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FORUM

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Abstract   This forum article consists on a commentary on the article by Alandeom W. Oliveira, Patterson Rogers, Cassie F. Quigley, Denis Samburskiy, Kimberly Barss and Seema Rivera. The authors emphasized the need for environmental teachers to expand the focus of their instructional efforts beyond rational argumentation and reasoning, taking into account the complex emotional aspects of the human relationship with nature. In this commentary, I attempt to extend the conversation regarding these issues to the need for teachers to be aware about their own environmental beliefs, which could be guiding their teaching. I close with a consideration for the need for environmental teachers to be reflective practitioners, using reflection upon the ends of education, their environmental values and ideas and the moral and ethical aspects of teaching, for challenging students' beliefs and empowering them to make informed environmental decisions, contributing thereby to the building of more just and environmental sustained societies.

In their manuscript, *Environmental Agency Read Alouds*, Alandeom Oliveira and colleagues discussed some aspects related with the patterns of environmental agential attribution from elementary teachers and students, based on the analysis of three environmental read-aloud case studies. The authors highlighted the need to raise educators' awareness about the necessity of expanding the focus of their instructional efforts beyond rational argumentation and reasoning, and their work reveals the potentiality of this strategy,

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environmental read-alouds, in helping teachers to cope with students' multiple and often conflicting motivations and beliefs that often underlie environmental issues.

In this commentary I would like to highlight the other side of the question, which is the need for teachers themselves to be conscious about the different patterns of agential attribution implicitly present in their own discourse, and the need to balance them, when implementing this type of pedagogical strategy, or even others, when discussing any environmental issue with students.

Environmental issues are some of the most pressing social problems of our time. From pollution, global climate change, and depletion of natural resources, to poverty, social exclusion and public health, environmental problems threaten the individuals, communities, and all living organisms on the planet. For addressing these issues, it is important to understand what motivates people to act in an effort to preserve the natural environment.

According to Coral Bruni, Randie Chance and Wesley Schultz (2012), children's environmental concerns for the consequences of human impact on the environment are organized around three factors: self, other people, and the biosphere. This model states that a person's environmental attitude is rooted in its basic values system and is relative to the importance that a person places on each of these factors (Schultz 2001). Even in actual conservation management decision making, scientifically objective criteria are compromised by the multiple demands placed on land, and conservation management programmes are increasingly expected to fulfil cultural, educational and amenity roles (Boza 1993). Indeed, values and scientific ideas are closely connected in the human mind. Concerning environmental education, nowadays it is recognized that although students use both scientific concepts and values in deciding about conservation issues, they appear to give more weight to values (Grace and Ratcliffe 2002). Besides, although the engagement with school is a multidimensional construct, encompassing behavioural, cognitive and affective dimensions, which interact in a complex and dynamic way (Fredericks, Blumenfeld and Paris 2004), according to Louis Iozzi (1989), the affective domain is actually a key entry point in learning and determines whether or not a student finds environmental content relevant enough and worth learning.

As Oliveira and colleagues argued in their work, the idea that personal and social values play a central role in shaping the human relationship with nature illuminates the need for environmental teachers to expand the focus of their instructional efforts beyond rational argumentation and reasoning, taking into account the complex emotional aspects of this relationship. Though the problem also raised by this argument relates with the environmental beliefs of teachers themselves: what about teachers' values that could implicitly be transmitted in teachers' discourse and discussion options during their teaching?

Teachers' environmental beliefs could be more important in guiding their teaching about controversial environmental issues than has previously been recognized (Cotton 2006). Indeed, teachers send powerful messages to students through what they do in the classroom, and the kinds of discussions they will and will not engage in, and even through the language they use (Arreguín-Anderson and Kennedy 2013). Mario Teisl and colleagues (2010) in a study with students of two environmental courses taught by five different instructors, found that although student environmental attitudes changed, these changes differed substantially depending upon who taught the course. Conversely, they found few differences in attitudinal changes when the instructor was the same, even when the course content differed. The authors concluded stressing the possibility of students being influenced by the environmental attitudes of the instructor or by their educational beliefs.

According to Ken Zeichner (2008), the most important point to think about teaching is that it can never be neutral. Teachers have a curriculum full of values and beliefs, and every choice they make in the classroom demonstrates an underlying value (Totterdell

2000). For this reason, teachers not only need to have pedagogical and academic knowledge in order to promote greater understanding (Zeichner 2008), but, more importantly, they must also have an awareness of their own values-based positions, regarding teaching and regarding the content they teach.

In science education in general, and in environmental education in particular, it is intended that teachers challenge their students' beliefs and points of view by offering different perspectives and allowing students to consider their options and to make informed decisions (Sims 2004). Indeed, in environmental education, students are expected to, in an autonomous way, critically appraise issues related to the environment, and to develop awareness, knowledge, skills, and commitment to result in informed decisions, responsible choices concerning lifestyle and behaviours, and even constructive actions concerning the environment (Arreguín-Anderson and Kennedy 2013).

These goals demand advanced critical thinking skills and strategies from teachers, to move students forward in their thinking with open-mindedness. For this, teachers need not only to know how their work affects students' attitudes, but also to make explicit their own values in what and how they teach (Mergler 2008). According to Amanda Mergler (2008), "clarity about one's stated values, and teaching choices made in response to one's actual values, is imperative if teachers are to reflect meaningfully on what they do in the classroom" (p. 2). Striving to make this somewhat 'hidden curriculum' transparent, making explicit the values that are, in many cases, embedded in them, will help teachers to reflect about the ways in which they shape the values of their students (Mergler 2008).

The question that arises is what teachers need to assist them in this demanding task? Reflection is currently a key concept in teacher education (Korthagen and Vasalos 2005). Connecting teacher reflection to the struggle for social justice and environmental concern, and the inclusion of reflection upon the ends of education and the moral and ethical aspects of teaching in teachers' education, means that in addition to making sure that teachers have the content and pedagogical background needed to teach in a way that promotes student understanding, we need to ensure that teachers make decisions in their work with greater awareness of the potential consequences of the different choices made, and that they know how to make decisions on a daily basis that do not unnecessarily limit the life chances of their students (Zeichner 2008).

The kind of education needed today requires teachers to be high-level knowledge workers who constantly advance their own professional knowledge as well as that of their profession, being capable of reflecting on their practices in order to learn from their experience (Schleicher 2012). This does not mean that individual teachers must think only by themselves about their work. The work of a reflective teacher can not be a solitary one (Zeichner 2008). The challenge and support gained through social interaction is important in helping anyone in clarifying what he/she believes and in gaining the courage to pursue her/his beliefs. Probably, teachers' education should be focused not only on the use of reflection, but also on the use of reflection as a social practice that takes place within communities of teachers who support and sustain each other's growth (McLaughlin and Talbert 2006).

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