"I Think I Can"

Building a Sense of Ecological Efficacy in the Classroom

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One major obstacle to sustainability in today’s society is a feeling of separateness from the “natural” world, often leading people to feel vulnerable to elements of nature, and unable to shape the world around them in the interest of ecological well-being. In order to prepare the next generation to live sustainably, we must help them to (1) recognise their relationships with the natural world, and (2) build a healthy sense of efficacy with regard to those relationships. This paper will discuss the importance of self-efficacy in achieving these tasks. Utilising Bandura’s social learning theory, I will suggest some strategies for adapting ancient practices to build a healthy sense of ecological efficacy in post-industrial classrooms.

When thinking about how we might enable our children and grandchildren to remedy the ecological problems now facing planet earth, we would do well to remember the story of The Little Engine That Could. In this old tale, a small steam engine is faced with the impossible task of lugging freight over a treacherous mountaintop. While other, bigger engines reject the task, claiming to be too weak, too important, or too old to manage it, the tiny little engine takes on the challenge himself and chugs-chugs up the high, steep slope, chanting “I-think-I-can-I-think-I-can” the entire way. It is the little locomotive’s unrelenting faith in his own ability that eventually gets him up the slope and over the mountain to deliver the precious freight on the other side.

Aside from the unfortunate image of greenhouse gases pouring out of the little steam engine as it puffs its way up the mountainside, The Little Engine provides us with a fantastic metaphor for the type of stamina needed by future generations to deal with the massive ecological distresses generated by their ancestors. While large businesses and political institutions may be unwilling to do what is necessary to protect our planet, it becomes increasingly important for individuals to regain faith in their own ability to effect ecological and social change.

This faith in our own ecological efficacy, it seems, must stem from an understanding that humans are not separate from, but part of nature, and that they are constantly engaged in relationships with both human and nonhuman entities. Recognising this leads us to understand that most of the choices we make have consequences for nature, some less favourable than others. Environmental activists are often asked, “Do you really think what you’re doing will make a difference (for the better)?” Recognising our relationships in the natural world helps us understand that refraining from pro-environmental behaviours makes just as much of a difference, perhaps small, but for the worse. The real choice before us is not between trying to make a difference and not trying – either way our actions will carry consequences for the planet. In recognising our role as part of the natural world, we allow for a two-pronged faith: faith that ecological conscientiousness will help the planet, and likewise, faith that lack of conscientiousness will produce negative effects.

Post-industrial cultures, unfortunately, have been obscuring views of humans’ relationships in nature for generations. The overwhelming majority of academic thought has been based on the assumption of an essential and important dichotomy between “human” and “nature”. This dichotomy arose in Greco-Roman thinking as early as the fourth century, and went on to form the bedrock of what is often referred to as Western thought. Due largely to coercive colonial and imperial forces, the Western worldview has come to dominate institutional systems worldwide, making the human-nature dichotomy a central feature of post-industrial ontologies. Only in recent decades have
contemporary scholars begun challenging this dichotomous feature of conventional paradigms with regard to the damaging repercussions it renders on the ecological well-being of our planet.\(^4\)

One damaging side-effect of feeling separate from nature is that we feel unable to mend the ecological distress that has become so painfully evident over the past few decades. Nature is something “out there”, brute forces with their own will. Climate change is something that is happening in the “environment”, which surrounds us, and affects us, but does not truly include us. This makes it difficult to admit that we have prompted destructive patterns in nature, and even more difficult to believe that we may take part in healing nature’s ills. Many people in post-industrial cultures feel incapable of shaping the world around them.

Modern psychology tells us that this perception of our own ability is an important factor in determining our actual ability to shape the world. Social learning theorists, such as Albert Bandura, have conducted numerous and diverse studies showing a causal link between efficacy beliefs and goal attainment. Their findings indicate that our ability to do what we want to do in life depends heavily on our perceptions of our own capability. Bandura asserts that, “People’s level of motivation, affective states, and actions are based more on what they believe than on what is objectively the case”.\(^5\) Bandura termed the belief in one’s own level of agency “self-efficacy”.

Bandura’s findings suggest that individuals are more likely to be capable of effecting positive ecological change if they, like the Little Engine, retain a strong belief in their own ability to do so. If this is the case, then building a sense of ecological efficacy in individuals is an important socio-cultural step that will help enable the next generation to create a more ecologically sustainable society.

The search for socio-cultural tools

A logical place to begin taking this step towards sustainability is in schools. Growing numbers of teachers, administrators, and educational policy-makers are recognising the importance of including environmental education in school curricula. Accordingly, the field of environmental education has grown tremendously over the past half-century, taking many great strides forward in understanding how to increase environmental knowledge and pro-environmental attitudes and behaviours.\(^6\) While the field of education has drawn extensively from the literature on self-efficacy, very little research has been done on the role of self-efficacy in translating environmental awareness into pro-environmental behaviour.

In one of few existing studies, Malkus and Meinhold report that “self-efficacy does appear to play a role in understanding environmental behaviors” and hypothesise that it is predictive of pro-environmental behaviours.\(^7\) Through interviews with young adults about recycling, Ojala also found reason to believe that self-efficacy is important: “trust in the efficacy of everyday actions, besides activating hope, also led to joy over doing something meaningful”.\(^8\) Positive emotions of joy and hope, in turn, gave regular recyclers energy to continue pursuing inconvenient pro-environmental behaviours. Likewise, a group of “reluctant recyclers” expressed low levels of self-efficacy, including feelings that their behaviour “does not count for anything” and that they lack influence over societal matters more generally.\(^9\) Quimby’s research team also found that investigative self-efficacy (confidence in one’s own ability in maths and sciences) is an important factor in determining students’ interest in environmental sciences and careers. They write “environmental educators could address this need by integrating self-efficacy enhancement into the curricula”.\(^10\) I would like to suggest that educators and psychologists alike should explore further the case-specific variable of “ecological efficacy”, or people’s belief in their own ability to affect changes in nature as part of an ecosystem. Further, I argue that parents, teachers, administrators, and policy-makers strongly consider the importance of building ecological self-efficacy enhancement into not only environmental education programs, but into community learning more generally.

In order to better understand how to go about building ecological self-efficacy, we can begin with two valuable sources: empirical research on self-efficacy and the social practices of First Nations cultures. Empirical research on self-efficacy points to four categories of self-efficacy sources: enactive mastery, vicarious efficacy, verbal persuasion, and physiological-affective states.\(^11\) Examining each of these sources will help us understand why certain cultural practices of First Nations peoples are so useful in instilling a sense of faith that human actions matter in nature. First Nations cultures, unlike increasingly pervasive post-industrial paradigms, tend to frame decision-making
in terms of relationships in nature, emphasising the consequences of human choices. Using the work of Bandura and his contemporaries as a lens, I will examine some traditional First Nations practices in order to identify techniques that may be useful for educators in contemporary post-industrial contexts.

Bandura claims that enactive mastery (direct experience allowing people to see the effects of their own actions) is the most profound source of efficacy because it provides solid and authentic evidence of agency. By engaging in direct interactions with nature, such as planting, hunting, or gathering food, for example, a person may readily observe how both human and nonhuman entities are affected by various actions. In many First Nations societies, all people, young and old, participate in food procurement activities and, in the course of daily life, are faced with both decisions about how to interact with food sources and the consequences of those decisions. Choosing to harvest too many squash, for example, would result in wasted food, the attraction of unwanted pests and too little food in the following weeks.

Traditional Ladakhi society provides individuals with numerous instances of enactive mastery, as every village member is urged to participate in the delicate agricultural system that has sustained the society at altitudes above 10,000 feet. The absence of rigid work roles allows all individuals to gain a number of different mastery experiences throughout their lifetime. This includes political efficacy, as the annual rotation of village leaders ensures nearly every person an opportunity to play an efficacious political role in Ladakhi society.

Young people in Australia can gain enactive mastery through programs such as the Stephanie Alexander Kitchen Garden project, which enables primary school students to design, build and maintain a vegetable garden. Importantly, the project is embedded in the curricula of participating schools, requiring children to spend at least forty minutes a week in the garden. This provides students a wonderful opportunity to experience first-hand the challenges and rewards of planting and harvesting vegetables, thereby building their sense of ecological efficacy.

Research on enactive mastery indicates that it is important to set reasonable, yet challenging goals. This is a delicate, but important balance. If goals are too challenging, then the failures that ensue will injure self-efficacy. If goals are not challenging enough, however, success will be redundant, having little influence on self-efficacy. Difficult tasks requiring several attempts to master can be the most powerful sources of self-efficacy. Failed attempts can enhance efficacy as long as they are utilised to anticipate foreseeable problems and to derive better skills for coping with adversity. Once the task is mastered, social validation of successful strategies can make a person more confident of future mastery. It is therefore important to explicitly recognise and congratulate specific environmental actions. As many teachers already know, praising the good work of students, carefully pointing out successful strategies that produce favourable results, enhances students’ sense of self-efficacy.

Public praise also points out the individual as a model for others. While mastering a task oneself is the strongest source of efficacy, observing other people master tasks also builds belief in our own capabilities. Vicarious task mastery builds efficacy by demonstrating possible obstacles that need to be anticipated, showing that those obstacles can be overcome through perseverance, and displaying useful skills and strategies for success. When observers also witness models receiving valued benefits for their actions, such as self-satisfaction or social praise, observers also become more motivated to try similar tasks.

Symbolic modelling, involving real or fictional accounts of task mastery via communicative media such as books, film, or mythical narratives, can also enhance ecological efficacy. In the Yup’ik (Eskimo) story of the Seal Boy, for example, a young boy’s parents send him to live with the seals to learn how to hunt:

In the Seal Village, the lad learns that a truly great hunter is someone who behaves courteously. Not somebody merely expert in stealth or stratagem, or whose hunting tools are especially ingenious or deadly... but most important of all someone who understands and performs the proper protocols... Hunting seals is a matter of character and moral fiber...

While living with the seals, the boy learns the consequences of human actions from the seals’ perspective. He learns how the seals wish to be treated, and comes to understand that...
the seals are deliberately giving themselves to the hunters, but only the “good” ones, who know how to treat the seal people with respect. Respect involves a covenant not to overhunt game or waste the flesh and to share the meat and oil and skins with needy relatives and neighbors.18

By acting on this intimate knowledge of the seals’ needs and desires, the boy becomes a great hunter. Seal Boy shows youngsters that they are capable of determining what is and is not ethical themselves: the boy is not simply told about respectful treatment of seals, he successfully investigates it. While Yup’ik children cannot literally go and live in the Seal Village themselves, they can imagine what it is like to be an animal and also how that animal might like to be treated. Children gain confidence in their own ethical reasoning skills by observing Seal Boy develop his own. Voicing creative, exciting stories that demonstrate children recognising how their choices affect nature can be a useful tool in building ecological efficacy.

Vicarious efficacy research shows that in order to be effective, observers must consider models “similar” to themselves.19 Perceived similarities enhance the efficacy-building process even if the similar attributes are completely irrelevant to the task at hand.20 Age and gender are particularly influential factors in choosing effective models. This highlights the importance of pointing out pro-environmental actions performed by people diverse in age, gender, and other salient features to provide effective models for a variety of people.

Telling someone about the consequences of their actions can also build self-efficacy. Verbal persuasion is most effective in the early stages of skill development, underscoring the importance of positive efficacy feedback during childhood. An emphasis on choices and consequences is apparent in many American Indian tribes.21 V. F. Cordova, an Apache philosopher, illustrates how this concept manifested in her own family life by recalling the day that she and her siblings were enjoying a hearty jump-fest on their bed and her father found them. Rather than ordering them to stop, he calmly pointed out how the bed was constructed:

He showed us sharp metal angles, narrow ledges which held up the metal springs underneath the mattress, and the seemingly small joints that held the bed together... [and] the consequences of falling on the floor as the bed collapsed. [Then] he remade the bed and left the room... Wordlessly [my siblings and I] decided that we could find another form of entertainment.22

In painting a picture for the children of the likely consequences of their jumping, Cordova’s father granted them both agency and responsibility. The information he offered broadened the children’s understanding of the gravity of a decision to keep jumping where a simple order to “stop jumping” would have reduced the children’s agency to a choice between following orders and not following orders. Presented with this information, the children were given the opportunity to make up their own minds about what to do, placing the emphasis on their agency. Cordova explains her understanding at the time that “I would, if I were injured in the face of all that information, be the only one responsible for my own condition.” This strategy is by no means new to the field of education, however its importance in promoting pro-environmental behaviours has been largely overlooked.23

Cordova’s father persuaded her to examine the consequences of jumping on the bed at an age when she was just starting to develop the capacities for critical thinking and ethical decision-making. It is crucial that children are offered ample, accurate, credible verbal persuasion of their ecological efficacy at the same time that they are learning about the challenges and intricacies of ecological relations. This carries particularly important implications for the way sciences and civics are taught: lessons about climate change, for example, ought to point out the choices children face involving greenhouse gas consumption, and the consequences of over-consumption. Again, this concept is nothing new to educators, but its importance cannot be stressed enough. As Ojala points out, feelings of “worry” that often accompany environmental education can be both detrimental and useful in promoting pro-environmental behaviours. The extent to which “worry” can be productive depends largely on a person’s self-efficacy.24

The final factor in building ecological efficacy is psycho-physiological, namely, stress and mood variables. High stress levels impact our emotional states, and both mood and stress have a hand in determining levels of self-efficacy. High stress levels can cause muscle tension, digestive agitation, and other physical symptoms that hinder
cognitive functioning, impede judgement and distract people from accomplishing tasks. This sets firm limits to how much pressure can be placed on children to make ecological progress. Children who become overly distressed about ecological issues may render themselves less efficacious by taking on too much personal responsibility, making them feel that their actions are never enough. In many First Nations cultures, stress levels are tempered by refraining from time pressures, allowing work to be enjoyable. Cooperative community approaches may also reduce individual stress levels – when the entire community is responsible for big tasks, individuals are less likely to feel over-burdened by personal responsibility.

Conclusions for schools

Certain suggestions made in this paper apply readily to school curricula without requiring large amounts of funding or infrastructure. Creative writing projects, for example, can ask students to imagine the world from the perspective of an animal they have studied and write about the animal’s encounters with humans. Science projects can provide opportunities for direct interaction with nature, for example growing plants or going for walks to observe wildlife. Maths classes can include equations involving the effects of consumption patterns on greenhouse gas emissions. History classes can entail explorations of ecological “success stories” featuring people from a variety of ethnic, cultural, and gender categories to ensure that each student is provided a model with whom they identify. Much praise should be afforded to the many educators who are already engaging such methods – building self-efficacy in teachers is also a very important task!

Intensive interdisciplinary units could also be designed with the express purpose of enhancing ecological self-efficacy. Students could, for example, put together a school fête for Earth Day including fundraising activities relating to the day’s significance. The students could study relevant non-profit organisations, and democratically choose one as the recipient of the fête money. Teachers could prearrange with the recipient organisation to follow up the donation with letters and pictures detailing how the money is used. This would provide students with sources of vicarious efficacy (by giving them examples of people who are successfully working toward ecological sustainability) as well as an enactive mastery experience (by giving them the opportunity to contribute financially to one organisation’s efforts). Students should be verbally persuaded of their capabilities throughout the unit, encouraging them to do their best to plan a fantastic fête and choose a worthy organisation. Anxiety inhibitors could be minimised by training teachers in conflict resolution, and engaging children in regular active, outdoor, and creative activities.

Teachers, administrators, and education policy-makers should be urged to continue discussing how self-efficacy enhancement can be brought into environmental education programs. On a broader societal level, it is important that we recognise the unique role that teachers can play in encouraging a cultural re-discovery of humans’ place in nature, and we should rigorously support further initiatives in this direction. Parents, of course, also have a special role to play – by inventing fun and creative ways of teaching our children to “Think-They-Can”, we may find that their levels of interest, achievement, and social engagement will also improve.

Notes

1. Maria V. Rodrigues is undertaking doctoral studies on “A Relational Approach to Global Justice: Psychology and the World Order” in the Centre for Applied Philosophy and Public Ethics at the University of Melbourne, where she has also worked as a Research Assistant.
2. For a comprehensive critique of numerous schools of thought based on this essential divide, see: P. Dickens (1992), Society and Nature: Towards a Green Social Theory, Harvester Wheatsheaf, Sydney.
6. Readers are referred to the Journal of Environmental Education as an excellent starting point to navigate the vast body of contemporary literature in this field.
9. Ibid., p. 789.
13. It must be stipulated that I have no intention of arguing that humans ought to reject post-industrial ontologies altogether in favour of adopting ancient ways of life. In fact, it would be a mistake to think that First Nations cultures only existed in the pre-modern world: many First Nations peoples are very much alive in the present day and age, and actively engage in post-industrial society. I wish only to propose that those of us working to preserve the liveability of the planet have much to learn from First Nations traditions that produced minimal environmental destruction over millennia.
17. Ibid.
26. For some excellent guidelines on effective ways of doing this, see D. Sobel (2004), op. cit.