Analysis of the content of the continuous formative teaching path through the proposals of the Fedathi sequence and the reflective teacher

ABSTRACT

The continuing education is essential in teaching activities, such as updating knowledge, improving methodologies and reflecting on practice, highlighting reflection on practice and developing changes through critical thinking of oneself and daily action for the solution problems and redirecting your practice. The Sequência Fedathi (Fedathi Sequence), developed to strengthen teaching action, supports the idea of a professional who is an investigator of his work environment, his classroom, his pedagogical action, the knowledge of his students. This text is the result of the Fedathi Project, a teaching proposal for the training of high school teachers, carried out in November-December 2018, by researchers from the Laboratório de Pesquisa Multimeios (Research Laboratory Multimeios) from the Faculty of Education of the Federal University of Ceará. The purpose of this article was to analyze the content of the speeches of 46 Mathematics teachers from public schools in continuing education through the perspective of the reflective teacher and the Fedathian’s attitude/stance. It was used as methodology the research centered on Content Analysis through the definition of categories later that allowed the identification of significant elements in the understanding of the teachers about the establishment of the proximity or the distance from the practice and theories that could subsidize the work of these teachers. As a result, we obtain the fact that the main recurring categories in the content of the teachers’ speech were maturation, Pedagogy “hands off”, Mediation, Planning, Didactic time and Reflection on the practice. Teachers took some categories as possibilities for innovations in their practice, highlighting the challenges of implementation due to inflexibility of time, compliance with the curriculum and traditional routines active in the school environment. It is concluded that the exercise of teaching reflection, in a reflexive and Fedathian’s attitude, is significant and relevant in teaching practice.

KEYWORDS: Fedathi Sequence. Reflective Teacher. Continuing Education. Content Analysis.
INTRODUCTION

Continuous learning is essential in teaching. The continuous formation of teachers has importance in several aspects - knowledge updating, methodology improvement, reflection about the practice, among others - in the performance of these professionals, being this theme approached by many authors (PERRENOUD, 2002; VEIGA, 2012; BORGES NETO, 2018) that deal with relevant aspects for the development of teachers.

Thus, a subject much discussed in teacher training is the action of reflecting on the practice itself (SCHÖN, 2000; ALARCÃO, 2009; ZEICHNER, 2008), promoting significant changes through critical thinking of oneself and daily action, since "[...] when the teacher reflects, he looks for ways to solve the problems he encounters and (re)directs his practice." (SELINGARDI and MENEZES, 2017, p.282).

In this respect, Schön (2000) advocates a professional who ponders his actions. For this, he offers us three possibilities: when the teacher pays attention to daily situations as problematic at the moment of experience (reflection on action), after the experience (reflection on action) and, in a more elaborate way, the teacher tries to understand the action and creates other methodological situations for a certain practice (reflection on reflection in action).

In this sense, the Sequência Fedathi (Fedathi Sequence), developed to strengthen the teaching action, supports the idea of a professional who is an investigator of his work environment, the classroom, his pedagogical action, the knowledge of his students (BORGES NETO, 2018). More than idealizing a didactic sequence, Fedathi enables the problematization of daily teaching situations, the reflection of its practice, changes in its action, in a pedagogical immersion proposal that can occur through an individual or collective process with the school team.

Etymologically, the word "immersion" has its origin in Latin: immersio.onis which means immersion, diving, action or effect of immersing(-se); act or result of diving (something) in a liquid; submergence (IMERSSION, 2019). In this perspective of meaning, the fedathian teacher is instigated to review his educational paradigms, how he conceives the teaching and learning processes and their actions, in face of the epistemic challenges of teaching and, also, of learning, being characterized, therefore, by a cyclic logic of the triad: theory, practice and reflection. The fedathian's proposal points to the relevance of the teaching focus on action, experimentation, experience, readings and reflection, suggesting the constant exercise of looking at oneself.

Thus, through our studies about the reflective professor, this text is the result of the Fedathi Project - teaching proposal for high school teacher training, held in November-December 2018, by researchers from the Laboratório de Pesquisa Multimeios (Research Laboratory Multimeios) of the Faculty of Education of the Federal University of Ceará. The project is an extension course that aims to train mathematics teachers from the fedathian's perspective. We started from the analysis of the material developed by the teachers who participated in the second edition of this training.

About this course, we have already been able to discuss another aspect of the teachers' speeches - the dichotomous vision between theory and practice - which also referred to the reflection of practice by the course teachers (MENDONÇA;
OLIVEIRA; BORGES NETO, 2019). Our analysis was based on the relationships established by teachers between their practice and the reflections on new methodological possibilities arising from continuing education and studies on the Fedathi Sequência.

In this study carried out in the year 2019, the teachers' speech revealed several challenges in the implementation of a new theory or methodology: concerns with the time of knowledge elaboration by the student, the heterogeneity of the classrooms and the little adhesion of the students to the new proposals brought by the teacher, besides the difficult adaptation of a new methodology, replacing the old, traditional and plastered structures of teaching-learning. The teachers also pointed out that the foundation of the practice in the traditional model recommended in the initial formation without - most of the time - a reflection in the scope of the action, constitutes another factor to be observed. Thus, we perceived the need for studies that establish a convergence between theory and practice, with a view to reducing the dichotomy between pedagogical action and theoretical reflections (MENDONÇA; OLIVEIRA; BORGES NETO, 2019).

In this sense, this text portrays a closer look at the following foundations of the Fedathi proposal: pedagogical mediation, pedagogy "hand off" and maturation. In addition, it problematizes the reflective character of the teacher about action, the importance of the teacher's planning and the student's protagonism.

With the support of these perspectives, the aim of this article is to analyze the content of the speeches of Mathematics teachers in the public continuous education network, through the perspectives of the reflective teacher and the fedathian's posture. The research methodology is focused on the assumptions of Content Analysis (BARDIN, 2011) through the definition of a posteriori categories that allowed us to identify significant elements in the teaching understanding about the establishment of proximity or distance from the practice and theories that could support the work of these teachers.

Thus, we present a theoretical incursion on the concept of the reflexive teacher and its interfaces with teaching posture from the perspective of the Fedathi Sequence.

**THE REFLECTIVE TEACHER**

According to Veiga (2012), teaching and learning strategies are paths that guide the didactic process. Besides knowing how content development occurs, considering form and time, the teacher must also observe the didactic process from the students' perspective, taking care of how they organize, elaborate and produce their knowledge.

Veiga's thought (2012) gives importance to various aspects of teacher training combining theory and practice. She considers that this formation "[…] develops in the perspective of a critical and emancipatory education, which requires unicity between theory and practice.” (Veiga, 2012, p.19).

Thus, the development of actions that can promote the improvement of teaching and learning practices, in addition to the relationships established
between teacher and students, demands a reflection that must be oriented towards the convergence of dialogue and critical thinking of the subjects.

Exploring new methodological options - such as the proposal in the Fedathi Course - as an innovative pedagogical practice, can lead the teacher to reflect on his or her practice and on the relationships that are established in the school spaces. The teaching knowledge then starts to configure a close relationship between the theories and their teaching practice. As Veiga (2012) states, "theory is also action and practice is not a receptacle of theory. It is formulated and worked on the basis of knowledge of concrete reality. Practice is the starting and ending point of the training process." (VEIGA, 2012, p.27).

Thus, the thinking of the reflective teacher (SCHÖN, 2000) led us to ponder on actions - planning, management of teaching time and teaching methodologies, for example - and on the discourse of teachers who, when participating in a continuing education course, immersed themselves in the daily thoughts and attitudes of the school and the classroom showing interest in strategies that can favour not only the teaching of their subject, its contents, but also the formation of critical and creative subjects who can develop autonomy in learning situations.

The concept of a reflective teacher is very broad. With support from the studies of Donald Schön (2000), several authors (PERRENOUD, 2002; PIMENTA, 2012; LIBANEO, 2012; ALARCAO, 2009) highlight this particularity of teacher training. Historical, conceptual, theoretical, concordance or critical aspects are perceived in the work of these specialists. In this sense, Perrenoud explains that "[...] we take our own action as an object of reflection, either to compare it with a prescriptive model, what we could or should have done, what another professional would have done, either to explain it or to criticize it." (2002, p.31).

In general, it is perceived that the act of reflecting on one's own actions is part of the teaching practice and demands different interventions during and after the situations that arise in the classroom. In this way, we observe that

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\text{The vision of the theory of the Reflective Teacher meets the continuing education of teachers, because it is a time when the practice of the teacher is at the center of discussions, that is, the action of the teacher and knowledge of practice are the focus of continuing education. (BARBOSA and FERNANDES, 2018, p.10)}
\]

The ideas of the reflective teacher of Schön (2000), based on three processes - reflection in action, reflection on action and reflection on reflection in action - show that, in the act of thinking, the professional establishes the understanding of diverse teaching and learning situations, in a critical manner, seeking to understand and restructure the strategies of action in the way he interprets the problems that arise in his practice.

In this perspective, the Fedathi Course, as a continuous formation, allowed the teacher to give meaning to the reflections that emerged in each forum and in each activity developed in the group, enabling the adoption of new strategies. Thus, by analyzing and investigating their actions,

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\text{[...] it is possible to look back and reflect on reflection-in-the-action. After class, the teacher can think about what happened, what he observed, the meaning it gave him and the eventual adoption of other senses. Reflecting on}
\]
reflection-in-action is an action, an observation and a description, which requires the use of words (SCHÖN, 1995, p.83).

The criticality provided by reflection in action is a fundamental element that we try to develop in the discussions of the Fedathi proposal and, through the knowledge of its fundamentals, deepen the understanding that the teacher has of his practice and of the results that come from each situation, problems or difficulties that arise in the school spaces. This criticism directs the professional to "[...] restructure the strategies of action, the understandings of the phenomena or the ways of conceiving the problems." (SCHÖN, 2000, p. 33).

What is sought is a teacher who investigates his practice, who strives to uncover the most diverse teaching situations and who, in the direction of the student, demands to know and help in articulation and student autonomy, paying attention to each student, despite the numerous and heterogeneous classes (SCHÖN, 1995). In this perspective, the Fedathi Sequence, presented in the following session, meets the idea of the reflective teacher, guiding his actions and enabling the involvement of students in the construction of their knowledge.

THE SEQUÊNCIA FEDATHI (FEDATHI SEQUENCE)

The Fedathi Sequence is a theoretical-methodological teaching proposal. The investigations based on this proposal consider the relevance of teaching action in teaching and learning and problematize the fact that many educational challenges in contemporary times are related to teaching and, therefore, also linked to the problem in the training and practice of teachers (BORGES NETO and SANTANA, 2001).

In the Fedathi proposal, the formulation of knowledge must be based on the stages of scientific research and be configured in the following phases: Positioning, Maturation, Solution and Proof (BORGES NETO, 2018). And, in each phase, the subjects involved take different positions. In addition, some principles guide the teaching action in this relationship with the student, such as Mediation and Pedagogy "hand off". Fontenele (2013) describes the teaching posture in each of the phases of the Fedathi sequence (Chart 1) establishing actions executed through the immersion of the teacher in the classroom. These are attitudes that, by transforming the teaching posture, also bring about changes in students’ behaviour.

Chart 1 - Teaching Actions in the Fedathi Sequence

<table>
<thead>
<tr>
<th>Stages</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Positioning</td>
<td>- Presents challenging situations from the level of students and previous knowledge.</td>
</tr>
<tr>
<td>Maturation</td>
<td>- It allows students to reflect on the problem or proposed activity.</td>
</tr>
<tr>
<td></td>
<td>- Presents the &quot;Hand off&quot; posture.</td>
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<tr>
<td></td>
<td>- Stimulates curiosity and investigation through questioning and without providing ready answers.</td>
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<tr>
<td></td>
<td>- Mediation when the student cannot advance.</td>
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<tr>
<td>Solution</td>
<td>- Requests the participation of students in presenting their responses.</td>
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<tr>
<td></td>
<td>- Provokes reflection through questioning and counterexamples.</td>
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</tbody>
</table>
The most prominent phase in the teachers' speeches at the Fedathi Course was the Maturation, as a result of the new perspective it gives to the teacher-student relationship. This phase corresponds to the achievement of the activity by the students, through the identification and understanding of the variables of the problem, with the supervision and mediation of the teacher. In the first moment, there can be a discussion between the teacher and the students about the problem situation in order to identify possible ways of resolution, identification of data, in order to establish relationships and clarify what is being requested by the activity (FONTENELE, 2018).

Mediation therefore denotes an essential feature in the Maturation phase. Thus, Pinheiro (2018) emphasizes, in his studies on teacher training, that the Fedathi Sequence represents a mediation, as a teaching action, which also aims to encourage the immersion of the student in research practice, configuring the teacher into a manager and observer of the learning process, where he performs analysis, understanding, motivation, intervention and formalization of knowledge developed by students.

Sousa (2015) defends the argument that the Fedathi Sequence proposes itself as a mediation process, conforming the teaching action. In this perspective, the role of the teacher is related to the creation of environments, conditions and means for student autonomy and protagonism in the construction of knowledge. This only happens when the teacher, at the time of class planning, considers the student as an active subject in his learning.

In this perspective, mediation in Fedathi Sequence constitutes one of the relevant foundations of teaching action in an educational process. It is expressed as a didactic-methodological alternative of pedagogical mediation, being the student an active subject of his learning, assisted by the intentional intervention of the teacher.

Mediation in the Fedathi Sequence gives the teacher's attention and readiness to the context of student reasoning. In fact, there is a monitoring of behaviors, interests, fears, attitudes, reasoning, opinions, strategies and interpretations in a way of thinking for the analysis and solution of the problem, guiding the significant time of the class and foreseeing the need for adjustments of different rhythms of the students (SOUZA, 2013; SANTANA, 2018).

Another highlight in Fedathi Sequence is the fact that the teacher takes on the role of observer and manager for the definition of the best moment of intervention/mediation using, for example, appropriate and directed questions so that the students reflect on the results found in front of the problem situation. The teacher also acts on students’ behavior in engaging or not engaging in activities. These actions are configured in "hands off/ hand in pocket" pedagogy. Santana (2018, p.16), in this regard, makes it clear to us that

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<table>
<thead>
<tr>
<th>Stages</th>
<th>Details</th>
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<tbody>
<tr>
<td>-</td>
<td>Promotes discussion of mistakes, successes and compares the results presented by learners to encourage learning.</td>
</tr>
<tr>
<td>Proof</td>
<td>- It formalizes the results, by means of generalizations, exposing the formal definitions.</td>
</tr>
</tbody>
</table>

Source: Adapted from Fontenele (2013).
[...] the pedagogy "hands off/ hand in pocket" goes through the phases of the Fedathi Sequence, giving theoretical and practical elements to the mediation of the teacher in the reflection of the students, so that they can organize and express their assumptions, to try to solve the proposed problem, organized individually or in groups, in view of the level of difficulty of the activity, available time and other elements necessary for the planning of the didactic section.

“Hands off/ Hand in pocket” Pedagogy is, therefore, a teacher's mediation behavior that promotes the student's reasoning about the response to problems and the actions that will guide the search for results. The teacher does not propose a direct intervention in the formulation of knowledge but allows the free thinking of students and collective work, also stimulating the exchange of knowledge between peers. As Santana (2018) also emphasizes, such action

It aims to stimulate the students to research, to reflect, to have a sense of investigation, to collaborate and to systematize knowledge, that is, the Fedathi Sequence intends to resignify the roles in the classroom, which, for many years, have been based on the acts of speaking and dictating of the master, in the traditional perspective of teaching (p. 17).

It is important to emphasize, as timely as possible, that the Pedagogy "hand in the pocket" occurs in all phases of the Fedathi Sequence, being necessary for the development of reasoning and learning. Thus, the challenge of Mediation in Fedathi, constituted in praxis and pedagogical immersion, conforms the "when" and "how" to mediate the work that the students are developing, with observance for the diverse situations - sometimes explicit and already expected by the teacher, sometimes involuntary appearing spontaneously in the actions of the students - that the educational phenomenon can manifest.

Thus, using our theoretical basis, we indicate below the methodological path taken in this study.

METHODOLOGY

The Fedathi Course was divided into five forums (held on the Moodle platform, installed on Laboratório de Pesquisa Multimeios' servers). We analyzed the first of them (Forum I), which lasted 6 days, with 65 student and tutor interactions. In all, we had the regular participation of 46 teachers who, in this text, have their identities protected. We chose to characterize them as Professor 1, Professor 2, and so on, as their lines were recorded in a spreadsheet that structured our categories.

In the forum, it was proposed to read the book Sequência Fedathi: fundamentos (BORGES NETO, 2018) which guided the discussions through the following guiding question: How do you see the teaching work from the perspective of the methodology of teaching Fedathi Sequence and how this methodological proposal can help teaching practice in the teaching of Mathematics? Try to discuss the principles of the Fedathi Sequence and its contributions to teaching practice, according to the readings proposed by this unit.

The investigation now reported is of qualitative and documentary nature and was structured under the assumptions of Content Analysis (BARDIN, 2011). We
carried out an initial analysis of the documents, followed by their exploration, which determined our research objective and also the treatment of the results and our interpretations.

In this way, we read the material, what Bardin (2011) calls “floating reading” to delimit what would be analyzed, also making the cut of the text. At a later point, we looked at the units of record that gave rise to some categories (Chart 2).

<table>
<thead>
<tr>
<th>Units of registration (UR)</th>
<th>Categories (C)</th>
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</thead>
<tbody>
<tr>
<td>UR 1 - Stages of the Fedathi Sequence</td>
<td>C1: Maturation</td>
</tr>
<tr>
<td>UR 2 - Foundations of the Fedathi Sequence</td>
<td>C2: Pedagogy “Hands off/ Hand in Pocket”</td>
</tr>
<tr>
<td></td>
<td>C3: Mediation</td>
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<tr>
<td>UR 3 - Teaching Posture</td>
<td>C4: Planning</td>
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<tr>
<td></td>
<td>C5: Didactic time</td>
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<tr>
<td></td>
<td>C6: Reflection on practice</td>
</tr>
</tbody>
</table>

Source: Own authorship (2019).

Six categories of analysis were identified, which in turn were grouped into three Registration Units (UR). They were established through the recurrence of the teaching speech in pointing out these aspects in the formation, the extension of the whole course. Although other themes and fundamentals of the Fedathi proposal were discussed, these were more appreciated in the teaching debate.

The first category, Maturation, concerns the second phase of the Fedathi Sequence (UR 1). Here we identify the recurrence of teaching speech in identifying this moment as something new that could be adopted with a perspective of changes in the classes of these teachers.

The second category, “Hands off/ Hand in Pocket” Pedagogy, one of the foundations of the Fedathi proposal (UR 2), was the one that stood out most during the course. Depending on our reading, letting the student think, reflect individually or in group, does not constitute a common action of the teachers’ practice.

Mediation, the third category listed in this text, is related to the great interest highlighted by teachers in perceiving this characteristic absent from their classroom actions. The relationship with the students, in most of the speeches, is marked by the centralization in the teacher, not allowing interactions or even the performance of the students. When faced with the possibility of letting the students participate in class, dialogue with colleagues, have time for discussion, the teachers glimpsed a new way of making their classes more interesting and collaborative.

Outlining UR Posture teaching, we have Planning, the fourth category, as a prominent factor in the speech of teachers. This action, which should be simple and routine in the daily life of the school, is something new and that could promote more significant results in teaching practice. Planning a class, or didactic sessions, had a more refined look at the teaching perspective, throughout the course discussions.
The fifth category, Didactic Time, proves to be a constant in the debate on Fedathi Sequence. The use of a new methodology meets the circumstances imposed by the school to comply with the school plan, the curriculum. Time becomes a justification, or excuse, for not adhering to other modes of teaching, in addition to the traditional way already integrated in school spaces.

We bring Reflection on practice, in the sixth category, referring to the aspects addressed by teachers who led them to consider their daily actions and ponder about practices that do not perceive the student with autonomy in learning situations with predominance in mathematical content.

**DISCUSSION OF RESULTS**

Through what we proposed in our objective, we analyzed the teachers’ statements which, organized and characterized in the categories already explained, represent the teaching thought on each identified subject. In this way we have listed some excerpts that translate these ideas.

Initially, we observed that Maturation is one of the phases of the Fedathi Sequence that teachers bring as a novelty and challenge in their practice and in the need for a greater protagonism of the student in their learning, as can be seen in the speeches of the teachers below in Chart 3.

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Analysis Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>[...] my attention was drawn to the care that the teacher should take when presenting the problem and that it should fit the previous knowledge of the student and the MATURATION that summarizes the moment of reflection and discussion between teacher and student in solving this problem.</td>
</tr>
<tr>
<td>P2</td>
<td>The stage that I see as a great challenge in this methodology is Maturation, because it is at this stage that the student must walk alone in his learning, of course there is still the support of the teacher guiding him, but this break of dependency is difficult, since they are used to receiving the content well &quot;chewed&quot;.</td>
</tr>
<tr>
<td>P3</td>
<td>About the phases, I liked very much the maturation, I find this discussion with the student about the problem presented very important, really this phase makes the student think and participate in solving the problem, not being a simple passive subject, &quot;contemplating&quot; the explanations and resolutions of the teacher.</td>
</tr>
<tr>
<td>P4</td>
<td>The main contribution I see with the Fedathi Sequence is the maturation and testing stages. Which teaches us not to solve the issues immediately. Putting the student to think and bring his pre-established knowledge, leading him to reflect on the challenging situation. Putting the teacher as an action of the subject, interacting with the student, and not a mere problem solver.</td>
</tr>
</tbody>
</table>

Source: Own authorship (2019).

Teacher P1 denotes the importance of defining a problem and the prior knowledge of the student to substantiate the Maturation that is the space for reflection and discussion between teacher and student in solving the problem.
Teacher P2 finds Maturation challenging, as he has a mistaken perspective on the phase, as it imprints a solitary action on the student, even if he considers the teacher to support him through guidance, believing that the students' dependence on the teacher is something difficult. Professor P3, on the other hand, considers the participation, both student and the teacher, in the Maturation phase, denoting the importance of the students' protagonism and participation.

Teacher P4 shows a rupture with the more traditional teaching, where the teacher soon solves the problems, and perceives, through Fedathi Sequence, the greater participation of the student, considering his knowledge and emphasizing the teaching action in the interaction with the student, not only in solving problems with the solitary student participation.

Analyzing the second category, we come across the attention designed by teachers to the Pedagogy principle "hand in pocket". In Chart 4 below we highlight some representative lines of teachers participating in the course.

Chart 4 - Category 2: Hand in pocket Pedagogy

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Analysis Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>P5</td>
<td>[...] one of the principles that caught my attention was the expression &quot;hand in the pocket&quot;. This expression, in my opinion, is a wait for the student’s reaction when time is given for him to solve a proposed problem. The teacher is a mediator between the proposed problem and the possible solution(s).</td>
</tr>
<tr>
<td>P6</td>
<td>To develop a &quot;hand in pocket&quot; pedagogy, that is, to allow students to produce and develop knowledge, is at the very least instigating, because to do so, the teacher must be convinced of what he is proposing and have a didactic, mathematical and pedagogical mastery over his students, so that such an important moment does not turn into indiscipline in the classroom. Hence, the development of appropriate didactic situations is extremely important.</td>
</tr>
<tr>
<td>P7</td>
<td>But what caught my attention most was &quot;Hand in Pocket&quot;, that is the initial step, since the students cannot build their autonomy. The textbooks themselves already come with a system where, one issue will be solved, and the others will be solved by the students. However, it will not be an easy change, due to school structures, but one that is possible little by little.</td>
</tr>
<tr>
<td>P8</td>
<td>I found the &quot;hand in the pocket&quot; pedagogy fantastic, as it is a way of not anticipating the answer, without letting the student put his &quot;hand in the pocket&quot;, which is the most recurrent in my pedagogical practice.</td>
</tr>
</tbody>
</table>

Source: Own authorship (2019).

“Hand in pocket” pedagogy is another category that teachers find innovative and challenging. Teacher P5 refers as novelty to the expression "hand in the pocket", in which waiting for the student's reaction is associated with providing time to solve a problem. He also considers that the teacher is the mediator between the problem and the student's actions. In this sense, it is important that the teacher has the experience of this concept in pedagogical immersion, so as not to establish mistaken ideas about this foundation, as when considering that the hand in the pocket is associated only with the attitudes of the student. This foundation is related, mainly, to the change in the teacher's posture (BORGES NETO, 2018).
One aspect scored by another teacher, P6, is the need for the didactic domain, the knowledge of the contents and the planning for the implementation of the "hand in pocket" proposal. Meanwhile, Teacher P7 highlights the challenges of implementing this type of mediation with support in established school structures, the inadequacy of didactic material and the need to instigate the protagonism and autonomy of the student.

Teacher P8 was concerned about the participation of the student through the teacher's help, but without anticipating responses, allowing the involvement of students in learning, thus believing that the change in the teacher's posture can reflect on the various possibilities of the student in their attitudes and experiences.

In a very approximate perspective of "hand in pocket" Pedagogy, the principle of Mediation was also highly appreciated by teachers. We noticed that, for guiding actions that change the attitudes of the teacher and also promote the participation and interaction of students, this principle was much discussed and accepted as a possibility for adoption in the classroom as expressed in Chart 5.

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Analysis Contents</th>
</tr>
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<tbody>
<tr>
<td>P9</td>
<td>The teaching work from the perspective of the teaching methodology of the Fedathi sequence is a mediator, an instigator of the student's knowledge, who receives command to apply it by means of action or &quot;omission&quot; implying to the student a methodology of knowledge investigation, who should actively participate in the construction of his knowledge. The teacher, like any other, plans his classes and first, makes the diagnosis of the students' knowledge, through an interaction between them (student-student, teacher-student). Being in possession of this information, the teacher makes experiments in order to generalize the achievement. On the other hand, the student participates in order to be analyzed and in the interaction with the environment, seeks answers through questions and with the teacher he experiments with his conclusions to acquire a &quot;new&quot; knowledge.</td>
</tr>
<tr>
<td>P10</td>
<td>The Fedathi Sequence is the proposal of a didactic sequence that allows the creation of conditions and possibilities of a meaningful experience in the learning of mathematics. Learning is effective when the student using problem-solving strategies feels in the position of a mathematics scholar. In the Fedathi Sequence, the interaction of teacher and student, based on the knowledge already acquired by the student, allows the student to develop mathematical reasoning, the expansion of their knowledge and the possibility of developing methods of teaching and mathematical research.</td>
</tr>
</tbody>
</table>

Source: Own authorship (2019).

An important element expressed by teachers in the statements in Chart 5, which is a foundation of the Fedathi Sequence, is the mediating character of the teacher in the teaching context. Teacher P9 reaches the idea of Mediation as an instigating act of student knowledge, which can be an action or "omission" to provide active student participation in the formulation of knowledge.

It is interesting to note that teachers have the idea that waiting for the student's time, waiting for his answer, letting him mature his knowledge is an "omission", emptied of a didactic intention. We believe, however, that this
moment of waiting and letting the student raise his hypothesis, experience the resolution of a problem posed, is an intentional and planned attitude by the teacher, not an action of omission (SANTANA, 2018), as was referred to in the teaching speech.

In addition, the same teacher stresses the importance of planning, of diagnosing students' knowledge for Mediation. He also expresses the idea of experimentation carried out by the student in the elaboration of knowledge, however, in the teaching work, it is not possible to experiment without planning, but an intentional action, which foresees the various scenarios in daily life in the classroom and is prepared for the unexpected situations arising from teaching actions.

Teacher P10 achieves the Fedathi Sequence as a proposal that creates conditions and enables a meaningful learning experience. This is an interesting aspect because, with its origin in an activist matrix of Pedagogy, the Fedathi Sequence is based on the teaching experience of the teacher - pedagogical immersion and student learning experience - student immersion. The teacher is the subject who stimulates the students through situations, problems, questions, counterexamples, to put the student in a learning situation. In this perspective, the speech of P10 denotes the importance of the interaction of subjects - student and teacher - in the process of teaching and learning, constituting one of the important foundations of the Fedathi Sequence - the Mediation.

Following our analysis, the fourth category reveals little discussed conceptions by teachers about the Planning of didactic sessions or classes. In Chart 6, we gathered only two lines, but both were very representative of the group of teachers.

<table>
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<tr>
<th>Teachers</th>
<th>Analysis Contents</th>
</tr>
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<tbody>
<tr>
<td>P11</td>
<td>In using this methodology, the teacher goes through a transformation of his posture as a teacher and his posture in front of his class of students. The teacher, when carrying out the planning, should do a research on the subject and plan from the problem situation, which is the starting point.</td>
</tr>
<tr>
<td>P12</td>
<td>The teaching work remains of paramount importance. However, the actions are now developed by the students. In this way, it is they who are the protagonists of the class. However, it is worth noting that for this to occur, the teacher must plan the class well from the foundations of the sequence.</td>
</tr>
</tbody>
</table>

Source: Own authorship (2019).

Teachers P11 and P12 (Chart 6) reflect on the importance of the methodology under discussion, see the changes coming from their job, the changes - both for the teacher and for the students. And, in this evaluation, they understand the relevance of planning. The satisfactory results, desired by the teachers in their classes, go through the perception of the work environment and research. When planning, the teacher researches, examines and explores the school environment and, also, the knowledge and interests of the students.
As stated in P11, the Planning begins with research on the subject to be taught, including the problems that will be proposed to students. In Fedathi, this is a topic of great relevance to the teaching process, since it focuses on the whole process of discovery and, consequently, learning.

Corroborating with this thought, P12 realizes the importance of the teacher’s work and highlights that the student’s change of posture, with its protagonism in the face of the knowledge learned, is associated with the planning and use of the fundamentals of the Fedathi Sequence.

The awareness of teachers in decision making in the Planning comes with another topic well analyzed in the Forum - didactic time. The main point of discussion is associated with the fulfillment of the lesson plans established in the curricula of the teaching institutions. The reflection of the teachers, in the excerpts shown (Chart 7), goes through some interesting points in the debate: content, expected results and learning. These are reflections that deserve much attention in teacher training, especially when we address a new teaching methodology.

Chart 7 - Category 5: Didactic Time

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Analysis Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>P13</td>
<td>We don’t give the student enough time to mature his mathematical ideas. As a teacher, I have noticed the student’s lack of interest in mathematics. In this sense, Fedathi Sequence allows us to hold the students’ attention when we propose them to be protagonists, to investigate a given mathematical problem and thus show their solution.</td>
</tr>
<tr>
<td>P14</td>
<td>I like what I read. But unfortunately, there’s no time to apply that methodology by taking two classes a week.</td>
</tr>
<tr>
<td>P7</td>
<td>The schools, more and more, demand results in a smaller and smaller time, because numbers are important, but, we can slowly in the classes make a change of attitude, where the student himself perceives the importance of the practice of Fedathi sequence as a solution to a system that is failing and obsolete.</td>
</tr>
<tr>
<td>P8</td>
<td>We are eager to “give all the content” and we end up not giving the student the necessary time to learn and to be able, alone, to solve the problems that are proposed to him.</td>
</tr>
</tbody>
</table>

Source: Own authorship (2019).

In this category (Chart 7), we note that P13 and P8 portrayed the idea that they did not take the time for students to grasp the content in solving the proposed problems. In this case, teachers consider that the new methodology can help in this challenge.

In P14, we observe a discourse on the maintenance of the structures of school boards, that is, the difficulty in inserting something new, because time does not allow changes in teaching actions. The teacher’s learning remains in theory and cannot expand into the classroom, in view of fulfilling a curriculum that imprisons, hinders the new and, consequently, punishes teachers and students, who are deprived of other possibilities.

In this reflection, we have an observation of the difficulties that the teacher faces in realizing that “[...] the development of an effective reflexive practice has to integrate the institutional context.” (SCHÖN, 1995, p. 87). Many are unable to
overcome such difficulties and remain in the guiding and imprisoning practice of schools.

This is confirmed when P7 reminds us that in many school spaces, the subjects' intention is to seek results - whether in passing subjects or in external evaluations - without observing the students' learning time. This same teacher, however, is able to perceive, through reflection on his action, that the bureaucratic system of the school can be overcome and "little by little" the teaching posture can "[...] make the school a place where it is possible to listen to the students" (SCHÖN, 1995, p. 87; italics by the author).

We note that the analysis of didactic time, in various aspects, has allowed teachers to perceive the conflicts established between the teaching systems that impose their curricula. In some cases, these teachers position themselves in the condition of acceptance and, in others, of overcoming these structures. In any case, they were able to reflect on their practice. This can be expanded in other statements (Chart 8) by deepening the employment possibilities of the Fedathi Sequence.

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Analysis Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>I also see myself as a contends teacher and a fan of traditional classes, but I am also willing to reflect on my classroom practice with students and other classmates.</td>
</tr>
<tr>
<td>P15</td>
<td>When I read the first text about the origin and foundations of the Fedathi Sequence, I realized how much I am a contends teacher and, in class, &quot;knowledge dominator&quot;, because I recognize that I take a totally traditional class in which I present the content, solve all the proposed exercises and do not allow the student body to have the opportunity to manifest, participate, interact and, especially, question.</td>
</tr>
<tr>
<td>P16</td>
<td>The Fedathi sequence brought me a possibility of decentralizing all the functions (presenting content, schematizing, passing questions, solving them) of teaching practice and enabling the student to build knowledge with the mediation of the teacher.</td>
</tr>
</tbody>
</table>

Source: Own authorship (2019).

Our whole exam relates to the reflection made by teachers about their knowledge, their attitudes towards themselves and their students, among other aspects, in well-defined categories. Teachers' thinking in a reflective attitude has been identified in many speeches as exemplified in Chart 8.

We observed in P1 and P15 that, when they came across the Fedathi proposal, they recognized its content and traditional classes, not allowing the existence of spaces for dialogue with the students, who should "mainly question".

The observation of P16 is important, as it adds the possibility of decentralization by the teacher who, adopting the posture of mediator - essential principle in Fedathi - offers the student the opportunity to develop, elaborating his knowledge and having autonomy in the situations of learning mediated by the teacher, without prioritizing the content, but the debate and the opportunities that they can give to the life of each student.
The position displayed by P15 is very common among mathematics teachers: it presents the content, solves lists of exercises and does not promote student interaction, research or time for discovery. The course’s opportunity for dialogue, however, opened space for initial reflective action about the attitudes experienced by teachers, triggering opportunities for "reflective practical teaching" (SCHÖN, 2000).

**FINAL CONSIDERATIONS**

Through the objective outlined in this article - to analyze the content of the math teachers’ statements from the public network of continuing education through the perspectives of the reflective teacher and the Fedathian’s posture - we were able to verify how the proposal of continuing education of teachers, supported by these two perspectives, can help the development of a reflective practice of making teachers and that can impact on the needs and learning of students. In fact, the Fedathian’s perspective is configured as a compass of the teaching path with origin in the analysis of its posture, attitudes and praxis, feeding the will for change of many teachers.

Some categories of analysis were elected that expressed recurrent in the analysis of the content of teachers' discourse: Maturation, Hands off/Hand in Pocket Pedagogy, Mediation, Planning, Didactic Time and Reflection on Practice.

Considering the categories analyzed, it was possible to observe that Maturation was highlighted by teachers as something new, which could be adopted in their classes in a perspective of change. This aspect was also scored for the Pedagogy category "hand in pocket", but with greater caution because it requires more autonomy from the learner, and this is not common practice for teachers.

Mediation was another category in which teachers want to appropriate themselves better in their daily work, because teachers found the absence of this foundation of their classroom actions, constituting, in effect, a mistaken idea, because all teaching actions, even those with more traditional characteristics, are configured in Mediation, but the fact is whether this mediation creates conditions and places the student in learning circumstances, having more autonomy and being instigated in him the interest for learning.

We noticed that the teaching practice is still marked, significantly, by the centralization in the subject professor, not being allowed the interactions or even the performance of the students. This possibility is observed by teachers as an innovation in their teaching practice, glimpsing their most interesting and collaborative classes.

Planning is also a highlight in teachers’ speech, when in their reflection they realize the importance of the decision making to which planning can lead. We believe that this activity should be a routine action in the daily life of the school, however, it constitutes something innovative and can promote more significant results in school practice.

Teaching time and compliance with the school and curriculum plan were points of concern expressed by teachers as challenges for the implementation of
other methodologies in teaching practice. Time becomes a justification, or excuse, for the non-adherence of other forms of teaching, besides the *modus operandi* of the traditional school.

Reflection on practice was another topic perceived in teachers’ reporting, in several situations. In contact with the possibilities of a new methodology and fundamentals, for example, the teacher revisits his practice, compares, criticizes and evaluates his daily actions and ponders about the practices that do not enable the autonomy of the student and do not place them in learning circumstances. Teachers question their attitudes towards content, based on expected results and traditional actions. These are relevant reflections in teacher training, especially when a new teaching methodology is approached.

We consider important the emphasis that this analysis makes to the exercise of teaching reflection about their teaching knowledge and specific content to be taught; their attitudes and relationship with the students; their relationships with the times and curriculum requirements, among others. The reflection, in a reflective and Fedathian’s behavior, constitutes a significant elaboration and also relevant in the teaching practice.
Análise de conteúdo do percurso formativo continuado docente mediante as propostas da sequência Fedathi e do professor reflexivo

RESUMO
A formação continuada é imprescindível na ação docente, como, por exemplo, na atualização de conhecimentos, no aperfeiçoamento de metodologias e na reflexão sobre a prática, destacando-se a reflexão sobre a própria prática e desenvolvendo mudanças por meio do pensamento crítico de si mesmo e da ação cotidiana, para a solução de problemas com que se depara e o redirecionamento da sua prática. A Sequência Fedathi (SF), desenvolvida para fortalecer a ação docente, sustenta a ideia de um profissional que seja investigador de seu ambiente de trabalho, de sua sala de aula, de sua ação pedagógica e do conhecimento de seus alunos. Este texto é resultado do Projeto Fedathi - proposta de ensino para formação de professores do Ensino Médio, realizado em novembro-dezembro de 2018, por pesquisadores do Laboratório de Pesquisas - denominado Multimeios – da Faculdade de Educação da Universidade Federal do Ceará (UFC). O objetivo deste artigo foi analisar o conteúdo das falas de 46 professores de Matemática da rede pública de ensino em formação continuada mediante as ópticas do professor reflexivo e da postura fedathian’s. Foi utilizada como metodologia a pesquisa centrada na Análise de Conteúdo por meio da definição de categorias a posteriori que permitiram a identificação de elementos significativos no entendimento dos professores sobre o estabelecimento da proximidade ou do distanciamento da prática e de teorias que poderiam subsidiar o trabalho destes professores. Teve-se como resultado o fato de que as principais categorias recorrentes no conteúdo do discurso dos professores foram: Maturação, Pedagogia “mão no bolso”, Mediação, Planejamento, Tempo didático e Reflexão sobre a prática. Os docentes tomaram algumas categorias como possibilidades de inovações em sua prática, pontuando os desafios da implementação em decorrência da inflexibilidade de tempo, o cumprimento de currículos e de rotinas tradicionais ainda bem atuantes no ambiente escolar. Conclui-se que o exercício da Reflexão docente, numa atitude reflexiva e fedathian’s, se constitui em elaboração significativa e, também, relevante na prática docente.

REFERENCES


