

## The Teacher, the Fedathi Sequence and the Failure Indexes of the Subject

### Differential and Integral Calculus

O Professor, a Sequência Fedathi e os Índices de Reprovação da Disciplina Cálculo Diferencial e Integral

El Profesor, la Secuencia Fedathi y la Tasa de Reproducción de la Asgnatura Cálculo Diferencial y Integral

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#### Abstract

The failure of students in the discipline of Differential and Integral Calculus is frequent in institutions, whether public or private. It is up to the teacher to reflect on the pedagogical practice, identify how learning is taking place and analyze what changes should be necessary in the planning, conduct and evaluation of the class. The objective of the work is to identify the results of students in the discipline of Differential and Integral Calculus at the Universidade Estadual Vale do Acaraú, over a period of 10 years, presenting the Fedathi Sequence as a possibility of mediation to reduce the low rates in evaluations. The research is exploratory with a quantitative and qualitative approach and indicates that the general failure and dropout rate in the academic periods between 2009.1 to 2019.1 were higher than 50%, reaffirming the national trend. It is concluded that the pedagogical practices based on methodologies that seek to dialogue with the student in the classroom contribute to the evaluation process and also to the final result of the subjects. The Fedathi Sequence is presented as a methodological proposal, supporting the hypothesis that through mediation and evaluation of the knowledge construction process, it is possible to minimize the failure and dropout rates of the discipline.

**Keywords:** Fedathi sequence; Integral differential calculus; Learning assessment; Teaching.

#### Resumo

O insucesso dos alunos na disciplina de Cálculo Diferencial Integral é frequente nas instituições, sejam de ordem pública ou privada. Cabe ao professor, refletir sobre a prática pedagógica, identificar de que forma está ocorrendo a aprendizagem e analisar que mudanças devem ser necessárias no planejamento, condução e avaliação da aula. O objetivo do trabalho é identificar os resultados dos alunos na disciplina de Cálculo Diferencial e Integral na Universidade Estadual Vale do Acaraú, em um período de 10 anos, apresentando a Sequência Fedathi como uma possibilidade de mediação para a redução dos baixos índices em avaliações. A pesquisa é exploratória com abordagem quantitativa e qualitativa, e indica que o índice geral de reprovação e evasão nos períodos letivos entre 2009.1 a

2019.1, foram maiores que 50%, reafirmando a tendência nacional. Conclui-se que as práticas pedagógicas baseadas em metodologias que procurem dialogar com o aluno em sala, contribuem no processo avaliativo e também no resultado final das disciplinas. Apresenta-se a Sequência Fedathi como proposta metodológica, sustentando a hipótese de que por meio da mediação e avaliação do processo de construção do conhecimento, é possível minimizar os índices de reprovação e evasão da disciplina.

**Palavras-chave:** Sequência Fedathi; Cálculo diferencial integral; Avaliação de aprendizagem; Ensino.

### Resumen

El fracaso de los estudiantes en la disciplina de Cálculo Diferencial Integral es frecuente en las instituciones, ya sean públicas o privadas. Corresponde al docente reflexionar sobre la práctica pedagógica, identificar cómo se está dando el aprendizaje y analizar qué cambios deben ser necesarios en la planificación, conducción y evaluación de la clase. El objetivo de este trabajo es identificar los resultados de los estudiantes en la disciplina de Cálculo Diferencial e Integral de la Universidade Estadual Vale do Acaraú, en un período de 10 años, presentando la Secuencia Fedathi como una posibilidad de mediación para la reducción de tasas bajas en evaluaciones. La investigación es exploratoria con enfoque cuantitativo y cualitativo, e indica que la tasa general de reprobación y deserción en los períodos académicos comprendidos entre 2009.1 y 2019.1 fueron superiores al 50%, reafirmando la tendencia nacional. Se concluye que las prácticas pedagógicas basadas en metodologías que buscan dialogar con el alumno en el aula, contribuyen al proceso de evaluación y también al resultado final de las disciplinas. La Secuencia de Fedathi se presenta como una propuesta metodológica, sustentando la hipótesis de que a través de la mediación y evaluación del proceso de construcción del conocimiento, es posible minimizar los índices de reprobación y deserción de la disciplina.

**Palabras clave:** Secuencia de Fedathi; Cálculo diferencial integral; Evaluación del aprendizaje; Enseñanza.

## 1. Introduction

The teaching of Differential and Integral Calculus (CDI) is present in the curriculum of several higher education courses and is pointed out as one of the basic foundations of certain professions in the Exact Sciences courses.

The subject causes a certain fear in students, and the high failure and dropout rates in the discipline, in colleges and universities, whether public or private, are already cultural. The students reveal to have difficulty with the necessary abstraction, and with the understanding of the definitions of the contents exposed by theorems and axioms, with little relation to the daily life, being put under heavy pressure in the periodic tests.

Therefore, it is suggested, as verification practices, systematic and continuous assessments, as it is considered that, like learning, assessment should not be considered only at the end of a large period of accumulated knowledge. Therefore, it is considered a change in practice, which can be done by a methodology.

The Fedathi Sequence deals with a teaching methodology, focused on the execution of the pedagogical practice, which values the construction processes in the classroom, accompanying the student, evaluating their path, valuing the process.

The research is exploratory in nature, with a qualitative and quantitative approach, over a period of 10 years, with results obtained by students in the CDI discipline of the Mathematics course at the Universidade Estadual Vale do Acaraú, in Sobral-CE.

From this context, the questions that guide the present work are: what are the results of students in the discipline of Differential and Integral Calculus at the Universidade Estadual Vale do Acaraú, over a period of 10 years? Can the Fedathi Sequence as a teaching methodology contribute to the teacher's evaluation method?

Thus, the objective of the work is to identify the results of students in the discipline of Differential and Integral Calculus at the Universidade Estadual Vale do Acaraú, over a period of 10 years, presenting the Fedathi Sequence as a possibility of mediation to reduce the low indexes in assessments.

It is believed that it is possible to invest in the Fedathi Sequence as a possibility to improve the process of mediation, evaluation and learning, in order to progress in the framework of results of the subject, reducing the number of failures and dropouts, allowing the teacher to leave the role knowledge transmitter, resizing the student's role as the developer of his knowledge.

The constructions made in this article refer to a greater maturation of a course completion work entitled “Evaluation of the learning process in the subject of Differential and Integral Calculus using the Fedathi Sequence teaching methodology”, presented in 2019 in the Degree course in Mathematics at Universidade Estadual Vale do Acaraú.

Initially, the topics "Strategies for learning Differential and Integral Calculus", "The Fedathi Sequence as a contribution to learning" and "Assessment of learning and focus on the process" will be covered, covering the theoretical study and the development of the aforementioned work. Then, the methodological procedures will be described, later, the results will be discussed to finally present the final considerations.

## **2. Strategies for Learning Differential and Integral Calculation**

Many students are unsure about the CDI discipline. In courses, where mathematics enters the curriculum as a requirement, the failure, dropout and dropout rates only increase, as reported by the National Institute of Educational Studies and Research (INEP).

Complaints at universities about students' difficulty in abstracting content are frequent. Tall (2002) addresses the student's difficulty in building mature mathematical thinking to accompany content. The author reinforces that “in the process they may have a difficult path that will require a fundamental transition in their reflection processes” (TALL, 2002, p.7). In the academic environment, there is a need for mechanisms that facilitate the development of mathematical thinking by the student, and, therefore, the learning of the discipline.

In the perspective of Rezende (2003), the student's learning difficulty is often not linked to the fact that he does not have the built cognitive structures necessary to the subject, but because he is unable to associate, relate the necessary knowledge to the new content. It is up to the teacher, then, to work on these previous structures, build connections for the elaboration of new concepts and applications.

According to Cury (1990), there are gaps when it comes to planning CDI, since the objectives are not being achieved, given the failure rates in the discipline. That is, it is necessary to reinvest in the planning of the teaching and learning process, change strategies. For Robert and Schwarzenberger (1991), learning is also linked to time, quantity of content, abstraction and reasoning skills, among other aspects that must be inserted in higher education students: “[...] more concepts, less time, need for more reflection, more abstraction, less significant problems, more emphasis on demonstrations, greater need for versatile learning, greater need for personal control over learning.” (Robert & Schwarzenberger, 1991, p. 133).

There are many elements pointed out by the authors that hinder student learning. It is necessary to create strategies that manage to minimize the lack of time to study all the content that ends up being “dumped” on the student. It is necessary for the student to be able to mature these contents, to assimilate and reflect on them. The teacher needs to change his teaching posture. Therefore, Lima et al. (2006) make it clear that it is necessary to act differently, and for this it is necessary to dedicate themselves in order to interact with students, ask questions, work on errors in the classroom as a way of reconstructing learning. Therefore, the author suggests a change in the way the class is conducted. Tinkering with the conduct of classes can add to the resolution of several of the problems pointed out by the authors.

Fontes (2015) rescues several investments in order to improve performance in the CDI discipline, namely: motivating students; develop creativity, reasoning, autonomy, modeling, the use of digital technologies; in addition to reinforcing in their work the valuation of learning assessment and the attentive eye to other professionals who teach the subject.

This article reinforces the need for a change in the teacher's posture in the classroom, seeking with this change to provoke autonomy, creativity, reflection, the valorization of error, the reinvestment in planning, the construction of a more elaborate thought without a large gap with previous knowledge, allowing reasoning and also valuing the assessment of learning continuously. Therefore, it is necessary to use new teaching methods, adopting a new posture. Menezes (2018, p. 15) suggests

the development of “[...] a different attitude on the part of the teacher, in order to change the current panorama of the discipline [...] by valuing the student in the classroom and directing him to scientific interest as it instigates curiosity, discovery, reflection, the hypothesis survey, the validations, also arising from the student's own action, not only being imposed or transmitted by the teacher.”

In other words, one should start by valuing the role of students in the classroom, reinforcing their discoveries, instigating the student to learn. Through this bibliographic survey, it is identified that the change in the teacher's posture can improve the results of failure and dropout, since within the practice the teacher can work on these difficulties presented, either valuing the essential of the discipline in order to give time from maturation to students for understanding, either by questioning students more in class, in order to work on mathematical thinking, also rescuing previous knowledge, among others, valuing the process of knowledge construction.

Therefore, the idea of Fontes (2015) is reinforced with regard to the act of valuing the evaluation, and it is believed that this can be done by using a different methodology. Here, the teaching methodology presented by Menezes (2018) for the CDI is considered valid: Fedathi Sequence. In the following topic, its characteristics are discussed.

### **3. Fedathi Sequence as a Contributor to Learning**

The Fedathi Sequence, as a teaching methodology, seeks to strengthen the teacher's posture in the classroom. It is developed by continuing education students, teachers and researchers at the Federal University of Ceará, a space in which the Fedathi Group was formed in the early 1990s, with the purpose of didactic adequacy in mathematical learning. Hermínio Borges Neto, coordinator of the group, systematized the sequence in order to bring students meaningful mathematical learning through new conditions and possibilities (Souza, 2015). The sequence has already transposed the discipline of Mathematics and seeks to guide the practice of teachers in different areas.

The word “Fedathi” was inspired by the names of three children of the creator of the sequence: Felipe, Daniel and Thiago. This teaching model aims at scientific investigation in the production of knowledge, modifying the teacher's posture in the search for the student's autonomy in learning, developing significant teaching criteria and techniques (Souza, 2010). It does not intend to create a recipe, but to indicate paths, guide actions in the classroom.

To Souza (2013), the Fedathi Sequence conceives that the student treads the path of a mathematician, for the discipline of Mathematics, and that in the face of a presented problem, investigate the errors, go through several paths in the search for results; improve your knowledge in search of solutions, check your resolutions, correcting them when necessary, leading you to build your response model. Investigating the problems presented, being curious and creative.

According to Souza (2010), teachers have difficulties in modifying learning methods with mathematics, often due to the lack of time with extensive curricula, thus opting for the types of classes they are already used to doing. It is necessary to innovate. Teachers should not be tied to a single way of teaching, they need to change and look for new ways of teaching that lead to better learning when their current job does not seem very effective.

According to Souza (2010), the Fedathi Sequence is divided into four stages, which are explained below: Position, Maturation, Solution and Test. In Taking a Position, the teacher presents the problem to the student, who exposes, either in an oral, written form, through a game, concrete material, in order to realize, in an individual or collective way, a generalizable situation. At this stage, it is up to the teacher to institute strategies to trigger the class, motivating students to start the process. Arranging inquiries for yourself and trying to use clear language, exhibiting good communication, are valid strategies for awakening reflections and providing a better understanding in students.

In Maturation there is a deeper look at the issue. It is up to the students to try to understand what the situation requires

and to think about the best paths to be followed in the search for resolution. After understanding, students should identify the information inserted in the problem, check the relationship of the variables, test possible results and follow the steps of a researcher facing the problem. At this moment, the teacher monitors the development of the activity, but without conceiving ready answers, that is, practicing hand-in-pocket pedagogy, which allows students to reflect and be responsible for their learning.

It is noteworthy that Maturation requires a greater amount of time, because, in addition to developing the students' intellectual progress, it promotes the teacher to monitor the content characterized by questions from the students or from the teacher during the teaching situation. Thus, the teacher must be attentive in the course of the activity, following the student's reasoning in order to mediate and present information that is capable of favoring learning.

In Solution, students expose their mature models, that is, the supposed resolutions to the problem. It is essential for students to interact through discussions, mediated by the teacher, when explaining their models, justifying the path taken, participating in the construction of their learning process (Araújo & Borges Neto, 2022).

The Test is the last step and allows the formalization of the results found by the students, building links between the models displayed, with the model that will be reinforced by the teacher. The model presented must be the one worked in a generalized way, since it expands deductive thinking. It is essential, therefore, to plan all these steps carefully.

The steps presented above are characterized in detail in the thesis "Teaching Differential and Integral Calculus from the perspective of the Fedathi Sequence: characterizing the behavior of a good teacher". In this, Menezes (2018) reports the teaching of Differential and Integral Calculus in the conception of the steps of the Fedathi Sequence, in order to establish in the students reasoning and understanding of subjects that support the CDI. From a new behavior, it is possible to leave the simple exhibition of contents, encouraging students to seek solutions, to search for new alternatives and to provoke possibilities, making them arrive at a justification for the presented problem, expanding their practice, stimulating reflections by through questions (Sousa, 2015). Therefore, a new attitude is being adopted by the teacher, in his planning, in his class conduct and, finally, in his way of evaluating.

#### **4. Learning Assessment and the Focus on the Process**

Through the evaluation of the teaching and learning process, the teacher is able to extract information, identifying what needs to be modified, in order to achieve the student's learning, with the purpose of making him progress, guiding him through him.

For Luckesi (2000, p. 4), "the evaluation of school learning does not imply approval or disapproval of the student, but permanent guidance for their development [...]". This conception allows the educator to develop mechanisms for the student to overcome his difficulties.

The evaluation technique is sometimes immersed in the education and learning processes in a methodical and continuous way, in which the error is not denied, the negative meaning is not attributed to it (Esteban, 2000). In this method, the teacher tends to be concerned with the causes that originate the students' responses through evaluative exercises, causing a pedagogical follow-up capable of capturing information that underlies to guide the students, without devaluing the knowledge revealed by the student. In this perspective, the error is identified and work is done in order to overcome it.

In a way, according to Hoffmann (1994), the evaluative practice of teachers is a reproduction of their experiences, whether as students or educators. It is evident that the assessment practice is related to their experience history, therefore, the meanings and the conceptualization of assessment are different for each teacher. It is necessary to review conceptions about the evaluation process.

Barbosa (2004), in turn, characterizes traditional assessments as ready and unique, reproducing only content, finding confluence in the characterization of Behrens (2000, p.46): “[...] in a unique and bimonthly way, it contemplates issues that involve memorization [...].” In other words, the authors reinforce the existence of the evaluation as mechanical, repetitive memorization, without the need for reflection. These assessments usually value the final result, not valuing the student's progress in the discipline.

The so-called practice of continuous assessment, for the traditional method, is very strong among teaching assessment routines, occurring through the development of assessment tests and tests, with which quantitative data can be obtained, in order to analyze student performance. Often, "it is a record in the form of a note, a procedure that does not have the necessary conditions to reveal the learning process, as it is only an accounting of results" (Wachowicz & Romanowski, 2002, p. 82). The knowledge building process, in this sense, is in the background. Evaluates what the student remembers at a specific moment.

In contrast, formative assessment aims to improve learning and is characterized by the assumption that the educator is knowledgeable about the learning process, applying an assessment that is based on knowledge-transforming instruments. The student, in turn, makes his way in the search for significant knowledge and it is up to the teacher to observe and record the solutions obtained, managing to intervene and make adjustments, in the search for better results, not focusing only on grades.

Therefore, the evaluation in the formative perspective "[...] is loving, inclusive, dynamic and constructive, different from the exams, which are not loving, are exclusive, are not constructive, but classificatory." (Luckesi, 2000, p. 7). The evaluation must value efforts, commitment.

The evaluation carries the reflexes of theoretical concepts of education, such as the vision of the environment in which the school is inserted. It is necessary to learn to evaluate, valuing the knowledge construction process, mainly, in the disciplines with greater learning difficulties, such as the CDI, often with restricted checks to the use of periodic tests in the teaching evaluation process. It is not possible to validate knowledge using notes only, especially when evaluative practices do not add qualitative records of cognitive aspects in the construction of knowledge.

From Barbosa's point of view (2004, p. 54), there is a need for a new evaluation process, in which “the student's personal rhythm and conditions are respected, from the moment of entry, that is, the starting point, during the process (trajectory), aimed at learning”, capable of perceiving the path that the student has taken, if there is the construction of knowledge. In this case, the grades will be considered taking into account the basis that the student has, his personal efforts, his potential.

Therefore, the assessment should provide students with opportunities to be active members in the learning process, allowing them to develop their knowledge in the search for improvement, whether for the discipline of CDI, or any other. The evaluation, therefore, cannot be seen as a final process and its quantitative aspect should not be valued. For this, it is suggested a teaching methodology that accompanies the student during the learning process, that does not focus only on the final result, through a grade.

The next topic will discuss the methodological procedures and the format of the research carried out, in order to understand the space and the research model.

## **5. Methodological Procedures**

The main purpose of the Mathematics course at Universidade Estadual Vale do Acaraú, is to train teachers to work in elementary and high school in the North of Ceará and is located on the CIDAO campus, in Sobral.

The research is exploratory, since it seeks to point out the results of the students in a period of 10 years, pointing out the Fedathi Sequence as a possible resource of teaching mediation.

For Gil (2008, p.27), "exploratory research is developed with the objective of providing an overview, of an



approximate type, about a certain fact." That is, how are the approval rates in the Differential and Integral Calculus discipline at the university.

To collect data on the pass, fail and break rates in the periods from 2009 to 2019, it was necessary to contact the administrative body of the Mathematics Degree Course at the State University Vale do Acaraú. The study considers the institutional characterization that those who fail refer to those who did not reach the minimum presence required by the course, or did not reach the required average, tracing the quantitative approach of the research.

The work combined analysis of quantitative data with qualitative interpretations, since a documentary study was carried out for quantitative data collection at the university for the period of 10 years on the discipline, and interpretive participation by the author, student of the institution that attended the course.

Initially, a theoretical study was carried out on the learning assessment, the strategies for teaching CDI and the Fedathi Sequence, believing that the teacher's conduct interferes with the learning assessment and implies the results found at the end of the course: failures and breaks. The results will be discussed in the next topic.

## 6. Results and Discussions

The data performed in the data collection phase were specified in Table 1, made possible and elaborated with the data provided by the administrative body of the Mathematics Degree Course at the Universidade Estadual Vale do Acaraú. The total mentioned rates are presented, as well as the results of the teachers represented by P1, P2, P3, P4, P5 and P6, over the 10 years, basing the average results referring to the classes taught.

**Table 1** - Students' results in CDI from 2009 to 2019.

DENOMINATI ON	APPR OVAL	FAILURE	BREAK	PERI ODS
P1	36,9%	43,9%	19,2%	4
P2	71,7%	22,8%	5,5%	3
P3	34%	34%	32%	4
P4	54,1%	36,4%	9,5%	5
P5	31,2%	40,4%	28,4%	3
P6	44%	44%	42%	7
TOTAL	43,5%	40,1%	16,4%	26

Font: Developed by the authors

It is observed that, of the 26 periods analyzed, with a total of 1,162 students regularly enrolled, the general approval rate does not reach half of the students (43.5%). With P2, there was greater approval by students in the discipline, a result considerably higher than that of other teachers, also reducing the number of breaks by students. P6 was the one that taught the discipline the most, with a total of 7 periods and 316 students inserted, equaling the percentage of approved with that of failed. P5 was the one with the least amount of students approved. The table above shows that failure rates have been above 50%, counting failures and breaks, except for P2 and P4, over these ten years.

Through the author's experience as a student at the institution, it was possible to identify, on the practice and evaluations of teachers P2 and P4, who adopted different attitudes from the others, although the evaluation methods did not differ from other teachers. Even though they did not use the Fedathi Sequence, indicated in the present work, the teachers used

their own methodologies, approaching the steps of the sequence, producing a dialogic effect in the classroom.

In the author's conception, the evaluation method of P2 and P4 happened in a traditional way, that is, a usual way of evaluating in the Calculus course: 3 tests ranging from 0 to 10, with questions requiring a certain level of abstraction, with statements of evaluations of the type "calculate the limit" and "solve the derivative", causing the generation of a note. In other words, even if the teachers conducted the class differently, the evaluation process was still done in a traditional way. "[...] an accounting of results (Wachowicz & Romanowski, p. 82, 2002)." Therefore, they represented an appreciation of the note, instead of the process.

The student's steps to build the student's mathematical thinking in the classroom should be valued, as the process already indicates learning, therefore, it can be evaluated. With this in mind, the different evaluative forms expressed by the teacher, such as: tests, tests, group or individual activities, form an informal everyday procedure, which can and should be counted in the formative assessment.

Although no differential procedure was observed in the evaluation methods of teachers P2 and P4, it appears that their conduct, mediation in the classroom, could partially supply this absence, according to the results of approvals, 71.7% and 54.1%, respectively. It is believed, therefore, that the direction in which teachers direct their classes, with differentiated interventions, can increase approval rates, even maintaining formal assessments, as was verified by the author in informal conversations with other students. In addition, the methodology may contain an assessment embedded in practice, which redirects the student, through questions, making him reflect.

Thus, it is believed that the use of the Fedathi Sequence as a teaching method can increase the approval rates in the CDI subject, as well as reduce the dropout rate, since the monitoring of the student's progress means that the teacher is always reinvested and involved in its planning, and in its conduct in class, through a constant evaluation and self-assessment.

When Lopes (1999) states that "in many cases, university students do not know the previous mathematical concepts that are necessary to take calculus" (p. 125) takes up the idea that previous difficulties must be overcome. For this, the Fedathi Sequence seeks to perform the plateau, in order to identify if the students have the necessary contents for taking a position with the content, that is, verifying the level of the students, what their previous knowledge is, and prerequisites for the Taking of Position, that is, the situation triggering a problem.

In Maturation, students focus on the activity. And the teacher, who is in the observation of the paths taken by the students, asks questions, and is able to identify and correct errors, perceiving the pace of the students, in such a way that he can make such leveling corrections. The student is in the construction of mathematical knowledge through the search for solution of the problem and the teacher can actively monitor the progress, evaluating.

In Solution, characterized by the expositions of the models found by the students, with their ideas and opinions, a survey is carried out based on the discussions. Encouraged by the teacher to explain his reasoning, it is possible to find results. The teacher evaluates the solutions presented by the students.

After following all the previous phases of the sequence, this is the moment of systematization, in which the teacher formalizes the new knowledge, with the final step: the Test. The wrong models raised can be used as counterexamples, showing students what caused the failure. The student himself is able to evaluate himself, to feel part of the process, to compare results. It is a mediation posture that does not treat evaluation as "mere collection of contents learned by heart, mechanically and without much meaning for the student" (Moretto, 2010, p. 115), as it values construction.

In this way, it is clear that the teacher monitors the student's learning, evaluating the entire process of building knowledge, identifying difficulties and levels of reasoning, in order to give directions, improving the final results. It is possible to value this construction, taking a critical and autonomous training of students, so that students are not just mechanical memorizers of formulas and procedures.



In this way, the use of a new possible didactic approach is pointed out to facilitate learning, and with this, the teacher becomes apt to new conceptions regarding the assessment of learning and its self-assessment. Although the research identifies teachers P2 and P4 with more positive results in the quantitative data of the research, the research subjects pointed out a traditional way of evaluating, and should, therefore, redefine the evaluation as a learning object.

Based on the results of the students in the years 2009 to 2019 in the discipline of CDI at the Universidade Estadual Vale do Acaraú, a low performance is perceived, which can come from evaluation formats with an emphasis on classificatory results, not being clear the care in notice if learning is happening in the process, not restricted to periodic evaluations.

The question that guided the work sought to investigate the results of the subject, showing that the general failure and dropout rate in the academic periods between 2009.1 to 2019.1 were greater than 50%, reaffirming the need to work on teaching and evaluation in CDI, conceiving the possibility of researching the Fedathi Sequence as a teaching guidance methodology.

## 7. Final Considerations

Changes in class management are proposed in this article in order to be successful in the results of the subjects. It is understood that the students' performance is directly linked to the teacher's pedagogical practice, and this, with the adopted methodology, since P2 and P4 are remembered for having a different methodology. In this perspective, mediating a class with the Fedathi Sequence enables the construction of knowledge. It is also possible to evaluate and correct the error, leading the student to reflection.

However, the Fedathi Sequence, as a teaching methodology, can present some obstacles when being executed. A student and teaching immersion is necessary, as well as adaptations to be made gradually. It is evident that the teacher also needs to investigate what content prior to the CDI will be barriers for students. Thus, it is possible to develop evaluation methods capable of measuring learning, assuming reflective, investigative postures.

This work points out the need for further investigation from the perspective of evaluation in the Fedathi Sequence, little explored. One of the limitations found is the lack of access to teachers P2 and P4, in order to investigate, in the light of the teaching perspective, the basis of their methodologies, identified as differentiated.

Anyway, teachers showed changes in posture in the classroom, which could give them a differential. It is necessary to do a greater investigation on the way they conducted these classes, either by the student's conception, with a statistically representative quantity, or by the view of the teachers themselves. What could teachers P2 and P4 consider about these results? Do they consciously perceive the difference in their practices? Understanding the results obtained through teaching is an interest for future research, as well as investigating what other teachers think about these results and their mediation and evaluation practices.

Thus, the contribution of the discussion presented in the research was verified; in the teacher's practice, in particular, in higher education of the courses in which the CDI is included in the curriculum, in view of the need to seek a new conjecture in the evaluation process, carried out together with a methodology linked to it.

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