation with the course.

Anticipation phase

The student weighed the pros and cons of her choice process, even thinking about giving up the course due to academic difficulties, prioritizing what she was most interested in, that is, those contents she believed were more related to professional practice and started to focus on learning rather than simply being approved. At the same time, she realized that she took a long time to start studies. In the second moment, she mentioned difficulties in reaching the goals set during the week, she planned to dilute the content of the subjects over time, in particular, she wanted to prioritize the subjects she considered more boring and, consequently, more demanding. She did not feel very confident to pass in all subjects, so she projected the possibility of having to give up any of them, in case she was unable to organize herself. Finally, in the last interview, she once again mentioned that she had not achieved all the objectives she proposed. However, she felt more hopeful about being approved. She mentioned that she was anticipating the activities she will perform and started to reflect on her goals, which made her more motivated because she now has parameters for comparison; she perceived herself to be more self-taught, not just waiting so much for the professor, but looking for alternatives.

Performance/behavioral phase

At first, her strategies were related to reading parts of the content that she did not understand. She reported not having the patience to solve exercises; and experimented with new places to study, such as the library, as she assessed that, at home, she has many distractors. In the second interview, she mentioned that she optimized short vacant periods to study. In addition, she started to read and highlight important parts of the texts, however, again she was unable to organize herself to write the summaries. Nevertheless, she said that she managed to pay more attention in class, which led her to more easily identify how her study process takes place. Finally, she managed to study with a friend, something she had never done, and recognized the importance of solving exercises. Also, she adopted self-monitoring behaviors, so she started to understand more what she knows and what she doesn't know, and what she still needs to learn.

Self-reflection phase

She reflected that she entered the course without having much information. As for the studies, she assessed it as a difficult and torturous process, leading her to evaluate her way of studying as poor; she understood that something external was necessary to help her remember her activities. In the second interview, she reported being more aware of what was not right in her study process and what she needed to do to change that. She reflected that she was upset for not being able to deal with distractors and extra-class activities. She believed that she needed to be pressured by deadlines and external stimuli to cope with her demands; obtained the result of a test and identifies that she did not go well, because she lacked to master important concepts. Finally, in the last contact, even though she was unable to do one of the planned works, she managed to identify what was to be done and what she did wrong. In addition, she began to analyze her tests differently. Previously she just looked at the result. Now, she tried to understand the reason for her mistakes and the reasoning used, she observed the presence of a gradual process of changing posture and habit.

Case 3

Student P., 30 years old, was studying physics degree. At the time, she was approximately in the third semester, with four failures. She evaluated her performance as 'reasonable', but she had already thought about leaving the program due to the difficulties related to her studies. P. had a family and had previously changed courses (she was studying mathematics); sought intervention to learn to identify her difficulties and to deal better with them, developing new strategies.

Anticipation/motivation phase

She noticed a change in her way of looking at studies, starting to show more persistence in the search for alternatives for her learning; she reported that she was unable to balance study hours and demands in order to cover all subjects. In turn, in the second interview, she reported greater organization of time and achievement of the proposed objectives. As for her focus of studies, she continued with the objective of learning the content and, for that, she was feeling safer to try new study strategies. Finally, at the last moment, she reported greater safety and confidence, including for the following semester, and also identified a greater focus on the objectives, despite the daily unforeseen events.

Performance/behavioral phase

She became more attentive to her attitudes. Before, she did not identify where her mistake was and, consequently, she did not know where to get help. She realized that she has applied a greater variety of strategies. In the second interview, she indicated that she continues to pay attention to her study process and added new strategies to her repertoire: she has been using colored tickets, she highlights topics in the book, she takes note of the explanations, etc. She did group work, and even invited a colleague to study, something she had never done during her undergraduate studies. Finally, she refined her monitoring process, identifying that she usually makes mistakes in the most basic calculations and not in the technique. For the first time, she was reading the statements carefully and proceeded to review the test before handing it over.

Self-reflection phase

She perceived herself as a curious student and was feeling more satisfied with the way she started to deal with her study process. She reported that she had learned more and did not forget her learnings. In a second moment, she reinforced the idea brought up earlier, indicating greater satisfaction and stating that she was learning to study. Finally, she evaluated that she wanted to keep what was built so far, comparing the quality of her study process with the performance of her grades.

Discussion

The process of development of self-regulation was presented differently for each case. Table 1 lists a summary of the changes experienced during the intervention.

Table 1. Summary of the changes experienced during the intervention

Changes	
Case 1.	<p>Intention to stay on the course linked to the performance obtained - ambivalence arising from the self-efficacy perceived at the time</p> <p>Establishment and fulfillment of more specific study objectives, linked to a greater organization of time</p> <p>Resumption of interest in studying, which is no longer seen as an obligation</p> <p>Addition of new study strategies and distraction control</p>
Case 2.	<p>Reflection on the course selection process</p> <p>Understanding that the failure to reach the proposed goals is due to procrastination</p> <p>Greater focus on the learning process, rather than just seeking to pass the tests</p> <p>Anticipation of tasks - attempted planning, but failed to execute</p> <p>Self-monitoring: identification of what occurs in her study process, seeking to understand why the errors occurred and what needs to change</p> <p>Adding new strategies, like studying with colleagues</p>
Case 3.	<p>Greater focus on learning</p> <p>Safety and confidence to study</p> <p>Persistence to seek new alternatives on how to study</p> <p>Greater balance of study time between subjects</p> <p>'Learning to study' posture associated with the perception of greater self-knowledge about her way of studying, strategies, etc.</p> <p>Self-monitoring: identifying errors and monitoring her problem-solving process</p> <p>Addition of new strategies, such as notes, group work, etc.</p>

In case 1, it is observed that the student's motivation to continue studying depended on the results obtained in the tests, including having already thought about abandoning the course due to the performance difficulties experienced. In this sense, despite having made some advances in terms of setting goals (previously defined the time and content of what to study, not just studying according to urgencies), his confidence and persistence were still dependent on the results of the tests. In the self-regulatory cycle, it is observed that self-efficacy plays a key role in the way the subject faces his/her challenges, how he/she behaves in the face of difficulties and sustains his/her regulatory practices, culminating in better academic results (Brown et al., 2008). Case 1 presented an unstable pattern of self-efficacy, linked to an external regulatory component (test result), which made its regulatory process dependent on it. Although still based on an external reference, the student realized that his study process was different from the test result. Despite being upset with the test result, he was satisfied with the studies carried out. Such reflection denotes qualitative progress in his ability to distinguish what is a process and what is a result. Focusing on the process provides that the practices are guided and monitored by the individual him/herself, increasing his/her motivation for the internal regulation of the paths necessary to achieve a certain competence (Lau, Kitsantas, & Miller, 2015).

Case 2 had greater difficulties in reaching the proposed objectives, evaluating her study process as torturous. She made some progress by anticipating and designing certain activities she had to carry out. However, she defined herself as a procrastinator, saying that

she had difficulties to begin her study process. Procrastination has been associated with poor or less than expected academic results (Kim & Seo, 2015), which can be understood by the student's difficulty in putting into practice what he/she plans to do. Even recognizing herself as a procrastinator and understanding the consequences of this type of posture, the student was unable to adopt behaviors that displaced her from this position. In this sense, external stimuli were still necessary to help her deal with academic demands, as she had difficulty autonomously sustaining her motivation to initiate and maintain the strategies outlined.

In general, students who define themselves as self-regulated tend to engage less in procrastinatory behaviors, compared to other students. In particular, those students who are more confident in their ability to deal with academic demands tend to procrastinate less (Wolters, 2003). Self-regulated learning depends on a student's proactive stance not only in setting goals, but also in their execution. In case 2, progress can be seen in self-observation and in the identification of mistakes made, however such adjustments, despite being anticipated, were not put into practice by the student. Students who procrastinate have difficulties in adopting self-regulatory strategies, be they cognitive and/or metacognitive (Wolters, 2003). As a result, procrastination ended up reinforcing the need for external stimuli to deal with academic demands.

Finally, it can be said that case 3 was the one that stood out the most as having built a self-regulatory functioning during the intervention. The student reinforced her motivational aspects, especially the belief in her ability to seek alternatives and the safety to try new strategies. From there, the self-regulatory cycle seemed to come into play and occur almost naturally. A greater repertoire of strategies, greater self-monitoring and greater satisfaction with the study process were perceived. Once again, the importance of self-efficacy as a motivator and driver of changes in self-regulatory practices is observed. In addition to its role in the self-regulatory cycle, self-efficacy is positively related to academic adaptation (Haddad & Taleb, 2016).

As can be seen, each case presented a different trajectory of development of self-regulatory skills. Case 1 demonstrated advances in the establishment of objectives and a repertoire of strategies, but his instability in terms of the belief in self-efficacy reflected in a trajectory of changes that was also unstable and still dependent on external guiding results. The development of self-regulation was being built, which may justify the concomitant presence of internal and external regulators, and the consequent ambivalence in the face of this situation. One may think that case 1 needed more time to build his new self-regulatory stance.

In case 2, the difficulty in starting the self-regulatory cycle was found. Probably, the student is in the initial levels of the development of self-regulation - observation and emulation. Procrastination can limit progress to other levels of development that depend on more internal regulation (self-control and self-regulation). Case 3, on the other hand, can be seen as opposed to case 2. The student in case 3 demonstrated to put into practice the self-regulatory cycle (anticipation, performance and self-reflection) in an increasingly refined and complex way. Her movements, since the first, have been towards greater self-regulation, basically through an increase in self-efficacy.

The cases presented exemplify different trajectories of the self-regulated learning process. It is noteworthy that such a process is not linear, characterized by ambivalences, advances and setbacks. In this sense, it is observed that the process of internalizing regulation seems to depend, firstly, on an external source of reference. This external regulator acts by providing support, and/or feedback. It is known that in the self-regulatory

process, the individual monitors the achievement of his/her objectives by internal parameters, but when this process is not yet introjected, there is a need for something external to play the role of regulator. In case 1, feedback from the results of the tests acted as a parameter to guide the student. In case 2, in turn, the student required external parameters to motivate her to start the execution of tasks, something that she could not do independently. In case 3, it can be thought that the very fact of having participated in the intervention served as a stimulus for her to start the self-regulatory process and, from there, to proceed more autonomously.

Final considerations

Even though this is not a study focused on the effectiveness of an intervention, it was possible to realize that an activity focused on self-regulated learning can promote changes in the development of this competence, however each student/participant will have its construction and development process. However, it is emphasized that some participants may need more individualized interventions, such as the student who perceived herself to be procrastinating, which implies the identification of the profile of these cases for later monitoring.

Finally, this study aimed to understand how the development of self-regulation occurs in college students. For this, the intervention was then adopted as the shared context among students, in order to check potential changes in favor of self-regulatory development. In this sense, a microanalytical tool for accessing data was adopted, respecting the dynamic, procedural and contextualized character of self-regulated learning. It is considered, then, that the merit of this study lies in the use of a qualitative approach, sensitive to changes over time (McCardle & Hadwin, 2015). The use of microanalytical measures allows educators to access contextualized information about how their students self-regulate their learning, in particular, emphasizing the promotion of procedural objectives, and not focusing only on approval results (Lau, Kitsantas, & Miller, 2015).

As a qualitative study, few cases were investigated, which means that it is possible that there are more differentiated routes regarding the development of self-regulated learning. It is suggested that this study be continued, with, for example, a longer longitudinal follow-up, which would enable a greater wealth of information. In this sense, it is worth reflecting on a possible selection bias in the study, with the more self-regulated students showing interest and organization to participate in all stages of the research.

Through the analyzed cases, different trajectories were identified for each student. However, it was noticed that students who had greater difficulties in self-regulation were still linked to external regulations, especially to the results of the tests. In this way, it is important to point out that, at the beginning of the development of self-regulation, external and social regulations are necessary so that the student can later incorporate the practices in an autonomous and critical way. Nevertheless, it is worth reflecting if the student is being provided with other feedbacks, in addition to the results of the tests.

It is known that, in the college context, students are required to act autonomously and proactively, but sometimes this can be confused with acting in isolation and on their own. Providing feedback to the student is much more than evaluating him/her through an exam and/or a paper. Effective feedback is seen as part of the student's learning and development process, by encouraging reflection and focusing on self-regulation. Further, in particular,

students at the beginning of the course can benefit from more active support from their veteran colleagues, professors and mentors in the course (Berkout, Helmich, Teunissen, Van der Vleuten, & Jaarsma, 2017).

In this sense, the university also has the role of promoting and enhancing regulatory skills in students. If professors promote feedback based only on tests, students are unlikely to have parameters to assess the quality of their study process, as the parameter offered focuses on the result, not the process. To train students to become self-regulated learners, it is necessary to invest not only in the transmission and measurement of knowledge, but also in proposing assessments and feedbacks that accompany the development process of this student. This change in approach often implies and demands a change in the pedagogical proposal of programs and institutions. It implies being open to recognizing the presence of different ways of learning and different trajectories of self-regulatory development.

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