
Closing Address

Education: *Is It an Essential Ingredient for Community-Based Water Management?*

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In the past, we have had a very linear view of education. That view of education has privileged the producers of scientific knowledge and those that teach it. We take people who do not know the current threats and problems, and we take that knowledge to them. That knowledge, coupled with the knowledge we share on how to solve the particular problem, will then, almost magically, result in healthy ecosystems.

In fact, lack of knowledge may be only a small obstacle in moving toward a more sustainable ecosystem. If we look at the pyramid of social control, we can begin to understand why structures and actions are in place that lead to ecosystem degradation. And we can identify the best ways to change those structures and actions. Education has a pivotal role to play, but not always in the linear way our older models of ecological change suggest. Our concern as water educators is to understand why people act in the public interest.

We can look at action in response to different kinds of social control. The best kind of social control is *internalization*. People want to do the ecologically responsible thing and know how to do it. In that case, our job as educators is to simply keep them informed of new knowledge that helps them do it even better. But let us suppose that people want to do the right thing, but don't know how. Then our work as educators is to bring them the knowledge and technologies to enable them to do this successfully. This can be viewed as identifying and increasing *human capital*.

But often that is not the case. The next level of control is social pressure. There may be negative social sanctions for those who act in ecologically responsible ways; they may be laughed at or ridiculed as "wusses". Or the social pressure may encourage people to conserve water even though they don't want to, because of the fear of being regarded as socially irresponsible. Thus part of an educator's job is not just to transfer knowledge and technology to individuals. It is necessary to organize groups that share the values to create the necessary social pressure to change structures and behavior. The educator's role is expanded to create *social capital*.

When social pressure doesn't work, the perpetrator of the ecological infraction may live outside the community, may be a corporation, or may be surrounded by others who see

environmental exploitation for the sake of a profit as perfectly acceptable. In that case, it is necessary to evoke economic sanctions. These can be of two types: positive sanctions, such as cost sharing, payments for ecosystem services, and earning more for ecological products or negative sanctions such as fines and lack of access to premium markets. In this case educators can mobilize *financial capital* as part of their educational activities.

Yet there are cases when even economic sanctions are ineffective. In that case, force becomes the ultimate sanction. Positively, in order to avoid the polluting in the first place, land can be zoned to exclude the polluting activity. Negatively, the operation can be shut down. In democracies, this requires mobilization of *political capital*.

Capitals are resources invested to create new resources over a long time horizon. The environmental educator must maintain a balance among the different types of capital in their work. These types of capital include natural, cultural, human, social, political, financial, and built capital.

Natural Capital

Natural capital includes:

- Air
- Water
- Soil
- Biodiversity (plants and animals)
- Landscape
- The biophysical setting that impacts human endeavors and that is impacted by those activities.

For environmental educators, natural capital means healthy ecosystems, multiple benefits. To achieve that, educators stress:

- Systems and interdependence are characteristics of the biological and natural order
- Natural sciences, social sciences, and humanities disciplines contribute to understanding of the environment and environmental issues
- Learner connections to immediate surroundings provide a base for understanding larger systems, broader issues, causes and consequences
- Human communities are mindful of natural systems
- Ecosystems yield multiple community benefits
- Those with conflicting uses of the ecosystem seek common ground
- Effective education generates and makes use of data about the local conditions

Cultural Capital

To achieve natural capital, educators have to invest *cultural capital*, which includes:

- Symbols
- Ways of knowing
- Language

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- Ways of acting
 - Definition of what is problematic

Cultural capital determines how we see the world, what we take for granted, what we value, and what things we think possible to change. Hegemony allows one social group to impose its symbols and reward system on other groups.

As environmental educators invest in cultural capital, they build on different heritages, which they seek to maintain and value. That includes:

- Recognizing and valuing cultural differences
- Identifying mechanisms to maintain ancestral languages and customs
- Taking the time to understand and build on different ways of knowing and doing.
- Taking into consideration the community as a whole, including: socio-political, economic, historical, and cultural influences
- Building on locally existing skills and resources
- Reaching people in multiple ways

Human Capital

Traditionally, environmental educators have invested in *human capital*, which includes:

- Education
- Skills
- Health
- Values
- Leadership

These are the characteristics and potentials of individuals that are determined by the intersection of nature (genetics) and nurture (determined by interactions and environment).

Educators increase human capital by increasing the use of the knowledge, skills, and abilities of local people. That includes improving:

- Questioning and analysis skills
- Knowledge of environmental processes and systems
- Skills for understanding and addressing environmental issues
- Personal and civic responsibility
- Identification of skills, knowledge and ability
- Augmentation of skills, knowledge and ability
- Use of skills, knowledge and ability
- Recombination of skills, knowledge and ability

Social Capital

Investment in *social capital* includes the environmental educator building:

- Mutual trust
- Reciprocity
- Groups
- Collective identity
- Sense of shared future
- Working together

Social capital involves the interactions among individuals that occur with a degree of frequency and comfort. *Bonding social capital* consists of interactions within specific groups and *bridging social capital* consists of interactions among social groups.

Social capital has two dimensions:

- Bonding
 - Tight, exclusive networks
 - Strong distinction between insiders and outsiders
 - Single answer focus
- Bridging
 - Open and flexible networks
 - Permeable and open boundaries
 - Legitimization of alternatives

Social capital includes strengthened relationships, communication, community initiative, responsibility, and adaptability. Educators who build social capital understand that it:

- Evolves from work with a coalition or group
- Supports a person who takes responsibility for managing or leading the process, and relies on quality group planning and facilitation techniques
- Builds effectiveness through linkages to other communities, partners, and resources
- Relates to long-term community vision and goals

Political Capital

Political capital is a difficult area for environmental educators. The belief that knowledge is enough means that politics with a small *p* is often avoided at all costs. Yet political capital involves the basics of holistic environmental education.

- Organization
- Connections
- Voice
- Power

Political capital is the ability of a group to influence the distribution of resources within a social unit, including helping set the agenda of what resources are available. That often means putting environmental resources on the policy agenda.

Investing in political capital means increased voice and influence.

- Those who are concerned about environmental issues are organized and work together.
- Excluded people know and feel comfortable around powerful people.
- The issues of excluded people are part of the political agenda.
- Agencies and communities
 - Build value for education as part of policy development and implementation
 - Offer avenues for participation that are competent, fair, and enhance involvement for all levels of responsibility
 - Build skills for flexibility and responsiveness to environmental issues and for facilitating community engagement

Financial Capital

Environmental educators need to invest *financial capital* to achieve ecological goals.

That includes:

- Debt capital
- Investment capital
- Tax revenue
- Savings
- Tax abatement
- Grants

Financial capital is made up of forms of money used to increase build the other capitals. Financial capital is often privileged because it is easy to measure, and there is a tendency to put other capitals into financial capital terms.

Built Capital

Environmental educators often use *built capital* as they work with communities to increase water quality. It includes:

- Sewers
- Water systems
- Constructed wetlands
- Riparian buffers

Built capital for environmental educators is human-constructed infrastructure used to enhance other capitals, particularly natural capital.

Investment in financial capital means that conservation does not take place at the expense of a vital economy. But a vital economy is not defined in terms of growth, but as appropriately diverse and healthy economies, which include:

- Reduced poverty
- Increased business efficiency
- Increased business diversity
- Increased community residents' assets

Finally, environmental educators depend on continuous learning in the context of community. That includes assessment (measurement), reflection, action, assessment, reflection and adaptive action.

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