

Environmental Educators' Views on Teaching About, For, and In the Environment

A Comparison of Educating for Sustainable Development in Manitoba and in an Environmental School in Costa Rica

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Outline



- Some thoughts on Environmental Education today
- The Whole School Approach
- Colegio Ambientalista Isaiah Retana Arias (CAIRA)
- Comparisons
- Some final thoughts



Over twenty years ago Robert B. Stevenson (1987) wrote:

While an environmental education curriculum should be interdisciplinary and focus on real practical problems, school curricula are discipline-based and emphasize abstract theoretical problems.

Recently, Edwards (2006) also questioning whether environmental education should be integrated into disciplines or exist on its own, noted that environmental education has rarely been able to establish itself in the curriculum as a subject in its own right.

We wanted to compare educating for sustainable development (ESD) in the context of a discipline oriented system as compared to alternative models.

In our context (MB), we identified our approach to ESD as an “islands of excellence” or “lighthouse” model.



"Islands of Excellence" model



- ❑ Some well qualified, committed teachers
- ❑ Supportive Ministry - (MESDWG), Grants for Education for Sustainable Development
- ❑ Third party support –Forestry, Kelburn Farm, Fort Whyte
- ❑ Special events, awards, conferences, Envirothon,



Problems with our Reach?

Benedict (1999) claimed that while there are many excellent highly visible environmental education projects that “there is little evidence that such a “lighthouse” approach actually does lead to changes in classroom practice that are sustainable over time without additional inputs or more deep systemic changes spreading to a large number of schools and pupils” (p 434).

Posch (1999) also noted that individual innovations pursued by committed teachers often came to an end when the commitment lagged, obstacles to implementation were encountered, or support was withdrawn.

The Whole School Approach



As discussed here is based on an environmental model:

Ekoskola - <http://www.eco-schools.org/>

SEEPS - <http://www.education.ed.ac.uk/esf/project-info/index.html>

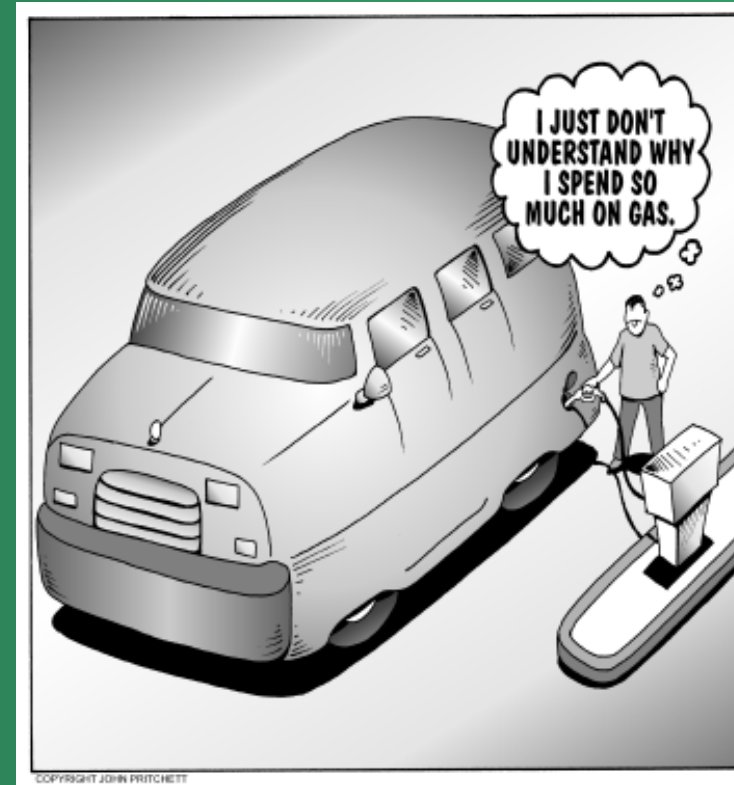
The Whole School Approach

Whole school approaches work on the assumption that the concern shown for environmental problems in the formal and taught curriculum of a school must, where possible, be addressed in the day-to-day practice in the school's non- formal curriculum.



The Whole School Approach cont'd

In this way, the values and attitudes espoused in the classroom are reflected in the day-to-day behaviour of teachers, pupils, administration and support staff. Thus, schools practise what they teach leading to values being reinforced by action (Shallcross, 2005).





The Whole School Approach cont'd


Schools practice what they teach leading to values being reinforced by action.

The content of the curriculum should also explore locally sustainable solutions to environmental problems.

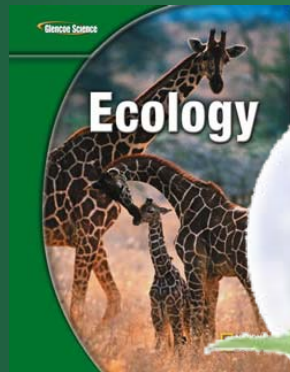
There is a democratic nature to the whole school approach, the idea is to empower and enthuse pupils to live more sustainably.

Education is *for* and *in* the environment rather than just education *about* the environment.

There is a wide reach that is sustainable over time.

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- ✓ One goal of our research is to compare current educational practices for ESD with an alternative approach.
 - ✓ School visits, observations, review of curriculum documents, teacher surveys, interviews, focus group meeting
 - ✓ Research was delineated by teaching about, for and in the environment.
 - ✓ Six teachers in Costa Rica and eight teachers in Manitoba participated.

Teaching about the environment focuses on curriculum outcomes that concentrate on environmental characteristics such as ecosystems, teaching for the environment examines current issues and how we can foster sustainability, while teaching in the environment promotes field based instruction.



Colegio Ambientalista Isaias Retana Arias



Pedrogoso, Costa Rica: www.colegioambientalistapz.com





AREA AMBIENTAL


Environmental classes meet one half day per week (4 h) for grades 7,8, and 9 and 8 h per week for grades 10 and 11.

Classes meet in the environment

All students take environmental classes.

Classes sizes are one-half the normal class size.

Environmental teachers are specialists



The environmental classes are project oriented. Students, with their teachers, literally build and manage different projects every year.

PROYECTOS AMBIENTALES



VIVERO FORESTAL Y DE ORQUÍDEAS

ZOOCRIADERO DE SAÍNOS



JARDÍN DE PLANTAS MEDICINASLES, HUERTAS ORGÁNICAS



JARDÍN DE MARIPOSAS



SENDEROS CON FINES ECOTURÍSTICOS Y CIENTÍFICOS





Some Curriculum Comparisons

- ❖ In CR there are some national curriculum courses, some still under development. In MB, provincial outcomes for ESD are found within the individual disciplines of science, social studies, health.
- ❖ Teacher developed courses, CAIRA. MB: optional vs compulsory.



Some Curriculum Comparisons

- ❖ Many of the same curricular objectives can be found in both approaches. However, a major difference is the spread across disciplines of related outcomes. At CAIRA, outcomes often divided in MB between science and social studies are found in the same course. For example formal objectives for ethics, respect, population and development can be found alongside objectives on water, soil, air, flora and fauna.
- ❖ Many outcomes connect directly to work in and for the environment. Eg. biodiversity → orchid nursery



Teachers

- ❖ There appears to be a gender balance in both CAIRA and MB.
- ❖ MB teachers teach ESD within different courses for varying amounts of time from 1- 10 h/wk and from 1-many wks/yr.
- ❖ CAIRA teachers teach ESD full time: 36 - 40 hours per week, 40 weeks per year.



Teachers

Teaching IN the environment (h/wk): MB - 1 h, CAIRA - 16 h

Teaching FOR the environment MB (h/wk): 2.5 h, CAIRA - 10 h

Teaching ABOUT the environment MB (h/wk): 4 h, CAIRA - 10 h



Teachers - % of time in place

MB

In a classroom (74.1)

In the natural environment on school grounds (11.3)

Outside of the natural environment off of school grounds (15.3)

CAIRA

In a classroom (24.2)

In the natural environment on school grounds. (63.8)

Outside of the natural environment off of school grounds (12.0)



Teachers

State the number of hours per month you are involved in environmental work in the community or organizations outside of teaching at school:

CAIRA: 0 - 30 h (avg: 10)

MB: 0 - 30 h (avg: 10)



Teaching strategies in the classroom

Lecture, Note taking, Class Discussion, Hands-on classroom activities, Student presentations, Computer assisted instruction, Guest speakers, Student debates, Student research

- ❖ Few differences between MB and CAIRA teaching strategies in the classroom. In CAIRA there was more use of hands-on activities and fewer guest speakers.



Teaching strategies in the field

Lecture, Note taking, Class Discussion, Hands-on classroom activities, Student presentations, Computer assisted instruction, Guest speakers, Student debates, Student research, Peer support.

- ❖ Few differences between MB and CAIRA teaching strategies in the classroom. In CAIRA there more use of hands-on activities and fewer guest speakers. The use of computer technologies was more advanced in MB (GIS).



Assessment strategies in the classroom

Written test, Student presentation, Performance test, Portfolio, Questioning,



More performance test in CR.



Assessment strategies in the field

Written test, Student presentation, Performance test, Portfolio, Journal, Questioning



More performance test in CR.



Integrating disciplines

Math, Science, Social Studies, Language Arts, Health, Physical Education, Arts

❖ MB more social studies, CAIRA – vocational, using tools



How did you become an environmental teacher?

- ❖ MB: interest, available position, environmentalist, science background
- ❖ CAIRA: They prepare professionally for five years in various areas such as agriculture, forestry, science, natural resources, interest, ideal profile (set by school).

How is the environmental curriculum developed?

- ❖ MB: Collaboration between teachers (very common response) or by individual teachers who are interested in issues, units in existing courses, eg S2 Social Studies, "Natural Resources",.
- ❖ CAIRA - some courses have an official, national curriculum, eg. Introduction to Environmental Problems, When there is not an official curriculum they can decide what outcomes to use for that subject taking into account the projects they have in the high school curriculum, like the nursery



Barriers to teaching ESD

- ❖ MB: Lack of funding for resources, especially field trips, a lack of connection between the curriculum and the physical environment, time, students' lack of interest, low enrolment cancels classes, school and curricular demands
- ❖ CAIRA: Resources, physical buildings, financial resources to develop the projects, some students don't want to work in the field, rain – buildings, preparation time, official curriculum



Supports to teaching ESD

- ❖ MB: Admin. support, flexible schedule, support network: programs such as Envirothon, inservices, dedicated teachers
- ❖ CAIRA: A 17 hectare classroom, “we do not just tell the students let’s imagine that we have the resources, the plants, the butterflies, we have the projects where they can apply what they learn in the classroom”, smaller class sizes (half), cooperative students (rural), parents, many of the students have parents who are farmers or do something related to the land.



Goals

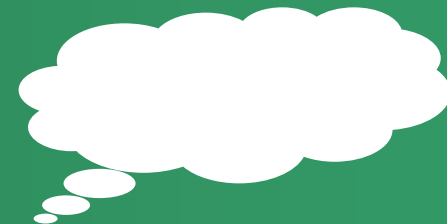
MB

To have students be informed, thoughtful stewards of our world so that sustainable living becomes the norm, shaping today and future generations.

CR

Posibilitar en Pérez Zeledón, el alcance de una cultura ambiental, por medio de acciones de conservación, protección y recuperación del ambiente natural, social y cultural, con el fin de satisfacer las necesidades de las presentes y futuras generaciones.

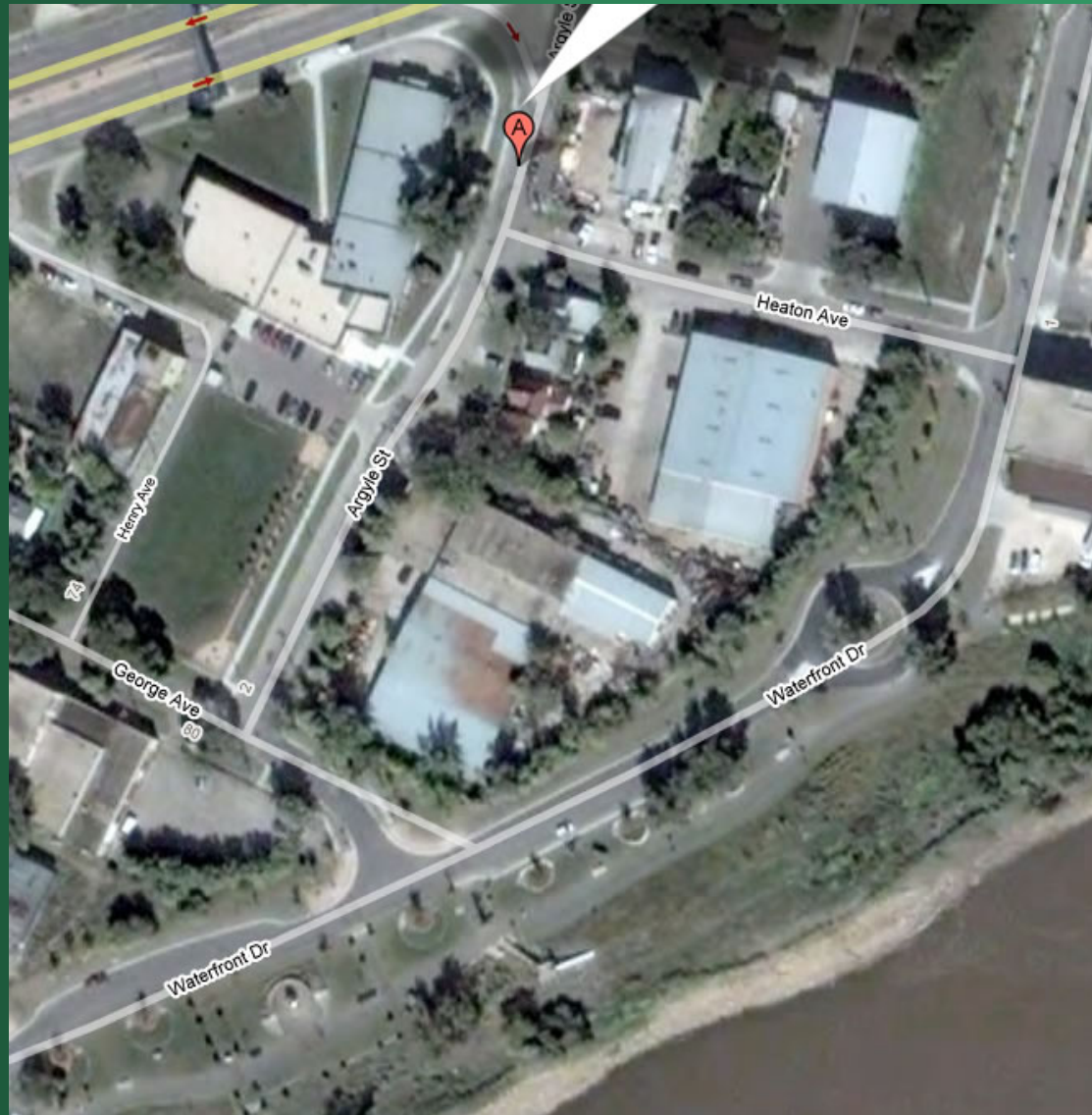
Closing Thoughts



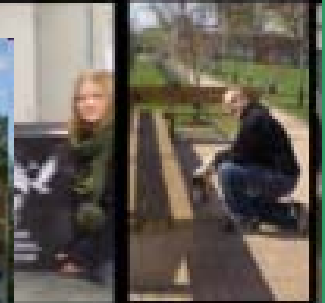
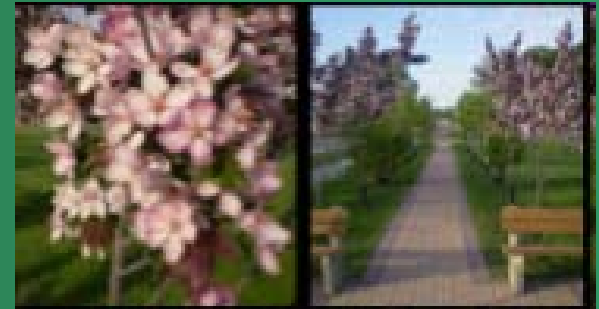
Is a whole school approach to environmental education a viable option in the context of Manitoba education?

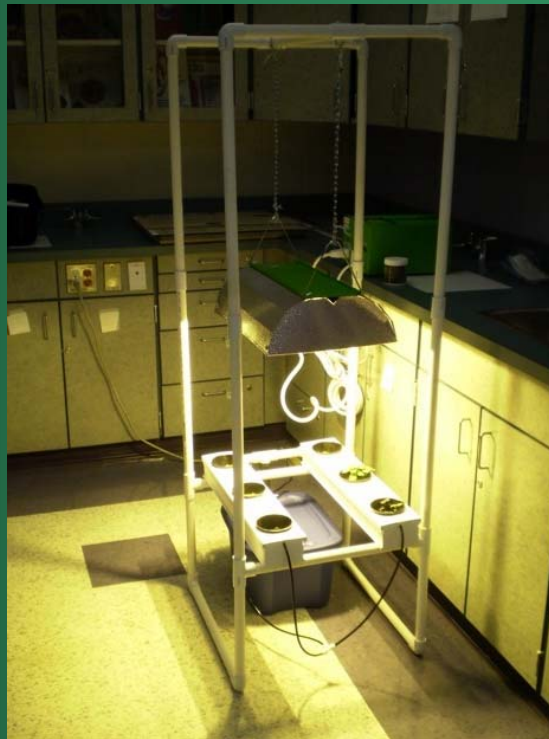
- Broaden the Islands of Excellence?
- A natural and local connection to the environment is needed.
- Rural/Urban?
- Attitudes, sense of community

Argyle Alternative High School



Argyle Outdoor Classroom (today)





Future?



Attitudes?




Closing Thoughts



Is a whole school approach to environmental education a viable option in the context of Manitoba education?

- Broaden the Islands of Excellence?
- A natural and local connection to the environment is needed.
- Rural/Urban?
- Attitudes, sense of community



Strong front end rhetoric which lacks adequate implementation in discipline centered system ... but what do we do?

- The most logical entry point would be a fully integrated S1/S2 science course – as intended
 - curriculum enabled - compulsory
 - appropriately timetabled
 - project based in the community

HIMNO AL COLEGIO AMBIENTALISTA ISAÍAS RETANA ARIAS

*Decidimos formar un Colegio
para así el ambiente cuidar
y sabemos que lo lograremos
con estudio empeño y bondad.*

*Lucharemos con fuerza de adentro
para así nuestra flora salvar
y la fauna que se está extinguiendo
todos juntos vamos a conservar.*

*Superarnos es nuestra meta
aprender para nunca olvidar
que debemos cuidar el planeta
nuestra patria y también nuestro hogar*

*Con orgullo diremos al mundo
Costa Rica es bella en verdad
pues sus ríos, sus valles, su gente
son tesoros que nunca se irán.*

*Lucharemos con fuerza de adentro
para así nuestra flora salvar
y la fauna que se está extinguiendo
todos juntos vamos a conservar.*

*Superarnos es nuestra meta
Aprender para nunca olvidar
que debemos cuidar el planeta
nuestra casa y también nuestro hogar.*

Letra y música. Dixia Barrientos

Año 2002

Arreglos: Prof. Andrés Hernández

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MERN Research Forum on Teaching and Learning in Science, Mathematics and Technology, February 6, 2009, University of Manitoba