

Between rivers of creativity and clearings of knowledge: the art of teaching science in the Amazon Rainforest¹

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ABSTRACT

This paper aims to reflect on how teachers can adopt a fluid and creative stance, inspired by Amazon's winding rivers, to open clearings in knowledge and facilitate students' understanding within the Amazonian context. The investigation aligns with the perspective of the philosophy of difference and uses Foucault's concept of the care for the self as a reference, along with central ideas about creativity. Through qualitative educational research, the text initially proposes reflecting on the possibilities of using creativity in science teaching as a means to promote connections between knowledge and enrich learning. Then, it explores how creative pedagogical practices can be likened to clearing a path in the forest, where light and clarity emerge, lighting the way to knowledge. Thus, the teacher's role is highlighted as an agent who flows, adapts, and transforms science education into a dynamic process connected to the Amazonian context.

KEYWORDS: Science Teaching. Creativity, and the care for the self.

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Entre rios de criatividade e clareiras do conhecimento: a arte de ensinar ciências na Floresta Amazônica

RESUMO

Este artigo propõe refletir acerca da postura fluida e criativa que pode ser adotada pelo professor, inspirada nos rios sinuosos da Amazônia, de modo a abrir clareiras no conhecimento e facilitar a compreensão dos estudantes no contexto amazônico. A investigação articula-se com a perspectiva da filosofia da diferença e utiliza como referência a ferramenta foucaultiana do cuidado de si, bem como ideias centrais sobre criatividade. Por meio de uma pesquisa qualitativa em educação, o texto propõe, inicialmente, refletir as possibilidades de utilizar a criatividade no ensino de ciências como meio para promover conexões entre saberes e enriquecer a aprendizagem. Ademais, explora como práticas pedagógicas criativas podem ser aproximadas à abertura de clareiras na floresta, nas quais a luz e a clareza emergem, iluminando caminhos para o conhecimento. Assim, destaca-se o papel do professor como um agente que flui, adapta-se e transforma o ensino de ciências em um processo dinâmico conectado ao contexto amazônico.

PALAVRAS-CHAVE: Ensino de ciências. Criatividade e cuidado de si.

Entre Ríos de creatividad y claros del conocimiento: el arte de enseñar ciencias en la Amazonía

RESUMEN

Este artículo propone reflexionar acerca de la postura fluida y creativa que puede adoptar el profesor, inspirada en los ríos sinuosos de la Amazonía, con el fin de abrir claros en el conocimiento y facilitar la comprensión de los estudiantes en el contexto amazónico. La investigación se articula con la perspectiva de la filosofía de la diferencia y utiliza como referencia la herramienta foucaultiana del cuidado de sí, así como ideas centrales sobre la creatividad. Por medio de una investigación cualitativa en educación, el texto propone, inicialmente, reflexionar sobre las posibilidades de utilizar la creatividad en la enseñanza de ciencias como medio para promover conexiones entre saberes y enriquecer el aprendizaje. Además, explora cómo prácticas pedagógicas creativas pueden ser aproximadas a la

apertura de claros en la selva, en los cuales la luz y la claridad emergen, iluminando caminos hacia el conocimiento. Así, se destaca el papel del profesor como un agente que fluye, se adapta y transforma la enseñanza de ciencias en un proceso dinámico conectado al contexto amazónico.

PALABRAS CLAVE: Enseñanza de las Ciencias. Creatividad y cuidado de sí.

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Between rivers and knowledge: the care for the self for teaching

To be Amazonian is to know that we live in the midst of one of the most powerful regions on the planet. Here, rivers meander their courses, connect peoples, cultures, and traditional and ancestral knowledge. Our forest offers us a pulsating scenario of life that inspires curiosity about what lives within it. However, this natural and cultural richness, which could be an inexhaustible source of learning, often does not find a place in classrooms. Classes take place as moments disconnected from the rich and diverse life that surrounds them, often limited to standardized approaches, universal materials, and little contextualization. Teaching disconnected from the local context makes knowledge scarce and overlooks the educational potential of the forest.

Creative processes in science teaching offer a way to bring the classroom closer to the Amazon. According to Ostrower (1976), the creative nature of man occurs within a cultural context, in which every individual develops themselves within a social reality whose needs and cultural valuations are shaped by the values of life itself. With this, we think that teaching creativity is like a bridge that connects local cultural and scientific knowledge, allowing fluidity, as do the waters of the Amazonian rivers, which do not follow a single straight path but open possibilities for arms and intertwining in new routes. The creative process in teaching also works like this: when we use elements as resources to teach, we strengthen the students' relationship to the place where they live, valuing their experiences.

This creative practice engages with the Foucaultian tool of self-care, developed by Michel Foucault, which transcends the idea of simply taking care of oneself in an aesthetic and individual way. Foucault (1984) refers to a continuous process of looking at oneself, in which the subject seeks to develop their own subjectivity and morality through practices involving reflection, knowledge, and action. Thus, self-care implies a constant relationship between the subject and the world, promoting a life ethic built on looking at the environment, at other people, and, above all, at the process itself.

Just like the Amazon's rivers, which flow and enable the creation of their own paths over time, the teacher who practices self-care also continuously seeks to reinvent themselves, adapting to the context, to the school reality, and using their creativity as a tool to connect the students' scientific and cultural knowledge.

When considering self-care, the teacher is not the one who transmits knowledge, but the one who makes an encounter with their own learning and reflection process. Foucault (2010) refers to the subject who finds their own way of living and teaching. They are inspired by the resources around them and use the students' knowledge as tools for approximation. This care for the teaching and learning process itself strengthens students' relationship with the place where they live and inspires them to recognize the importance of their own knowledge, history, and culture, something fundamental in our context.

Given the need for science teaching that recognizes the Amazon not only as a geographical space, but as a living learning laboratory, we ask: how can the teacher use creativity in science teaching, inspired by the Amazon's rivers, to connect knowledge and open clearings in knowledge, in order to facilitate students' understanding in the Amazonian context? This paper invites one to think about a more creative and rooted teaching by reflecting on how the teacher can assume a fluid pedagogical posture, inspired by Amazon's winding rivers, capable of opening clearings in knowledge and promoting a deeper, more contextualized understanding among students.

Initially, we reflected on the possibilities of using creativity in science teaching as a means to promote connections between different types of knowledge—scientific and cultural—and enrich learning. Creativity is then presented as a tool for connecting and integrating local knowledge, valuing Amazonian culture and its natural aspects. We then explore how creative pedagogical practices can be likened to clearing a path in the forest, where light and clarity emerge, lighting pathways to knowledge. Thus, we highlight the role of the teacher as an agent that flows, adapts, and transforms science teaching, making it a dynamic and profound process, directly connected to the Amazonian context.

Interweaving knowledge: creativity and self-care

The rivers that flow in the Amazon are among the region's greatest symbols: winding, unpredictable, always flowing, and adapting to the many contours throughout the forest. In fact, no river in the Amazon follows a straight line; They branch off, seek new paths, and intertwine with other bodies of water, creating a vital network of connections that sustains them and many other forms of life in the forest. Similarly, creativity in science teaching should not follow a single fixed path. Like rivers, when flowing, we can change the contours of the environment; that is, in practice, we shape learning, adapting it to students' needs. According to Bahia and Trindade (2013, p. 23), every person “becomes a flexible inventor of their personal future and potentially contributes to the future of their culture” (our translation).

Creativity helps us understand needs and opens space for intervention through ideas to find a solution. These ideas can take the form of new propositions or adaptations of existing concepts to the context in which they are. Ostrower (2001) states that, by creating, the human being modifies external nature, transforms, and perfects himself. In science teaching, we can see this transformation in practices that incorporate elements of Amazonian

daily life, such as leaves, seeds, animals, and river water, to explain concepts such as photosynthesis, the water cycle, and the food chain.

According to Goudard, Belli, and Menestrina (2004, p. 2, our translation), “any individual can be able to think creatively, act freely, give new forms to the already existing, open up to new experiences, appreciate the new, solve problems, lean towards innovations and reinvent.” Thus, we are all born with creative potential that can be awakened and developed.

Several perspectives on creativity have varied throughout time. Goudard, Belli, and Menestrina (2004) point out that, in Antiquity, creativity was considered a divine inspiration, a privilege of the gods, linked to supernatural forces. For Plato, it was a form of madness. Kant, in turn, believed that creativity was limited to a few people, being a rational, spontaneous, and inexplicable process, and could not be taught.

In Psychology, various approaches have also sought to explain creativity. For behaviorism, it is influenced by the environment and the positive reinforcement received throughout life. Psychoanalysis defines it as the response to unconscious conflicts, producing creative solutions that relieve tensions. In Gestalt, creativity is seen as a result of divergent thinking: the subject’s ability to produce various ideas from a given piece of information. In short, creativity results from the interaction between an individual’s perceptions and their communication with the environment.

Dewey (1993) states that creativity is like a process that is linked to the individual’s experience and interaction with the world. It is not an innate talent or limited only to a few people, but an ability that arises from the human ability to actively engage with the place where we live, reflecting on it, to transform our experiences into actions. He highlights that creative thinking is the result of curiosity, exploration, and the desire to solve problems, showing us that education plays a crucial role in fostering an environment that allows individuals to continuously develop their creative skills.

Foucault does not deal directly with creativity as a central theme, but his reflections on the constitution of the subject, the invention of the self, and

the aesthetics of existence invite us to create, especially in ways of life. “Life as a work of art: what seems to me to be the morality that can be drawn from all this, life as a work of art certainly presupposes the creativity of itself, by itself” (Foucault, 2010, p. 275, our translation), that is, an existential creativity.

In Amazon’s daily school life, the teacher can encourage students to investigate the place where they live. Whether in their homes, on the streets, or in ecological parks, proposing projects that explore plants (medicinal, food, and their benefits) or phenomena such as the meeting of the waters, a famous postcard of the region. In addition to arousing curiosity, these practices help connect the content with the students’ experiences.

In addition, for Dewey (1993), creativity is not an isolated phenomenon, but a process integrated into everyday life and educational practice. Education should promote a hands-on approach, allowing students to actively engage in learning situations that challenge their ability to think creatively. He argues that, by learning through practical experience and reflecting on it, subjects can create new ideas, solve problems in innovative ways, and transform the reality around them, thereby enhancing creativity in various contexts.

For this to be potentialized, it is essential that the teacher knows and practices self-care. Michel Foucault rescues the concept of self-care as a fundamental ethical practice for human existence, emphasizing that it is not an act of selfishness but a way of placing oneself in a world that has implications for the collective. According to Foucault (1984, p.47), our translation), “the care of oneself is not simply turning to oneself; it is a process of self-knowledge that connects the individual to a reflective relationship with himself and with others”. Inspired by the practices of Antiquity, self-care requires constant reflection and ethical work on one’s own way of being. It is through this practice that the subject can question themselves and examine norms that cross them, creating a space to act more consciously and freely.

Occupying oneself became, in a general way, the principle of all rational conduct, in every form of active life that intended, effectively, to obey the principle of moral rationality. The restlessness to occupy itself reached, during the long brilliance of Hellenistic and Roman thought, such a great extension that it became, I believe, a true cultural phenomenon as a whole (Foucault, 2010, p. 10, our translation).

In teaching, this care can be seen as a sensitive opening to perceive the environment and students' needs, allowing the teacher to be a transforming agent, attentive not only to what they teach, but also to how they teach. "To become what we have never been, this is, I think, one of the most fundamental elements or themes of this practice of the self" (Foucault, 2010, p. 87, our translation). Self-care is a lifelong practice, through which subjectivity is forged, configuring itself as an attitude and a way of being in the world.

To the extent that the subject knows themselves, conducts their life based on ethical principles that they themselves defines, in dialogue with social norms, Foucault (2010, p. 105) argues that "governing oneself is an act of freedom that emerges from the confrontation with power and the choice of how to live" (our translation). Thus, self-government is more than looking at oneself; it is the ability to intervene in one's own being and transform daily practices.

Rivers do not run straight. They bend, change their minds, go back a little, move forward again. They open paths in the way they can, bumping into the banks, finding stones, dodging obstacles. With that, they carry stories: earth, leaves, memories. Sometimes it deposits a little of itself in some corner, and soon it sprouts there. Other times, it takes away what has been there for a long time. The river is like this: it changes the place it passes through, and it also changes with it. Like the teacher, who also learns when teaching and lets themselves be touched when touching the other. In this dance between what flows and what resists, clearings are born, breathing spaces where light enters, and something new can grow.

The clearings are like breaks that the forest offers. Some appear softly, over time, with the wind. Others, more abruptly, opened by force, sometimes even hurt. There are clearings that heal, and there are those that hurt. So it is in life and in teaching. Sometimes we need to make room to see and hear better. A student's speech, a strange silence that makes us deviate from the initial plan... Suddenly, a clearing appears. We don't always know what to do with it, but it's a chance to create something new. Clearings are opportunities. Between the movement of the river and the light of the forest, life flows, reminding us to learn to flow and leave room for the unexpected.

When the teacher decides to take an active role in their pedagogical practice, critically reflecting on curricular impositions and adapting them to their students' context, a rupture is created. The clearing opens, and perhaps it is the most beautiful, the one within ourselves. Everything changes. Suddenly, what was tight, dark, a jumble of ideas and fears, gains a space of light. As if the river that we are opened a passage inside, taking what no longer serves us, leaving room for what does not even have a name yet. In the practice of teaching, this is an encounter, an exchange. Teaching is being available for these clearings, moments when we leave repetition aside and begin to listen to what is still in the process of being cared for. Be careful with yourself, with time, with the other, with your own crossing.

This movement is fueled by self-care, which enables the teacher to flow like Amazon's rivers: bypassing obstacles, creating paths, and connecting knowledge in a creative and sensitive way. By taking care of themselves and governing themselves, the teacher not only transforms their practice but also becomes a bridge for the ethical and critical development of their students, strengthening the relationship with the local environment and culture.

Produce clearings

Opening clearings in the forest allows light to penetrate and reveal new living spaces, and creativity inspires the teacher when teaching. They are not mere attitudes on the spot, but places where nature reinvents itself, and life finds new ways of existing. In moments of discovery, reflection, and connection are created that transform learning into a unique experience.

When disconnected from the realities experienced by students, science teaching runs the risk of becoming a plastered practice, stuck in curricular standards that ignore cultural experiences and regional knowledge. Freire (1996, p. 46) points out the importance of an education connected to the experiences of the learner, because “teaching is not transferring knowledge, but creating the possibilities for its production or construction” (our translation). The teacher who opens themselves to creative and sensitive teaching acts as a mediator, valuing knowledge and incorporating it into scientific learning, thereby strengthening the relationship between the student and the world around them.

Entangled with self-care, creativity seeks to break and create its own way of integrating scientific knowledge with regional knowledge and students’ cultural experiences, promoting a unique teaching in the search for belonging. By using natural and cultural elements of the Amazon—such as the meeting of waters, the diversity of seeds, or the forest’s traditional practices—the teacher creates opportunities for students to see science as something alive and close to their realities. These practices create clearings in which students become protagonists of their own learning, building connections between what they already know and new knowledge.

Creating clearings is a delicate gesture of choice. You need to know where to move, what can be removed, and what needs to stay. For the light to enter, something needs to come out. In the desire to do differently, we can end up taking too much, pulling out roots that sustain something vital; undoing what could be shelter; silencing what was still learning to speak. In teaching,

this can happen when we try to change everything at once, without listening to the class time, the community ground, and the knowledge that already existed there. Taking care of the clearing is also taking care of what is around it. It is to be aware that every opening moves the whole.

Clearings that are made in a hurry or without listening are like wounds in the forest. They open holes that are too big, too close to each other, and what was a living space becomes an isolation. The same thing happens in the classroom when processes are forced, when listening is cut off, and when everything becomes just a requirement. Not all change is transformation. Therefore, thinking of the clearing as care is remembering that making room is also a responsibility. A gesture that asks for presence, affection, attention to what is around, to what needs to be born, and to what needs to continue.

When well cared for, clearings become breathing spaces, in which light touches the ground for the first time in a long time, where dormant seeds begin to germinate. It is there that the pioneer plants are born, those that dare to arrive first and prepare the ground for other lives. In teaching, these clearings appear when the teacher creates space for improvisation, for listening, and for the errors that arise along the way. In the midst of doubt, something new is born. It cannot happen in a hurry; they are cultivated with presence. It is in this care of oneself and others that teaching reinvents itself: not as something ready-made, but as the forest that opens up a little, just enough for the sun to enter and life to continue.

Opening clearings in teaching is a process that requires the teacher to be sensitive to perceive the present needs, keeping an eye not only on what happens in the educational context, but also on their own thoughts. Just as clearings emerge from the interplay between light and shadow, creative teaching is also built on a balance between planning and spontaneity. It is in this space that Foucauldian self-care becomes an essential tool for the teacher.

Breaking with fixed curricular standards that disregard local realities requires courage and an ethical stance on the part of the teacher. Dewey (1993) already argued that education should be an extension of everyday life rather than a process separate from students' experience. By challenging curricular rigidity and proposing a teaching that values the environment and culture, the teacher is, at the same time, developing scientific skills.

It is essential that the teacher turns their gaze to themselves. This enables teachers to reflect on their pedagogical practices and responsibilities as a ruler in the educational environment. Foucault (1984, p. 47, our translation) emphasizes that “self-care is not only an individual practice, but an ethical act that directly impacts the collective”. Thus, the teacher who takes care of themselves not only transforms their subjectivity, but also the way they relate to students, recognizing in them the need for teaching that is more human and connected to reality.

By taking care of themselves, the teacher develops a more attentive look and a more active listening, allowing fluidity, like the Amazon rivers—adapting, circumventing obstacles, and finding new paths. This way, they not only “open clearings” for learning but also become a guide that lightens paths of transformation and growth for their students. These paths, in turn, strengthen students' relationships with the local environment and culture, showing that science teaching can be a living and pulsating experience.

Final considerations

In the Amazon or anywhere where life pulses strongly, teaching is more than following a lesson plan. It is to be available for encounter, for error, for the constant reinvention of oneself and the world. Creativity, in this way, is a necessity. It allows the teacher to breathe even with the weight of the curriculum, the demands, and the urgencies. It is what opens up small spaces of freedom, even when everything seems cramped. To create, in this sense, is to take care of oneself. It's finding ways to continue

being people in the middle of the gear. This is what Foucault reminds us with his idea of self-care: living can be a chore, and we can choose how we want to live, even if little by little.

Creating is not just inventing something new; sometimes it is resisting what they want us to be. It is being able to say: “It doesn’t have to be this way”. It is to make room for other stories, other ways of learning, of teaching, of existing in school. It is knowing that knowledge is not ready, and the truth is often a construction made by voices that impose themselves. Therefore, it takes courage to create new discourses, new narratives, more connected to who we are, to the place where we live, to what we feel. It is a way of breaking with old silences and opening clearings where other voices can speak.

And when the teacher sees themselves as someone who can create, they also allow themselves to feel. To feel the timing of things, the rhythm of bodies, the questions that are born from the ground. Teaching becomes a path and not a recipe. Like Amazon’s rivers, which do not go straight but dance on the earth, the teaching practice can also be sinuous, light, strong, and full of beautiful detours. And, as in the forest, the clearings that were carefully opened can become places of light, of new life, of unexpected encounters. In the end, teaching can be this: making room for the other to flourish, without forgetting to cultivate one’s own living as well.

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