Mariana Parzewski

MEDIA AND ENVIRONMENTAL LITERACY: MAKING SCHOOL RELEVANT

Giuliano Reis (1), University of Ottawa (Canada)

Professor adjunto na Faculdade de Educação da Universidade de Ottawa (Canadá). É um dos autores do livro Authentic science revisited: *in praise of diversity, heterogeneity, hybridity (2008) pela SensePublishers.*

Ranilce Guimaraes-Iosif, University of Alberta (Canada)

*Doutora em sociologia pela Universidade de Brasília e pós-doutoranda em Educação Internacional e Global pela Universidade de Alberta (Canadá). É autora do livro*Educação, pobreza e desigualdade no Brasil: *impedimentos para a cidadania global emancipada (2009) pela Liber Livro.*

Juliana Reis, University of Ottawa (Canada)

Pesquisadora independente. É autora do trabalho entitulado The environment "R" Us: adding another "R" to environmental

education practices in a Brazilian public school, aceito para apresentação no 5o Congresso Mundial de Educação Ambiental (Montreal, QC – Canada).

Abstract

The formal school system has been deemed to be essential in helping build the necessary knowledge and attitudes needed to promote environmental literacy. However, in a reality regulated by inexact educational policies and strong socio-economical inequalities, any attempt to empower those living in marginalized conditions to care for their environment-on both its natural and social dimensions-can be seriously compromised. The present ethnographic case study in a science classroom in a Brazilian public school describes and articulates how the use of media literacy-based instructional strategies can inform teachers and students' critical classroom practices towards ecologizing the performance of curricula.

Key-words: popular media literacy, ecoliteracy, environmental and science education, ethnographic case study, discourse analysis, global emancipating citizenship.

> The only thing that has been sustainable up to now is poverty!
> *Ricardo Navarro, El Salvador*

Introduction

Despite the fact that research has already shown the importance of informal learning environments for the realization of environmental education (NRC, 2009; Reis, 2007b), schools are still seen as appropriate sites with the necessary structure to support this type of education, especially through a historical connection with the science classroom(2) (A. Gough, 2002; Braus, 1995; Campbell & Robottom, 2004). Although "there is no doubt that environmental education needs a radical overhaul if it is to justify its place in the curriculum" (Dillon & Teamey, 2002, p.480), the fact remains that it is a large taken-for-granted part of the official discourse of schools to this day (e.g., MEC, 1998; Reis, 2008). Therefore, if our formal education institutions are to continue to undertake the essential and demanding task of educating young people to be environmentally literate, it is important to examine the tensions that underlie this effort and how they can be remediated. For instance, inexact educational policies and strong socio-economical inequalities not only pose serious impediments for critical thinking (e.g., Noble, McCandliss & Farah, 2007;

Wall, 2000), but also increase environmental degradation (Harper, 2000), thus compromising any attempts to empower those living in marginalized conditions to rethink their relationship with their environment-either on its natural or socio-economical dimensions. As a result, teachers and students are often challenged with having to justify their value to today's society by providing, promoting, and advancing educational initiatives that are not supported by (or supportive of) the socio-political and economical structure they participate (Guimaraes-Iosif, 2009). This, in turn, can lead to a form of violence that stems from the frustration of living and working within an education system that does not encourage change. Eventually, teachers find themselves burnt-out and students no longer can identify with what they are expected to learn in schools. We (as a society) all suffer the consequences of this violence: our schools are vandalized, our teachers are sick, and we lose sight the purpose of an education that should be emancipatory. In this context, the aspiration to better living standards are frequently associated with (and demonstrated by) how much goods one can buy, which contributes to change the environment to fit the survival needs of our anthropocentric consumerism over those basic life necessities of other species (and some humans as well).

This is not to say that schools are irrelevant-we are not Illich (1972) to suggest the deschooling of society-or that formal education plays a useless role in our against-the-clock search for a way to reverse the ecological damage we have already inflicted to ourselves and the planet where we live. Formal education certainly has a contribution to offer, we believe, as long as notions of global citizenship, culture, poverty, and social justice are made explicit in any discussion about/in/for the environment in our schools as means of stating that relationships amongst humans are not distinct from those of the environmental movement (e.g., Lotz-Sisikta & Schudel, 2007; McLaren & Houston, 2004; Plumwood, 2002). Indeed, "we are the environment" (Papa, 2003). This, in turn, renders futile the dichotomous view that we (humans) are the saviors-or the villains-of the natural world. Likewise, it goes against the impetus of justifying the existence of our schools at the expense of an education that in reality oppresses rather than liberates our children and educators. Yet, the question remains: How can such an ecological education project become possible?

The environment 'r' us

It has already become consensual by now that a salvage project for environmental education "must stay relevant to the needs and interests of the community and yet constantly adapt to the

rapidly changing social and technological landscape" (Hudson, 2001, p.283). This perspective on EE requires educators and students to consider a range of aspects-social, cultural, economic, political, psychological, and ethical-other than exclusive scientific ones to attend to the environmental issues of our communities (e.g., Gayford, 2002; McKeown-Ice & Dendinger, 2000). Likewise, it involves the reframing and decentering of knowledge traditions in a cross-disciplinary endeavor that contributes to a collective (communal) work.

Only then, education will open up to opportunities for developing a more sophisticated understanding of those factors at play in the complex area of the non-human and the human genre. For example, when investigating the juxtaposition of EE and "how the environment of the school responds and affects the needs of its inhabitants" (David, 1974, p.687), it is our understanding that participants should contemplate their own conditions both within and beyond the classroom (e.g., May, 2000) and how their attitudes toward the environment are embedded in culture patterns (Skogen, 1999). If not grounded in real life scenarios, any efforts to understand, analyze, and create solutions to the ecological concerns of our time will be meaningless.

In a historical moment where ecology has become a priority around which people's lives are now revolving, the idea that we have to educate a global citizen has gained also momentum on the international stage. It is of crucial importance to imagine ways to adapt to this new reality and, in the process, develop a rational for critical ecological teaching, learning, and being in a just society. In this context, media and their technologies can afford us with an integrated and creative approach to embed all these ideals into our school practices. According to Ricardo Navarro, a Salvadoran activist, "The struggle for the environment is the struggle for our own survival; we cannot afford not to get involved."

Media as a topic of study

Media consumption is a pervasive activity in our ordinary lives, sometimes creating a mediated reality indistinguishable from life itself (Lind, 1998). Therefore, people share a common experience and a collective memory through media (Alvermann, Moon & Hagood, 1999). The fact that media producers use effective strategies to sell their stories-or sell audiences to advertisers (Fairclough, 1995)-makes media play an influential role by determining a specific cultural framework that provides a reference point for validity and acceptance of what is socially desirable (Pellechia, 1997). As a result, people relate in diverse and powerful ways to what is presented to them in the media, including aspects of

education for citizenship (Dimopoulos & Koulaidis, 2002) and environmental education (Hannigan, 2006).

The continuous and influential exposition to media contents (whether involuntary and unconscious) makes its incorporation and critical evaluation in schools to appear inevitable, especially because of the widespread practice that asks teachers to link school to the everyday world of their students (Elliott, 2006; Jarman & McClune, 2002; Phillips & Norris, 1999).

As a consequence, the ability to deal with media has become characteristic of the urge for an ecological (and scientific) literacy and an important skill for citizens in a democracy. We are better placed to address the environmental (or ecological) concerns of our time if we understand how they are presented to us through the media we use to create reality. In this scenario, nothing would make more sense than ask students to produce their own media artifacts as means to build a more concrete understanding of the how media operates-at the same time providing us (researchers and participants) with a more refined perception of what role technology media can play in an environment that-at first sight-cannot afford to consume it critically. Using media to study media should present us with an opportunity to understand that "reading is not exhausted merely by decoding the written word or written language, but rather anticipated by and extended into knowledge of the world" (Freire, 1983, p. 5).

In sum, since the environment has become a global issue that needs to be addressed seriously everywhere; it is crucial to discover modern and creative ways to bring this discussion to the school context. Using media and technology in EE projects is a perfect measure to inspire and involve teachers and students. They we will be able to expand their learning experience and their connection with the local and global realities.

Theoretical framework

In our study, we videotaped participants' during their engagement in naturally occurring science school-related and media-based environmental activities. In such situations, and for our research purposes, discourse analysis (Edwards & Potter, 1992; Hammersley, 2003; Potter, 2000, 2003) has proven to be an appropriate theoretical framework (e.g., Reis, 2007a). Equally relevant are the works of Brazilian researchers (e.g., Demo 1999, 2001, 2003; Freire 1970, 1973, 1976, 1985, 2006; Guimaraes-Iosif, 2007, 2009; Jacobi, 2003; Santos, 2003; Vieira, 2001) and others in the arena of critical emancipatory education (e.g., Delors, 1996; Howe &

Covell, 2005; Llewellyn et al., 2007; Westheimer, 2007; Westheimer & Kahne, 2004, Noddings, 2005; Pike & Selby, 1988). These references provide the theoretical tools to identify some of the challenges participants face while participating in EE initiatives with a focus on quality global emancipating education. Guimaraes-Iosif (2008, 2009) argues that educating global citizens in these times of neoliberal globalization policies and practices requires more than responsible citizens with good ecological intentions. They must be emancipated citizens and have the ability to think critically, take a stance and mobilize collectively to fight poverty and social injustice domestically and abroad. A global emancipating education teaches students how to question national and international policies, agreements and organizations that influence their way of understanding and living in multicultural democratic societies-i.e., change their social-political environment. This kind of emancipating citizenship education is based on a dialogical and critical approach, and educates people who ensure these initiatives are effective in protecting human rights and fighting social inequalities in the world, which most certainly include paying attention to the natural environment as well. Global emancipated citizens have hope, not fear, are creative, open and flexible to change, learning and dialogue. They respect the differences between the sexes, ethnic minorities, races, religions, political and sexual orientations (Guimaraes-Iosif, 2007, 2008, 2009).

In the end, what our readings do is to inform our analysis and interpretations of the observed situations in order to make them as systemic and non-individualistic as possible-i.e., where their elements (historical, social, political, natural, etc) are considered to be inseparable from one another.

The media project in Paranoá

The school where we collected our data was a public elementary school in a shantytown in the Federal District (Paranoá). The town has approximately 55,000 inhabitants, of which 10% are unemployed (Guimaraes-Iosif, 2007). Moreover, 81% of the households have no computers-i.e., no access to the Internet or computer-based technologies and information (GDF, 2006). The school we visited was founded in 1990 and has over 1,300 students distributed in grades 5 through 8. Roughly 50% of the student body receives government food subsidy that requires them to go to school-and still many students have to repeat the same grade every year. The school operates during two shifts (mornings and afternoons) and most of the teachers we met were substitute teachers. Finally, there was a computer lab with about 18 computers (only 4 were fully functional at the time of our data collection). Patrimonial robberies are

not uncommon on the school ground and police officers can be seen on school premises frequently.

This school site was chosen for two reasons: First, it had been identified previously as a marginalized institution in an underprivileged socio-economic and cultural reality (Guimaraes-Iosif, 2007), which allowed us to observe how poverty mediates what teachers' and sudents' do in school. Second, at the time we learned of an in-house prosperous environmental education program designed and implemented by the school science teacher, Mr. S(3) . The program provided us with the right atmosphere to readily delve into our research program.

Due to financial and time limitations, only one grade eight class (13-16 years old) took part in the project. The selection criteria of participants (students) respected their availability and willingness to participate and took into consideration the science teacher's preferences for working with a particular class. In this way, the selection process was made the least intrusive possible.

Once we first arrived on site, where we stayed for three weeks, we introduced ourselves to the students and gave them a short introduction on important aspects of media production- e.g., purpose and detail of information one has to provide to the audience. We hoped that this would help them write a plan for the next phase of the activity. Then, we asked students to choose one of four media activities they would like to engage: a video documentary, a photo essay, a podcast, and a web-based newsletter. After students had decided which group they wanted to join, the class was split into four small groups and they started working on their projects. Each group was accompanied by a member of the research team and no marks were assigned to this project. In the course of the activities, in which all students participated (n=42), we tried to keep in mind that we wanted to work on the possibility of technology media production as a tool to develop students' relevant abilities to deal with information in a society where it is readily available and frequently changing (e.g., Dimopoulos & Koulaidis, 2003; Ferguson, 1999; Leard & Lashua, 2006; Orlowski, 2006; Stack & Kelly, 2006). A field trip to a local newspaper plant and radio broadcasting studio followed the conclusion of the activities, which involved a public presentation of the materials produced to other students in the school.

An example from the field

The analysis of the following short conversation(4),(5),(6)(and its influence on the way the

actvitiy was guided by the researcher present) illustrates
some of the possibilities of the methodology described in the
previous section for an education that promotes ecological and
media literacy, democracy and social justice. It took place on
the second day of activities at the school, when all groups
met a second time to plan for their media projects (in this
case, the podcast). The group under study here had four male
members, all of whom were present during this short
interaction.

The conversation starts with one of the researchers asking
students about the reasons for making a podcast on climate
change, a term first employed by the students themselves (01).
It seems like he had asked that before, although he is not
sure (01 and 02). He poses the question a second time (02).
Then, one of the students start responding by reasoning that
"this is one subject that is more…" (03)-when he is cut off by
a second student that says that "[it] draws more attention in
the media" (04). Here, the first student concurs (he repeats
what the second student say) and adds: "and on the planet"
(05), thus increasing the relevance of their choice of topic
and justifying the attention climate change, a socio-
scientific issue (SSI), has been getting from the media. After
a short pause, he continues his response reaffirming the place
of the matter in the media ("everyday it's on the news" [06
and 07]) and provides one example in support of what he says:
"one example is the polar caps that are melting at a speed…"
(07 and 08)-when he is cut off again by the second student,
who says "earthquake" (09). Next, the first student has the
opportunity to finish his sentence: "unexpected speed" (10).

An example from the field

In their talk, students make it explicit that media are indeed
a source of information that is valued as noteworthy (possibly
over their textbooks)-or else they wouldn't have mentioned
them. Moreover, the remark "on the planet" (05) indicates that
climate change is perceived as real. In a extreme case
formulation, SM1 states that climate change is "every day"
(06) on the news and that it has to do with the increase in
the temperature of the Earth-he uses the word "melting" (08).
He elaborates further to indicate that this event has
amplified what otherwise would have been considered a natural
phenomenon ("at an unexpected speed" [10]). This, in turn,
also demonstrates a certain knowledgeability of the subject:
How did he know that the polar caps melting process existed,
let alone that it was speeding up?

In the context of the interaction described above, the media project proved to be relevant in that it allowed students to connect school to their lives outside the classroom. More so: by concentrating on the content of what students say, we (and the teacher) could learn about students' current understanding of climate change-which creates an occasion for the design of instructional activities that address potential areas of conceptual conflict (e.g., climate change and the occurrence of earthquakes and the use of "climate change" as a more appropriate terminology than "global warming"). In addition, the fact that the project involved the use of media technology (softwares, computers, etc) offered students with an opportunity to develop certain critical literacy skills they probably wouldn't if we were not there. For example, participants learned how to produce a podcast with a certain audience in mind, write an script in a way that makes what one says sound believable, and convey a message without losing the audience one speaks to, etc. If transferable to other situations in their lives, these skills could, for instance, help them make informed consuming decisions and develop their emancipating citizenship.

Later on the day, the group was inquired further on their comprehension of the topic of their choice (data not shown). For instance, we explored one of the global aspects of their learning by asking them whether or not they were contributing to the "melting of the polar caps" even though they were thousands of miles away from the poles, and if humans (and plants) produced green house gases as part of their physiological processes. Because students did choose to talk about climate change, whatever they were asked to do was not meant to be taken as a test or probing of their abilities to display knowlegde. Quite the contrary: The objective of this (sometimes laborous) exercise was to improve their presentation and give them a small taste of what it is like to produce media; that is, we tried to make the activity as authentic as possible and relevant to the goals of each group.

In the end, students crossed the boundaries of disciplines-e.g., media studies, science, geography, etc-straightened their understanding of the complexity of the human-environment relationship, learned to listen to and respect each other's ideas in a democratic environment, gained access to technology and made sense of the value of science as a human endeavour that should be socially just. The final presentation to the other students added community value to their work.

We left the school in September (2008) and since then students have started a public anouncement program during the snack break and have continued the production of the newsletter with the support of the language teacher. We are coming back this

year to follow up with these new activities and possibly invite some of the participants to mentor other students into getting access to the same activities portrayed here. It is our hope to make this a sustainable enterprise over time.

Conclusions

The present ethnographic case study of a science classroom in a Brazilian public school offers considerable insights to our evolving societal role as a collective that cares for the natural and social environments, especially of those disfavored economically. It investigates how teachers and students can move EE more successfully into the non-elitist stream of our society through the use of media-based technologies. Hence, such an approach to EE has proven to hold the potential to promote digital multiliteracies (ecological and media) over the violence of a traditionally oppressive education system that tends to favor more traditional perspectives on learning, instruction, and curriculum. Given the increasingly diverse student populations worldwide, it is vitally relevant to consider those marginalized voices and to respect their views in order to reflect on our current educational practices.

Parallel to the work of DeGennaro & Brown (2008), and based on our field observations and videotapes of students engaged in collaborative activities integrated into their science classroom routine-particularly the production of the short podcast-we articulated the benefits of an EE project that combines ecological awareness with notions of democracy, social justice and global citizenship (ecopedagogy). This project aims to expand participants' environmental literacy and the possibilities for social (global) critical emancipation, thus making the purposes of elementary environmental (and science) education more attainable.

Acknowledgements:

Resumo:

O sistema de educação formal é considerado essencial para o desenvolvimento de uma alfabetização ecológica. Entretanto, em uma realidade regulada por políticas educacionais inexatas e fortes desigualdades sócio-econômicas, qualquer tentativa de incentivar aqueles vivendo na marginalidade para que cuidem do seu ambiente - seja ele natural ou social - está seriamente

comprometida. O presente estudo etnográfico de caso em uma sala de aula de ciências em uma escola pública no Brasil visa descrever e articular como o uso de estratégias baseadas em novas tecnologias de mídia pode facilitar as práticas pedagógicas de professores e alunos de modo a mediar uma implementação mais ecológica dos atuais currículos escolares.

Palavras-chave: alfabetização em mídia popular, letramento ecológico, educação ambiental e científica, estudo de caso etnográfico, análise do discurso, cidadania global emancipatória.

Notas

[1]Corresponding author: greis@uottawa.ca

[2]Interestingly enough, people are probably more educated now than they have ever been, both quantitatively and qualitatively. According to Orr (2004): "The plain fact is that the planet does not need more 'successful' people" (p. 12).

[3] Pseudonyms are used throughout to preserve participants' anonymity.

[4]Transcription conventions: (2.0) is a pause of 2 secs. (...) indicates ineligible answers. (.) when the transcription is not clear. [for concurrent speech. o what goes in between is relatively quieter than surrounding talk. The use of square brackets indicates additions to the text and double round parentheses indicate enclosing transcriber's comments. Arrows indicate a shift into a higher (?) or a lower (?) pitch in the utterance-part immediately following the arrow. The convention (.) indicates a less than 0.1s gap between utterances.

[5]The original transcription in Portuguese is presented in appendix A.

[6]R is the researcher who is working with the students, Sm1 is the first male student to speak, and Sm2 is the second student to speak.

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