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Recycle Please: Teach Your School to Recycle, to Care, and to Help Solve the Climate Crisis

Ted Wells

"I HEAR AND I FORGET. I SEE AND I BELIEVE. I DO AND I UNDERSTAND." - *CONFUCIUS*

"EDUCATION IS NOT THE FILLING OF A PAIL, BUT THE LIGHTING OF A FIRE." - *WILLIAM BUTLER YEATS*

Recycle Please

TEACH YOUR SCHOOL TO RECYCLE, TO CARE, AND TO HELP SOLVE THE CLIMATE CRISIS

A 3RD TO 6TH GRADE CURRICULUM DESIGNED BY TED WELLS

BANK STREET COLLEGE • INDEPENDENT STUDY • ANN HURWITZ - MENTOR • JULY 1, 2007

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TEACH YOUR SCHOOL TO RECYCLE, TO CARE,
AND TO HELP SOLVE THE CLIMATE CRISIS

by Ted Wells

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ABSTRACT

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TEACH YOUR SCHOOL TO RECYCLE, TO CARE, AND TO HELP SOLVE THE CLIMATE CRISIS

by Ted Wells

This Independent Study offers one developmentally-appropriate way in which the elementary school teacher can help alleviate the current global warming crisis by leading students to organize a school-wide recycling program carried out in the spirit of service-learning. The reader will learn that this recycling work is two-pronged: the physical labor of recycling and the educational outreach to the school community through marketing, using posters, assemblies, videos, and more. A philosophy of education underlying this work is described in detail, as is the journey of the author in discovering this pedagogy that includes tapping into a personal environmental activism for the sake of future generations. Sources include scientific and mass media articles covering global climate change, Internet web pages, and texts covering a variety of subjects from philosophy of education to environmental story books. The ultimate goal of the curriculum described herein is to build authentic environmental awareness in a class of students and their school community through recycling and service-learning and to share this green, kid-energy with others to encourage smart, creative lifelong habits.

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"Rethinking Recycling" Web Site – *projects.parkschool.org/~recycle*
All of Ted Wells' class' videos, some student writings, photographs, and other resources are imbedded in this student created and managed website.

All student names have been changed in this text.

Cover photo of aluminum can from Whalen Metals (dunbara117.tripod.com/LAB1C) and of student recycling superheroes by Ted Wells

Dedicated to past, present, and future students of 4W.

It is not the language of painters but the language of nature which one should listen to. ... The feelings for the things themselves, for reality, is more important than the feeling for pictures.

- Vincent Van Gogh

If 98 doctors say my son is ill and needs medication and two say 'No, he doesn't, he is fine,' I will go with the 98. It's common sense – the same with global warming.

- Arnold Schwarzenegger

Earth is like a human. When the human gets a fever we get chicken soup and get to watch TV. Then we get all better. When Earth gets a fever, it has no TV or chicken soup. So it doesn't get better as quickly. We need to do everything we can to give something like a TV or something like chicken soup to Earth right now.

- Isaac Jordan, age 10

Unless we create a more carbon-free world, we will not preserve the free world. Intensifying climate change, energy wars and petroauthoritarianism will curtail our life choices and our children's opportunities every bit as much as Communism once did for half the planet.

- Thomas Friedman

I arise in the morning torn between a desire to improve (or save) the world and a desire to enjoy (or savor) the world. This makes it hard to plan the day.

- E. B. White

INTRODUCTION: NATURE – A TRUE FRIEND

> To the lover of Nature, the forests, God's first temples, as the poet calls them, are a source of unending pleasure. He takes his troubles and cares to the deep woods and is calmed by their restful and cool greenness. Or if he is in a more optimistic mood, the whole woodland seems to respond to his happiness, and its beauty and freshness thrill him with the joyousness of being alive.
>
> *- Helen Binney Kitchel*

The natural world is in crisis on multiple fronts. Extinction rates have exploded this century. The race to preserve a fraction of the biodiversity on Earth will be a massive challenge. *We* choose what thrives in "our" world in 2007, and species are disappearing to the expanding reach of this human selection that has now replaced natural selection (Meyer, 2006, p. 5). We are using up resources at unsustainable rates; deforestation and overfishing are two striking examples. Most worrisome of all, a century of massive air pollution has changed the chemistry of our atmosphere causing a rise of one degree Fahrenheit in atmospheric global warming – a threat our world is just now waking up to.

For thirty years, almost all of the scientific community has agreed that human-made greenhouse gases are creating a heat-trapping layer in our atmosphere that is warming Earth (David, 2006). In 1990, forty-nine Nobel Prize winners and seven hundred members of the National Academy of Sciences agreed, "Amplification of the Earth's natural Greenhouse Effect by the buildup of various gases introduced by human activity has the potential to produce dramatic changes in climate" (Dow, 2006, p. 19). Their report went on to warn: "Only by taking action now can we ensure that future generations will not be put at risk (Dow, 2006, p. 19). They were generally ignored.

In 2007, global warming (also known as climate change) has finally made the critical leap from the scientists' radar into large-scale societal concern. This important awareness comes just in the nick of time while we can still solve this planetary crisis.

Now is the time for actions, large and small, from top and bottom. For those of us in the teaching community, now is the time to engage our schools in doing more to promote environmental awareness as one measure to ensure a sustainable future, as a way to implement hands-on "learning-by-doing," to promote service-learning, and to better prepare the next generation to live in an increasingly fragile world.

Histories and Parallels

Do you smile to yourself when viewing the rosy-fingered dawn bringing life to a distant hill? "How glorious a greeting the sun gives the mountains," John Muir whispers gently in your mind. Do you appreciate the magic and beauty that flows through a maple tree while pondering its annual loss of leaves? Do you enjoy the tastes *and* stories of the food you eat? Does your relationship with nature bring you happiness and meaning? More importantly, are these delights heightened when you witness a child tasting them for the first time?

I was this child. My parents wanted me to feast on such joys. They understood Wallace Stegner's meditation: "Whatever landscape a child is exposed to early on, that will be the sort of gauze through which he or she will see all the world afterwards." In fact, like my parents, my relatives over many generations have shared this love and consideration of nature's power. They worked with and for nature, often for the sake of future generations – for people like you and me. I believe that today I see nature through a prism they passed on to me.

I am a combination of six generations Missouri farmers (my father's side) and five generations of Connecticut Crayon makers turned conservationists (my mother's side). But foremost, I am a teacher of children. I am a teacher in whose blood runs a pragmatism and a passion to do what I can to help the educational community come to better understand our natural world and dilemmas it now faces. I do this with the help of my ancestors, but for the sake of my descendants. Looking forward we realize, as the American Indian proverb says, "We do not inherit the earth from our ancestors, we borrow it from our children." In 2007 we are beginning to appreciate the interdependence between humanity and nature and how this connection equates to future hope and potential.

For over one hundred years we have released colossal amounts of pollution into the air and water while brutally exploiting natural resources without trepidation or foresight – all at the expense of public health and the welfare of unborn generations. In 1965, my grandfather, Allan "Tim" Kitchel, Jr. produced a documentary *The Myths and the Parallels* to educate viewers to this problem. He scripted that, "Man cannot squander his resources, cannot pollute the earth, and expect to survive." Considering our planet's ecological health, his film asserts that, "Nobody weighed the risks or assessed the damage that set in once the balance of nature was upset. Man had not sensed the correlation between his actions and nature's reactions." These were radical words for 1965 – brave words; few believed him.

I did not know my grandfather, Tim, but I knew his mother, Helen Binney Kitchel. "Grandma" Helen Kitchel was a committed land conservationist, like her father Edwin Binney. They worked hard and preserved thousands of acres of wilderness for the state of Connecticut.

In 1966, Helen Kitchel was quoted as saying on a radio program:

> To my mind conservation is fundamental. A law of survival. It involves the interdependence of all life – of plant, animal and human kind. Because man can think and plan ahead, *his* is the responsibility for maintaining the balance of nature. In fact, his very existence depends upon it (Kitchel, 1966).

Land conservation is more desperately needed today than ever before for the health of our communities, to preserve biodiversity, and for the overall wellbeing of the environment. Unfortunately, an even more important kind of conservation is also needed. Energy conservation is necessary in the twenty-first century to safeguard our planet's global ecosystem. Lower levels of electricity and gas consumption equates with burning lower amounts of energy rich fossil fuels (coal, oil, and natural gas). Burning fewer fossil fuels lowers greenhouse gas emissions (carbon dioxide, mainly). Less carbon equates with slowing global warming.

In short: *less energy used = less burning of fuel = less pollution = global warming comes under control.* This far right side of the equation will only be possible when the far left side is seriously considered on a massive scale, that is when the three

corners of the citizen – business – government triangle are aligned and in agreement with this critical goal. Reductions in energy consumption combined with clean, alternative energy supplies are the way forward if we are to live in a sustainable world.

We need energy conservation, and on a massive, coordinated scale. To do this we must jointly believe in the notion of "interdependence." Only with a belief in and understanding of our interdependence will we be able to face this challenge. Humans are naturally egocentric, we often lack an understanding in how much we are a part of and how much we depend on nature and each other. We do not connect to the fact that future lives on Earth are dependent on our actions and our planning today.

My mother, Binney Wells, recently told me how from 1950's through the 1980's Helen Kitchel celebrated "Interdependence Day" with her family on January 1 of each year to promote peace and an understanding of our connections with nature and each other.

This theme of unity can be heard loud and clear today as former President Bill Clinton and other leaders talk of helping our world consider the importance of togetherness and a more appropriate and forward-looking relationship with the natural world (Clinton, 2006). Former British Prime Minister Tony Blair now uses the word "interdependence" regularly in his efforts to promote sustainability. This word, "interdependence" along with two others, "sustainability" and "green," must quickly move to the tips of our leaders' tongues if we are to make it as a stable democratic society beyond 2100 in a world where "hope" still remains. Helen Kitchel certainly was not the first to value this important principle, but she was forward-looking as a mid-nineteenth century American to celebrate it, as was her son who followed her.

Prior to watching my grandfather's films, I knew his face from photographs, and that it looked like my own, but that was all. I never met him. A door opened into the mind of this mysterious, passionate man when my mother recently opened a closet and dug out his reels and a scrapbook. We viewed his films, and I began to connect.

His films were made in the 1960's to educate people to lighten their impact on the natural world. I am fascinated that in 2007 they inspire me to consider these exact goals and how I can best carry them forward. He was motivated to help protect the planet just

as his mother was, just as my parents are, and as I am. This is a profound and startling realization. For me, it amplifies the whole point of this paper and has a deep relevance and connection. The timing of this discovery – while in the middle of drafting Chapter One of this paper in December 2006 – was serendipitous. My grandfather's passion is now fanning the flames of my own. His message is one I strive to carry forth with a renewed sense of history, connection, and courage.

Tim Kitchel wanted to debunk the myth of unlimited natural resources. He knew these would run out with the continued population explosion and increasing consumer habits. He also knew we could not always depend on science for solutions to problems we cause and wanted to expose the myth of scientific infallibility. Most of all, he wanted to minimize pollution and educate citizens to the problems our environment was facing.

I wish more people had seen his films as he traveled the country lecturing in the 1960s. He was telling an important truth – one that has become painfully clear today – but was also exposing hard-to-hear blemishes in the American way of life.

The Myths and the Parallels was screened in the Johnson White House and Secretary of the Interior Stuart Udall wrote him several letters of praise, as did First Lady "Ladybird" Johnson. 250,000 citizens viewed the film. But his scrapbook also contains notes from Garden Club leaders apologizing for low attendance at screenings. I sense a sadness and desperation in his words as one newspaper reported them:

> 'It's hard as hell to get people to realize how serious the situation is. I spend most of my time going around arguing and lecturing. I'm try to prick holes in the apathy and indifference of most people to the perils confronting us unless we clean up the manmade mess the planet is in.
>
> 'People think I'm some kind of nut. My best friends feel I'm wasting my time. They haven't actually said it, but I can feel it, and it hurts. I'm pretty thin-skinned, I guess' (Mockridge, 1965).

I wish more people had listened to my grandfather. I wish Congress had listened to Al Gore in the 1970s. But people had "mastered nature," or so they thought. Environmentalists were "crazy" according to then Vice President George H.W. Bush on the campaign trail in the 1980's (David, 2006).

Today we realize that nature cannot be mastered. We have connected the dots to understand and face real challenges. But how long will our own species stand in the way of action? As Rachel Carson said in an interview shortly before her death in 1964:

> Man's attitude toward nature is today critically important simply because we have now acquired a fateful power to alter and destroy nature. But man is a part of nature, and his war against nature is inevitably a war against himself...[We are] challenged as mankind has never been challenged before to prove our maturity and our mastery, not of nature, but of ourselves (The Story of Silent Spring, 1997).

A Teacher's Awakening

After a childhood in love with the natural world and much my time spent in trees, in barns, or on the backs of horses, my passion was renewed a few years back when I tired of an occasional cringe in my heart. During the 2004-2005 school year, I was bothered to action. I would wince when throwing plastic Gatorade bottles in the trash at school. I would recoil when tossing out piles of old papers. Seemingly simple daily activities were hurting me, especially when I would read the news or books about the rapid degradation of our environment. Was I part of the problem?

In class we read poetry about "Robert Frost" moments, as one student called them, where nature was flowering in glory – where nature, truth, and beauty became one. Through characters and words in the poems, we readers were there to witness and to watch woods fill up with snow the darkest evening of the year; to see the world in a grain of sand and heaven in a wildflower; to pause a minute and to let the mind take its photograph of the bright scene, something to wear against the heart in the long cold (Frost, Blake, Thomas).

We celebrated nature in our discussions and writing while unwittingly we damaged her through our actions. A hidden insincerity had always slept in me that was finally revealed. I tried to ignore it at first, and I kept going through the motions. Eventually these simple tasks, disposing of papers or plastic bottles in the trash at school, along with dozens of other life proceedings I began noticing, brought about a mission: I was going to help my school learn to recycle and go "green," and I was going to make some lifestyle changes to simplify and lighten my ecological footprint.

The more I learned about major environmental problems facing our generation and the next, the more I became frustrated by my school's casual attitude about recycling. So I did something about it. My wife, Anna, and I wrote a simple recycling curriculum as part of a 2005 summer graduate school class at Lesley University. Then I put it into action at The Park School in Brookline, Massachusetts where I teach fourth grade.

Anna and I also started questioning our lifestyle and doing simple acts such as changing our light bulbs, buying a rain barrel, composting more, using less hot water, building an indoor laundry drying rack, carpooling, joining local climate action groups, organizing rallies, and talking to friends about these ideas. We want to live lightly in terms of our ecological footprint first and foremost, to help the environment, but also so we can talk to others and spread the green message. In addition, this more ecologically sensitive lifestyle lets me talk to my students authentically about ways to lighten our impacts on Earth.

What grew from the fourth grade recycling efforts to green our school was more than we expected. Teaching my kids, their parents, my colleagues, and school how to carefully recycle and care for our planet brought many of us to a higher level of connectedness to each other and to Earth. It helped all involved hang on to that "inborn sense of wonder" (Carson, 1956). From service to the school and the nine- and ten-year-old leadership, almost magically, we started to teach our community something more. We were teaching our school how to care with action, practicality, and creative spirit. I am also happy to report that there is no longer a cringe in my heart for being as much a part of the problem. In fact, my heart is filled with a new sense of purpose and accomplishment.

Abraham Lincoln once said, "All my life I have tried to pluck a thistle and plant a flower wherever the flower would grow in thought and mind" (WhatQuote.com). I had found such circumstances in my school and in my life. Many thistles have been plucked and many thistles remain at my school and in my personal habits; yet flowers are steadily moving in. I am optimistic about our work.

In the upcoming chapters, I wish to share with you how I, with the help of my students, colleagues, and wife, taught one school to recycle and to consider a greener

path. For our success to be replicable, I have included: descriptions of the major environmental problems facing us in Chapter One, some of the key projects that drive the recycling curriculum in Chapter Two, my educational philosophy in Chapter Three, a chapter written by my wife, Anna, on the value of service learning in Chapter Four, and a detailed step-by-step outline of the curriculum in Chapters Five and Six.

This program's first two years have involved much hard work, but it has been worthwhile and beneficial to my classroom instruction. I have been in many truly connected classroom communities, but I have never seen classes come together quite the way my groups have the past two years while working on this project. Perhaps it was their common sense of purpose and mission based on their hands-on recycling work around school? Maybe it was the good feeling that solving a real world problem can bring to those trying to fix it? Or was it creating those class iMovie infomercials and news shows?

Most likely, it was all of these things and more. Whatever the case, the unit brought out the best in my students and it unified them. It highlighted something special about the power of service. Bringing kids together, allowing them to feel productive and helpful, and promoting service are all major goals that good teachers attempt to promote each year. This program provides many opportunities to achieve them all while helping the environment.

Although I understand that better recycling in a few schools is not going to solve all, or even one of the major crises concerning our planet's environmental health, it will help some and will trickle down to parents and other aspects of a school's ethos. Recycling can be thought of as an entry gate that leads individuals and even institutions down a green path of environmental action. Many think their personal recycling is enough to make them feel good and green, but I am sorry to say that *it is not nearly enough*, although it is a great place to start on an important journey. Acts large and small will help and will be necessary to fix our current global environmental crisis. In addition, this recycling theme provides a perfect hands-on problem for students to actively and successfully address and be guided by toward more general environmental awareness.

Environmental awareness is the ultimate goal of this curriculum. This awareness is in short supply and will be needed for the twenty-first century. The solution to our

problems will not come in any one text, person, documentary, or individual effort. It will happen through the joint efforts of millions.

This program is an ideal forum in which to work with kids as active, helpful citizens. This topic is also fertile ground for meaningful learning in core academic subjects. Students, particularly in the third to sixth grades truly enjoy this work (many high school teens and college recyclers do as well). It makes them feel helpful and productive. Is this not what we all search for in life? Why make children wait for such work? When this wonderful hook is set, lessons in reading, writing, science, social studies, and mathematics can happen alongside the marketing and physical labor of running a school's recycling program.

On a personal level we know it makes us feel good to be doing something timely and important for our environment. Of course, this environmental work and instruction comes alongside the intrinsic rewards of teaching. For me, when these two are combined, they make me whole and bring to my life a fulfillment that I want to build upon and share with others. I have no doubts that we can solve our climate crisis though gestures large and small. Starting a recycling curriculum and teaching children to care about the environment is one such step.

Why Now?

We must do this work for nature not so our children can appreciate the sunrise on her curves or to ponder her seasons, but so they can do so with their children. The waters are rising and nature appears to have had enough.

"The longer we wait, the more difficult it will be to mitigate the effects of climate change," Senator John McCain has said, then going on to ponder, "Are we going to hand our children and grandchildren a world vastly different from the one that we now inhabit" (McCain, 2005)?

Virgil wrote that, "Your descendants shall gather your fruits." And as moral citizens we must ask of ourselves: What are we leaving behind? Will it be fruit or famine for our children? Will we be able to master ourselves and provide for future generations?

Nature is wholesome, necessary, and invigorating. And yes, she can be cruel and violent, too. Ultimately, our attitudes about her are affected by how we grow up interacting with her. I have recently come to understand the power of Gustave Stresemann's words, "Just as the child is father to the man, so the impressions of one's youth remain the most vivid in manhood."

For me, growing up on a small farm in New Hampshire, nature was a close companion. With her I was vibrant and strong, unlike my time spent in the classroom or the doctor's office. She was a tree to play in, a mountain to hike, a horse to train, hay to stack, snow to slide on, and always a true friend. Like our squeaky old house and barn, and with our dogs, she was a valued member of the family. If not a member of your family, so to speak, a healthy natural world is at least a requisite life context for us all. We need her. And I have only recently discovered how hard I will fight to protect her so that my children can one day love her as I do.

CHAPTER ONE: THE CLIMATE CRISIS – OUR CHALLENGE, OUR RATIONALE

> We are now faced with the fact that tomorrow is today. We are confronted with the fierce urgency of now. In this unfolding conundrum of life and history there is such a thing as being too late.
>
> Procrastination is still the thief of time. We may cry out desperately for time to pause in her passage, but time is deaf to every plea and rushes on. Over the bleached bones and jumbled residue of numerous civilizations are written the pathetic words: 'Too late.'
>
> *- Reverend Dr. Martin Luther King, Jr.*

Over the past one hundred years, much of our culture has transitioned existing not only as a force pitted against nature, but also it has become a force *of* nature. All together, six-and-a-half billion of us are changing the unchangeable – our planet's global ecosystem and climate. Our buildings, vehicles, fires, and livestock are filling the atmosphere with heat-trapping gases such that warmer temperatures now impact our lives and threaten our future; but it is not too late.

Earth's climate has been the foundation of our evolution for millions of years. We, *Homo sapiens sapiens,* would not have come into being without such atmospheric conditions and life-lending water. We have thrived for millennia creating the wonders of the mind: language, religion, philosophy, poetry, science and so much more. But during our lifetimes we may reach a tipping point – a point of no return – where solutions to environmental problems are too late and only painful adaptation is obtainable.

Experts, including America's foremost climatologist, NASA scientist James Hansen, say that we have a ten-year window in which to slow atmospheric man-made global warming and avert a climate catastrophe (Warming expert: Only decade left to act in time, 2006). Many scientists, including Hansen, suggest a course of action that reduces carbon dioxide emissions 80% below 1990 levels by the year 2050 (Why are we asking for 80% carbon cuts by 2050?, 2007). Time is short and the consequences unimaginable. We must change course, unless this human enterprise begin its slow downward slide and

crash, followed by a devastation of meaning, ultimately moving future generations toward revised life goals of basic survival, rather than education, progress, and celebration.

Some say we may be heading toward extinction. Species extinction occurs naturally; however, rates of this biodiversity loss on Earth are now skyrocketing because of a variety of negative influences, including man-made climate change. "Species are disappearing at rates 100 to 1,000 times faster than normal" according to Yale's James Speth (2005, p. 2). Many habitats in the web of life are melting, burning, being cut down, or torn apart. Plants and animals (including humans) all work together in life, and when many fall, survival of those remaining becomes harder.

The current worldwide death toll due to intensifying and shifting weather patterns caused by global warming is currently sited at 150,000 deaths per year (Jack, 2007). Andrew Jack writes in the Financial Times that, "The World Health Organisation is finalising data forecasting that deaths linked to even a very narrow number of causes most closely connected to shifting weather patterns will reach more than 300,000 a year by 2030 [sic]" (Jack, 2007).

According to a 2006 report by Christian Aid that is supported by IPCC lead scientist Sir John Houghton, the poorest individuals in the world will be hit hardest by climate change. The report emphasizes that

> despite hand-wringing in the West about the threat to its coastlines from rising temperatures, it is the poorest who are likely to suffer most. It estimates that a "staggering" 182 million people in sub-Saharan Africa could die of disease directly attributable to climate change by 2100. Many millions more face death and devastation from climate-induced floods, famine, drought and conflict (West's Failure over Climate Change 'Will Kill 182m Africans,' 2006).

Looking centuries ahead, literally everything human – our very existence – could be at stake because of an inhospitable and rapidly changing environment.

Impacts and Consequences

A greenhouse creates warmer than outdoor temperatures by allowing light radiation to enter the space to heat the air and surfaces inside, but then that heat is not

allowed to exit. From this example, climatologists derived the term "Greenhouse Effect" to apply to the atmospheric warmth that is necessary for life on Earth. This can also be thought of as a parked car with the windows closed on a hot summer day. Another simplified description of the Greenhouse Effect is one where it is described as a blanket,

> such as a comforter or duvet that keeps our sleeping bodies warm by absorbing the heat radiating from us. If we fill the holes in the duvet with extra feathers, it will keep us even warmer. This is what we are doing to the Earth's atmosphere – adding greenhouse gases and keeping more heat in the atmosphere (Dow, 2006, p. 29).

Industrial air pollution in the form of carbon dioxide of the past one hundred years has been the major source of excess greenhouse gases. This combined with the deforestation of trees for the purpose of large-scale livestock ranching shrinks a major natural greenhouse gas absorption mechanism (forests) and replaces them with a greenhouse gas producer (cattle) and therefore causes increased release of greenhouse gases (such as methane) (Dow, 2006, p.29). The increase in greenhouse gases in our atmosphere, such as carbon dioxide or methane, is directly correlated to increasing temperatures that we call global warming. Much of these gases last for decades, meaning our problem cannot simply be turned off, but rather, it will have to be phased out over time.

A better label for global warming and its impact on the climate might not be "climate change, but rather, "Climate Chaos" as Dr. Eric Strauss, Director of The Environmental Studies Program at Boston College, described it to me (personal communication, December, 2006). Global warming is not a single, steady twist and turning up of the thermostat for all of us; this illusion only comes when worldwide weather data is averaged. Temperatures at the poles have spiked, but at the equator they are rising more slowly. For all of known human history, climate temperature changes were not something one would witness in a lifetime, but by generations and over centuries – that is, until now. We are currently witnessing chaos in our weather patterns due to changes in the global climate.

The winters in my hometown of Hopkinton, New Hampshire are quite different in 2007 than they were in 1987 when I was twelve-years-old. Today, winter is much shorter, warmer, and the ski industry relies on "manmade snow." I have friends in Montana who

indicate they are experiencing a twenty-year drought that is drying out their trees and filling their big sky with smoke from larger than ever forest fires. Alongside the smoke, they describe new weeds and insects creeping north. I know a family from Port Hood Island, Nova Scotia who say the small island they live on will be cut in half by erosion and rising waters.

Thomas Freidman describes a changing climate in three locations around the world in his New York Times Magazine article *The Power of Green.*

> I went to Montana in January and Gov. Brian Schweitzer told me: 'We don't get as much snow in the high country as we used to, and the runoff starts sooner in the spring. The river I've been fishing over the last 50 years is now warmer in July by five degrees than 50 years ago, and it is hard on our trout population.' I went to Moscow in February, and my friends told me they just celebrated the first Moscow Christmas in their memory with no snow. I stopped in London on the way home, and I didn't need an overcoat. In 2006, the average temperature in central England was the highest ever recorded since the Central England Temperature (C.E.T.) series began in 1659 (2007, pp. 45-46).

Severe changes are happening, and they are happening now. Climate chaos can be seen on the daily news in the form of tornado, heat wave, drought, forest fire, and even the heavy snow in Denver, Colorado in the winter of 2006-07. Warmer air temperatures soak up more moisture, which ultimately falls back down to earth causing surprisingly heavier-than-normal snowfall. The intense winter wind and ice storms in the U.S. Midwest and in central Europe of January 2007 are just samples of what will become more regular and more powerful. Peter Werner, of the Potsdam Institute for Climate Research says that, "In times of rapid climatic change, extreme events arise more frequently" (Europe reels as storms kill at least 47, 2007). Hurricane Katrina and these more recent events are harbingers of the damage that comes with a changing climate. Climatologists predicted these types of weather events long ago (Blakemore, 2007).

Dramatic, large-scale changes are now observable with ever-higher average temperatures. These will continue and increase in intensity and impact on plant and animal (including human) populations. A sample of concerns from the April 6, 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report warn of melting polar ice, cracking ice sheets, rising ocean levels, acidification of the oceans, shorter winters, melting glaciers, decreased river flows, altered growing seasons, stronger

hurricanes and tornados, more precipitation in some areas, and droughts in others (Adger, Pramod, et al., 2007).

The list is seemingly never-ending, as are the impacts of climate change on nature. The most clear and compelling evidence of all from the April 2007 IPCC report is that eleven of the twelve years from 1995-2006 rank among the top twelve of Earth's warmest years on record since 1850 when such records began (Adger, Pramod, et al., 2007).

Warmer average temperatures have started melting almost every glacier on Earth, including those in the massive Himalayan range, the spring runoff of which provides 40% of the *world's* population with at least half of their water (David, 2006). The prospect of massive water shortages is terrifying. How will Californian cities fare when the Sierra Nevada range loses its glaciers (McFarling, 2003)? How will Amazonian communities and ecosystems endure when the source of their greatest-of-rivers has melted completely away?

Melting polar ice caused by global warming is also raising the level of the sea. Invading ocean waters could force massive refugee migrations on a scale *one hundred times* Katrina's impact and provoke armed conflicts over land and limited resources. In fact, migrations have recently started. Geoffry Lean reports that:

> Rising seas, caused by global warming, have for the first time washed an inhabited island off the face of the Earth. The obliteration of Lohachara island, in India's part of the Sundarbans where the Ganges and the Brahmaputra rivers empty into the Bay of Bengal, marks the moment when one of the most apocalyptic predictions of environmentalists and climate scientists has started coming true.
>
> As the seas continue to swell, they will swallow whole island nations, from the Maldives to the Marshall Islands, inundate vast areas of countries from Bangladesh to Egypt, and submerge parts of scores of coastal cities (2006).

Many people will relocate to higher ground as water moves in. Most people will move to find water to drink. Most people will also adjust to discover food. But untold millions will not. Global warming will change agricultural patterns leading to major stresses in our societies and economies. Scientists say warmer temperatures and higher levels of carbon dioxide will benefit agriculture in some areas for a brief period, but that:

> Beyond 2050, or beyond 2 [degree Fahrenheit] warming... its effects on agriculture will turn decisively negative everywhere, as rising temperatures and variable, extreme weather reduces crop yields, while the opportunities to adapt, to introduce new crop varieties, and to move agriculture into formerly colder areas, are progressively exhausted. With at least 9 billion mouths to feed, a declining food supply will indeed be a crisis (Ackerman and Stanton, 2006, p. 14).

In a December 2006 interview, economist Jeffery Sachs, echoing the concerns of his mentor, sociobiologist E. O. Wilson, described environmental change and the staggering recent loss of biodiversity as a "massive process of neglect." He believes that thoughtless destruction of rain forests, over-fishing of the oceans, and the release of climate-warming gases is "a huge and unnecessary threat to other species and ultimately, of course, to ourselves." Sachs concludes that it is possible for us to "manage our economies in a way that would be sustainable for our own species and for other species on the planet as well. We could actually solve these problems if we didn't run away from them" (Sachs, 2006).

Environment or the Economy?

The commonly accepted argument that saving the environment will hurt the economy is deeply flawed and, in fact, backward, especially when looking fifty years into the future. Recent studies make clear that we must preserve our environment to save our future economy from ruin (Sachs, 2006). British government economist and former World Bank Chief Economist Sir Nicholas Stern's October 2006 report paints a sobering picture and will hopefully help educate leaders and change minds. Prime Minister Tony Blair has called Stern's report the most important he has ever received and says that it is, "the final piece of the jigsaw to convince every single political leader, including those in America, China and India, that global warming must be at *the top* of their agenda" (McLaren, 2006, emphasis added).

The Stern Report suggests that by 2050

> inaction on climate change will result in a depressed economy worse than the Great Depression of the 1930s. And that the financial cost will be higher than the Depression combined with the two world wars. And in human terms the resulting drought and

> flooding will displace 200 million people from their homes creating the largest human migration in history - all of them refugees. With up to 40% of world's known species set for extinction. To avert this tragedy the report says we need to spend 1 per cent of global [Gross Domestic Product] per year, roughly what is spent worldwide on advertising (MacLaren, 2006).

Recent events are bringing the global warming issue into our lives and onto our televisions, and the topic will most likely be front-and-center in the 2008 U.S. Presidential election. Awareness needs to be raised, and this venue can potentially hold a spotlight to global warming's threat. By 2008, all candidates will be forced to have an opinion and a strategy to battle this concern.

There are currently several proposed carbon cutting bills in the House and Senate. This is exciting news only if the public's interest is raised. For legislation to pass through the Congress and avoid a Presidential veto, the public will need to take up the issue on a much broader scale.

Stern's 600-plus-page economic report is as exhaustive and technical as it is compelling and it will not be widely read, although it is interesting that this report on the future of our global economy seems to be getting more attention than earlier reports about the effect of climate change on human health and possibility.

Polar Bears and Politics

The answer to the question of what will spark broad concern about global warming may lie in the sad image of polar bears drowning during extended swims and perishing due to loss of food and habitat. As reported on CNN.com:

> The reduction of sea ice has led to drownings and starvation of some animals, and weight loss and reduced cub survival in other populations. There has been a thinning of sea ice in some parts of the Arctic of 32 percent from the 1960s to the 1990s, according to the department [of the Interior] (Walton, 2006).

And Jeffery Kluger of Time Magazine went further to say that,

> It's not just the fact that the bears are dying that's so alarming, but the way they're dying — and all of it points to a warmer world. Spring ice that the bears rely on as fishing platforms has been breaking up about three weeks earlier than it used to. Though polar bears don't hibernate, they do retreat to dens in the winter to escape bad weather. When

> they emerge, they badly need to replenish their fat supplies, and slashing three weeks off the dining schedule does not help. Scientists who track bear populations report that fewer cubs are surviving into adulthood — never mind the ones that aren't getting born at all — and those adults that are observed are often thinner than they used to be. Some bears have been resorting to cannibalism to survive and others are simply turning up drowned, trapped in open water as they try to paddle to ice floes that have melted away (2006).

The plight of the polar bear in the news, timed with seventy- to eighty-degree temperatures in January 2007 along the *entire* east coast, waterskiing in Minnesota, and newfound media attention might be the final straws to spark large-scale concern, and if we are lucky, action. Citizens are at times more apt to speak up for the voiceless and the innocent – for animals and unborn generations, in this case – than they are for our own kind.

The polar bear, especially Berlin's adorable cub Knut, is drawing attention to the issue of global warming, as animated penguins in the film *Happy Feet* are urging millions to stop the over-fishing of our oceans for the sake of their health and survival. The polar bears, along with altered weather patterns in early 2007, are bringing the issue into broader public view, especially for those who do not read the science section of the paper or who will not watch Al Gore's documentary.

The melting polar ice caps' devastating impact on polar bears will perhaps be more broadly convincing than any economic report. At the end of 2006, the Bush Interior Department finally proposed listing polar bears as threatened with extinction under the Endangered Species Act because the animals' sea ice habitat is melting (Roach, 2006). This comes, however, only after five years of lawsuits by environmental groups and increasing public awareness of climate change. Formal announcements are still a year away. One more year wasted in denial of good science by some of the most influential leaders in the world who happen to get millions in political funding from the energy industry!

In this relationship between Big Oil and the Executive branch of government lies a stark example of an inborn political agenda at the expense of a healthy environment and the public's health. In the 2000 election, the energy industry "contributed over $48.3 million to George W. Bush and the Republican Party, and it has donated another $58 million since the president's inauguration" (Kennedy, Jr., 2004, p. 96). After such "donations" it is hard to find Bush employees without energy industry connections.

In this relationship has been born a monster in the form of climate change denial at the top. Luckily this denial is being picked apart by recent IPCC reports and even in military reports. A panel of retired military officers working together for the Center for Naval Analysis (CNA) research organization wrote in their April, 2007, findings that "Climate change can act as a threat multiplier for instability in some of the most volatile regions of the world, and it presents significant national security challenges for the United States" (Sullivan, Bowman, et al., 2007, p. 1). Their report covers topics from the effects that a changing climate will have on bases, weapons platforms, and equipment lifespan, to the effects of water shortages in parts of the western U.S., and more significantly, how warfare and conflicts in the developing world sparked by food and water shortages will add additional stresses on our military when on humanitarian missions. They advise our military to act now on climate change, yet the Commander in Chief is not listening.

The scientific community (in boldest form through the IPCC), grassroots environmental activism, the business community's U.S. Climate Action Partnership group (USPAC), and the CNA military voice are joined by the U.S. Supreme Court's April, 2007, decision ruling that the federal Environmental Protection Agency should consider carbon dioxide a pollutant to be regulated in the EPA's administration of the Clean Air Act. Yet, after careers spent *fighting* EPA regulation, former energy and chemical industry executives and lobbyists now *head-up* the Department of the Interior and EPA and they are resisting this Supreme Court decision. Denial remains. Denial at what expense? How will history judge our slow-motion, undemocratic reaction to the climate crisis?

If only human faces and the voices of scientific reports of the past thirty years could convert those still in denial and in the dark. Former United Nations Secretary General Kofi Annan called the United States leadership "out of step, out of arguments, and out of time" on the climate change issue (UN chief issues climate warning, 2006).

It seems that reports come in on a weekly basis that would disprove the "stay the course" executive agenda on climate change. We are now learning that predictions of when the Arctic will be ice-free were conservative; this shocking change will come

earlier than expected. Scientists now think the Arctic summer sea ice will be gone by 2040 (Roach, 2006). With so many reports finally hitting the mainstream news media, combined with Al Gore's powerful documentary *An Inconvenient Truth*, it appears that climate change is only recently – during the drafting of this paper, in fact – entering the global community's collective consciousness.

Perhaps the new leadership in Congress will take up this issue with the ardor and urgency it deserves. Perhaps the U.S. citizenry will demand action on climate change. Perhaps Al Gore and Kevin Wall's "Save Our Selves" 7/7/07 rock concerts on seven continents will unite the world to tackle this problem. Many are hopeful that Bill McKibben's 1,400 grassroots "Step It Up 2007" rallies across the country on April 14, 2007 will put pressure on Congress. Through such rallies it is obvious that the citizenry wants bold federal legislation, such as Senator Bernie Sanders' proposed "Global Warming Pollution Reduction Act" (S. 309). This bill will amend the Clean Air Act to include carbon dioxide. This is the gold standard of necessary legislation. Other proposed bills fall short of the necessary action.

According to Senator Sanders' website,

> The Global Warming Pollution Reduction Act requires that the U.S. reduce its emissions to 1990 levels by 2020. By 2030, the U.S. must reduce its emissions by 1/3 of 80 percent below 1990 levels; by 2040, emissions must be reduced by 2/3 of 80 percent below 1990 levels; and by 2050, emissions must be reduced to a level that is 80 percent below 1990 levels.

In the words of the bill itself, this act would make into law requirements

> to reduce by calendar year 2050 the aggregate net level of global warming pollution emissions of the United States to a level that is 80 percent below the aggregate net level of global warming pollution emissions for calendar year 1990 (http://www.govtrack.us/congress/billtext.xpd?bill=s110-309).

The Sanders bill (which was written and proposed in 2006 by Senator James Jeffords of Vermont, who is now retired) is what is necessary to fix this problem according to leading scientists like James Hansen (Why are we asking for 80% carbon cuts by 2050?, 2007). It is more than other 50 percent or 66 percent reduction bills. It is more than lip service or band-aids and is far more than anything the White House has asked for.

Ties and Lies at the Top

In his January 2007 State of the Union speech, President Bush said, "These [alternative energy] technologies will help us become better stewards of the environment – and they will help us confront the serious challenge of global climate change" (Bush, 2007). Many concerned citizens were encouraged that the President has publicly called climate change "a serious challenge." However, many question his sincerity and noticed that his vice president and chief energy policy advisor sitting behind him appeared to be having trouble restraining his laughter during this portion of the address.

The most disturbing cause for concern about the oil friendly Bush-Cheney administration lies in their attempts to cover-up the science and the warnings about manmade global climate change. These suspicions have been confirmed on a few occasions, most recently in February 2007 when news broke of long-term effort to influence and spread doubt about the facts and reality of global warming. This campaign of confusion and misinformation can best summed up in a joint report by The Government Accountability Project and Union of Concerned Scientists. They claim that over

> 120 scientists across seven federal agencies say they have been pressured to remove references to "climate change" and "global warming" from a range of documents, including press releases and communications with Congress (Spotts, 2007).

Dr. Francesca Grifo, of the Scientific Integrity Program for the Union of Concerned Scientists (UCS), has said, "Political interference is harming federal science and threatening the health and safety of Americans" (Goldfein, 2007). Like many concerned citizens, U.S. Representative William Clay of Missouri ties this cover-up and campaign of doubt to the oil industry. "The Bush administration has shown a blatant disregard for the health of the American people. They have shown they would rather safeguard the interest of big oil than preserve the future of the planet" (Goldfein, 2007).

CNNMoney.com describes how this UCS report also points out that ExxonMobil "spent $16 million between 1998 and 2005 funding 43 'organizations that seek to confuse

the public on global warming science'" (Hargreaves, 2007). In attempts to discredit the latest United Nation's Intergovernmental Panel on Climate Change (IPCC) report, ExxonMobil – through the guise of their friends at The American Enterprise Institute – offered scientists "$10,000 to critique findings ... which found that global warming was real and likely caused by burning fossil fuels" (Hargreaves, 2007). According to Climate Professor David Karl of the University of Hawaii, the tone of the letter with this offer was "looking for a particular outcome" (Hargeaves, 2007).

Decoupling the truth about climate change from undemocratic ties and lies of the oil industry and Bush administration is an important first step and is one that is finally happening. The next step will be to raise awareness in our citizenry about ways to help lessen our collective carbon footprint and ways to put pressure on the executive so that a veto on necessary legislation is not possible. Millions must come out in strong support of aggressive legislation in 2007. Modest carbon dioxide reductions will not be enough.

If 2006 is the year in which we woke up, hopefully 2007 will be the year in which we act. Luckily, large-scale understanding is happening now, while we still have time to do something about it. It will be a slow, challenging process to lift our collective foot off the gas and trim back American high-energy appetites. As a report from the Global Development and Environment Institute at Tufts University notes, there is such inertia in our economy and in Earth's climate that adjustments take time to produce desired results. This being the case,

> It is not possible to wait until the world begins to get uncomfortably warm, and then suddenly decide to stop. Because of its momentum, a supertanker has to turn off its engines 25 km before it comes to a stop. Likewise, we have to achieve a drastic reduction in carbon emissions several decades before we can bring climate change under control. (Ackerman and Stanton, 2006, p. 1)

We are in a race now, the most important race in which we will ever take part, but sadly many have not even heard the gun. It is,

> the race to change our politics, our technology and our personal consumption choices much faster than the world economy grows. Only unprecedented action taken with a profound sense of urgency can forestall an appalling deterioration of our natural assets (Speth, 2005, p. 12).

The greening of American politics seems to be "changing faster than the weather" according to The Economist Magazine (Green America: Waking up and catching up, 2007). Many Republicans have begun prioritizing the environment. Arnold Schwarzenegger, the Republican Governor of California is leading the charge for his party. Many other states and 400 cities are working hard to curb greenhouse emissions (2007). The obstacle remains at the top – a lack of leadership in the White House.

> Despite all this grassroots environmentalism, America remains the biggest contributor to global warming, accounting for roughly a fifth of all the world's emissions. The federal government's recalcitrance on the subject remains the biggest obstacle to an effective global scheme to tackle the problem. But whereas in Europe or Asia new ideas often flow from the centre to the regions, in America the states are the incubators of big shifts in policy. This means that change is coming—fast (2007).

Like many progressive issues, citizens and businesses are far ahead of government on the topic of climate change in the U.S. I have seen such change come from below in our other areas of life, such as our schools. Teachers often lead their schools in new, important directions. A few teachers in my school are currently trying to advance green capital initiatives and curricula, and our leaders are starting to catch up with us. Green ideas are moral and time sensitive. People will embrace them on a broad level, ultimately because they have to, but preferably as preventative measures.

If we hit pause too long? If we are too late? "The grandchildren of today's young adults will inherit a world crippled by food and water shortages, extreme and variable weather, extinctions and other ecosystem damages, and a growing danger of an even more severe catastrophe (Ackerman and Stanton, 2006, p. 1).

If we are too late, we will lose much more than the polar bear. Therefore, we cannot "hit pause" any longer. We will not say, "Too late." Together we will solve this global crisis. As we work to save the polar bear and the northern ice flows, and as we search for truth, we work to save ourselves. The ingenuity and greatness of our civilization is facing its ultimate test. This will be the century in which we come together and save our planet. As Polish nuclear physicist and environmentalist Dr. Ron Nielsen has written, our survival as a species is at risk. "We have entered a unique century, in which questions about our survival will be answered and our future decided. ... For the first time in human history, we are approaching and crossing the ecological limits of our

planet" (2006, p. 263). Now we must take a step back. We must teach each other through actions large and small how to find a healthier balance in the environment and in our lives.

Action and Hope

In 2006-2007, with special thanks to former Vice President Al Gore, a large part of our collective consciousness finally understands the unprecedented perils of global warming and other related environmental traumas. Gore stepped through a door opened in large part by the aftermath of Hurricane Katrina, a door that is now being held open by current events such as the dire straits of the polar bear, the disappearing Arctic ice, shrinking glaciers, and 70-degree weather in New Hampshire on January 6, 2007 (Temperature records fall in New Hampshire, 2007). Today we walk through this door ourselves to help address these problems.

In Gore's breakthrough documentary, he compares the climate crisis to other traumas in history. He stands in front of a slide quoting Winston Churchill: "The Era of Procrastination, of Half-Measures ... of Delays, is Coming to its Close. In its Place We are Entering a Period of Consequences" (David, 2006). The inconvenient and alarming truth is that the climate crisis could be worse for humanity then the human-derived evil to which Churchill was referring.

Churchill was right in 1936, as is the current British Prime Minister Tony Blair who says that there is "no bigger long-term question facing the global community" than the climate crisis (Norton, 2004, p. 2). Blair's Chief Scientific Advisor, Sir David King wrote in *Science* that climate change "is the most severe problem that we are facing today – more serious even than the threat of terrorism" (Norton, 2004, p. 2). Like Gore, Blair, and thousands of scientists, media mogul Ted Turner says that global warming "is the biggest crisis that humanity has ever faced" (Murphey, 2006).

When Dr. David Watson was pushed out of leadership as chair of the IPCC he was succeeded by Dr. Rajendra Pachauri, a man supported by many climate change deniers, including the Bush Administration and the oil lobby (Watson loses chair of climate panel, 2002). But even Dr. Pachauri has said, "Climate change is for real. We

have just a small window of opportunity and it is closing rather rapidly. There is not a moment to lose. We are risking the ability of the human race to survive" (Lovins, 2006).

As Winston Churchill in 1936, Gore – along with many scientists, environmentalists, and a few rare politicians like Blair or Sanders – is looking to us for help. Let's answer his call. Like Churchill, Gore is attempting to alert the world to a growing crisis – one that cannot wait. And like Dr. Martin Luther King, Jr., he senses "the fierce urgency of now;" that "tomorrow is today." He has understood for thirty years that time is short, but solutions possible.

According to James Speth, Dean of Yale's School of Forestry & Environmental Studies, there are finally indicators that the "the climate issue is beginning to gain traction, but the gap between climate science and climate policy and action remains huge" (Abbasi, 2006, p. 5).

My wife, Anna Wells, has studied this information-to-action gap while earning her Masters in Urban Planning at Massachusetts Institute of Technology. In her thesis she writes of

> a disconnect between information and awareness, as well as a gap between awareness and behavior. Studies conducted worldwide over the past two decades show that even though the majority of citizens consider environmental harms among the most serious problems confronting society today, most people do not display the corresponding pro-environmental behavior (2006, p. 43).

Anna cites Gallup Poll research that found:

> 62% of Americans believe that the Government is doing too little to protect the environment. In 2004, 49% of people living in the United States, 67% in Canada, and 67% in Great Britain said that protecting the environment should be given priority "even at the risk of curbing economic growth" (2006, p. 43).

One can assume these percentages are even higher in 2007 than when they were collected in 2004. Yes, people care, but beyond a few token gestures, they do not act.

Convincing people to act must move beyond writing papers and making movies. This message must quickly reach all facets of our lives. As a teacher, I feel that environmental education curricula in schools will help prepare the next generation while also helping trim back on the problems they will inherit. As a citizen, I feel a need to

speak up and help pull others closer to the truth about this crisis. Grass roots citizenship and politicians on lower levels of the political food chain are stepping up. Presidential candidates are starting to step up. The time is right. Ultimately all of this must lead to an awareness that forces our leaders to pass laws to protect the environment.

Millions of global citizens will have to act. This will be a caring, forward-looking activism for the sake of our children and grandchildren. This will be true activism "judged by the spirit of love" (Forbes, 2007). Sizeable measures such as leading a country or a business in the direction of using less electricity and "going green" will help. Medium sized measures like building a school that uses alternative energy sources and utilizes all available efficiencies, or leading a church congregation to take action on these issues will help. Perhaps most of all, small measures like walking more and driving less, carpooling, recycling, and reducing wastefulness will help, especially when considered writ large.

For me, an elementary school teacher, preparing children to have the attitudes necessary to care for Earth is essential, and is one small way for me to help the environment as my parents, my grandfather, and his mother all worked so hard to do. I feel a responsibility and the capability to help shift a small portion of our schools' daily schedules and energies toward environmental education. All of this not only for the environment, but as this paper hopes to make clear, also for better classroom communities and instructional pedagogies.

I have a successful initiative happening right now in my classroom, and as Reverend James Forbes, Jr. has paraphrased his friend Reverend King, "If you've got a light, put it on the lamp stand so everybody can see it" (Ashbrook, 2007). I see this light in my students and I will try to describe it and share what I know with others – and that's why I have written this paper. The recycling curriculum of this text is one small way to help close the gap between the facts and action; and it is one big way to guide children toward making a difference.

In these pages I attempt to stand with and build on the legacy of my parents, my grandfather Tim, my great-grandmother Helen, and so many others like Al Gore, Bill McKibben, and James Speth, and to spread an important message. That message is, as Speth writes, "We must all be environmentalists now" (2005, p. 12). Please stand with us.

CHAPTER TWO: MEET RECYCLING BOY – MARKETING THE PROJECT

> "The inspiration of a noble cause involving human interest wide and far, enables men to do things they did not dream themselves capable of before, and which they were not capable of alone. The consciousness of belonging, vitally, to something beyond individuality, of being part of a personality that reaches we know not where, in space and time, greatens the heart to the limits of the soul's ideal."
>
> *- Joshua Lawrence Chamberlain*

Early in our efforts to jumpstart recycling at The Park School last year, we held a poster-making contest. The winning poster would go on both sides of each of our dozen "blue bins" throughout the building. It is important to get every student involved and excited by this project early on through enjoyable, artistic activities like this one. It is also crucial to promote any recycling efforts regularly and with pizzazz. The hands-on physical work of recycling for their school is essential, but so is marketing the program and educating the community.

The forty-eight students in our three fourth grade classes had the task of designing posters individually or with a friend. The winner was to be picked by Comfort Halsey Cope, the Service-Learning Coordinator for the school. This winner would have the special honor of mass production, but all posters would go up in the halls of our large nursery-to-ninth grade school building. The winning poster and a few runners-up would also be shared on the school theater's document camera by our Head of School, Jerry Katz, in a "Morning Meeting" assembly with the entire fourth through ninth grade to kick off our service work for the school and to notify the population about how to use the new bins.

We received many great submissions for this contest. (Please see Appendices A1-A3.) The instructions were to make the posters educational, informational, creative, and clear. (Please see Appendix B for the homework assignment.) Sarah, a student with great attention to detail as well as artistic talent, made a poster with creative, eye-catching, stencil-like lettering (without a stencil) and was deemed the winner. Her poster was

photocopied; several children colored in the posters which then were laminated and secured to the sides of blue bins. We had class meetings to decide which strategic locations around the building would make the most sense to locate our bins. After talking with Mike Massauro, the head of Maintenance at Park, the kids taped up all the holes on the bottom of the bins to keep sticky juices and sodas from dripping onto and staining carpets. Finally, we were ready to put them in position.

We were ready to go! Well, almost. There are actually many other important steps to get your class or grade ready to recycle. I will go over each of these in Chapters Five and Six. I describe this poster project to give some specifics, but it also leads to a powerful story: the story of Tim and how he became our school's illustrious "Recycling Boy."

Tim's Transformation: The Birth of Recycling Boy

Tim was a quiet boy. In fact, his nursery and kindergarten teachers told me that he only said a few words during their years together. This spring before coming into my classroom, his third grade teacher told me something that saddened me during our "Hand Off" meeting. "He feels badly about himself," she said. "His self-esteem is a major concern. He is so quiet in class and often looks sad." When I asked her for more information about this, she told me an anecdote that Tim's parents had shared with her. They were watching a video of the holiday "Yule Fest" concert. While gazing at the television, Tim stated to his parents, "I'm so dark. I'm the darkest one. I hate my purple lips."

His former teacher went on to tell me about his academic strengths and challenges, of his friendships and interests, but from that moment on, I knew what my goal was for Tim in the upcoming year. I wanted to create an environment in which this boy could grow and feel better about himself. It was one of my main goals for the year.

As my intern teacher, Peter Bown, and I got to know Tim, we realized that he was a delightful little boy who could be exceedingly funny in a clever, half-hidden way and he was prized by his peers. But he was quiet in the classroom and rarely spoke up, often looking sad and lost. But with time, he started to grow.

When becoming Gods, Goddesses, Heroes, and Heroines – a major research project for our yearlong Ancient Greece study – Tim listed wanting to be Zeus as his third choice. I gave him this part thinking he might mature into it. He did! When presenting as Zeus, Tim was full of life and was a truly entertaining actor who enjoyed the stage. This surprised us, and pleasantly so. I have noticed several "quiet" students over the years who particularly like the stage as it gives them a chance to show off another, more lively side of themselves. This was the case with Tim.

For the recycling poster contest Tim created a gem. I thought it might win, but alas, it did not. It was chosen as one of runners up and was shown to hundreds at the Morning Meeting assembly. Just after this, it was lost. But Tim quietly grabbed a new piece of paper when he heard the unpleasant news and started a new one without complaint.

Tim's original poster, like the replacement, showed a larger-than-life super-hero wearing a long cape blowing vigorously in the wind. The superhero has the three-arrow recycling loop on his chest and both fists proudly resting on his superhero waistline. Two regular-sized mortals flank him and sing his song while a sense of power comes from the character centered in the horizontally framed piece of paper. (Please see Appendix A2).

A few weeks later, my class was brainstorming about ways to increase the amount of recycling that was taking place in our community of about 600 students, faculty, and staff. Things were going smoothly as we had worked out a few of the kinks, but the kids wanted to jazz up the response and get more people recycling.

I put up a chart with the question, "What can we do promote recycling in our school and in our world?" As children shared responses, I added them to the chart.

"We could make more posters," said Sandy. I wrote it down.

"I could go to each of my neighbor's houses and talk them into recycling. Maybe I could collect their cans for them?" said Richard eagerly. As I wrote this on the chart, I told the class that they should enlist a parent to go along with them if they wanted to do that.

"Why don't we put our posters on telephone poles in our neighborhoods?" asked Hylah.

"Not a bad idea, Hylah, I like how you're thinking of reaching out beyond our school community," I chimed in. "How can we teach people about this important idea?"

"Let's put flyers under peoples windshield wipers!" Meg blurted.

"I don't know if that's legal," I said, "but I can look into it."

Simon thought we could make millions of flyers and dump them on New York City using an airplane, but then retracted his idea after further thought!

Other ideas flew around the meeting circle and were turned and roasted on the collective spit of our joined mind – some possible, many not, most involving flyers. Then came the great idea, the idea that truly carried our recycling work and marketed our message effectively to thousands. This is an idea that continues to educate people on the Internet and, on November 12, 2006, was on national television. This idea is the recommended final project for the curriculum outlined later in this text.

I inserted the question, "How do messages reach large audiences these days?"

"We could write letters to the editor of the Boston Globe?" Benny said questioningly. Not a bad idea. I noticed a squirming, lanky student to my left.

It was Meg again, her hand frantically jerking in the air. I called on her and she said, "I think we should make a television commercial about recycling."

"Interesting. How might that work?" I asked.

This question led to one of those class discussions that you dream of. Everyone was involved. Everyone was excited. Creative juices were flowing alongside clear problem solving and cooperation.

I tried to keep a list of their many commercial ideas on a clipboard for future use, and then told them about the Apple computer program iMovie, which I had learned to use. I also told them about my friend Dan's "DV" (digital video) camera and how he would be happy for us use it. Peter and I joined in with their plan just enough to help it grow, but not too much. The best lessons and projects are led by the children, with subtle guidance from the teacher. I had many ideas to add, but tried hard to keep them to myself.

The logistics of implementing this video project will be described in greater detail in Chapter Six, but for now, know that it became a driving force behind our work. It was the primary reason we found so much success and had so much fun with our recycling.

One boy sparked all of this success: Tim. Tim and his magnetic personality when standing in front of a video camera enchanted many and convinced them to recycle.

During this initial conversation, one student said that we should have a superhero in our "infomercial." Another student liked the idea. I was one step ahead of them, and asked, "Who would be a good superhero for the project? Didn't someone make a poster about that?"

"Tim did!" one student answered.

"Tim should be the superhero!" another suggested with great excitement.

From there, as they say, the rest is history. Tim became "Recycling Boy" and symbolically led our grade in this effort. He was the star of the infomercial, narrating between its sections, urging us – often with his dazzling smile, super speedy legs, and quick hands – to recycle. His new persona came complete with costume. The recycling suit was one that I had Tim design for his part in the video. It started with an old "GS suit" ski-racing outfit that I wore in high school. Tim designed a white cape with an "R" on it. The traditional recycling logo – the three looping arrows representing "Reduce, Reuse, Recycle" – was taped on his chest. He also taped the letters R E C Y C L E onto a fleece cap. He looked magnificent (and can be seen on the cover of this text).

Tim amazed his former teachers by kicking off a Lower School nursery-through-fourth grade assembly. Hundreds of small children in the theater had their eyes glued to Tim and his shiny red suit as he dashed down the isle with his white cape following behind his blurred feet. I brought down the Superman soundtrack as he hit his muscle flexing poses on the stage and beamed, "Hi. I'm Recycling Boy!

"My mission on this planet is to teach everybody, including you, how to recycle and why it's good for Earth!

"I'm here with the fourth grade. We have a special surprise for all of you. It's a video of four commercials about recycling paper, bottles, and cans. Sit back, relax, and enjoy the recycling."

Everyone cheered, especially Tim's old teachers. Afterward, one Kindergarten teacher, Toni Gilligan, was almost in tears in telling me how proud she was of him and his newfound voice.

We must hope the teaching community can soon find its voice on the range of environmental problems facing our world today. This subject, along with its supporting attitudes and values, has now become as important as traditional academics in school today.

Helping build a sustainable future will not be an option for the next generation as it was for our own. They will be forced to lead green lives not by choice as some of us live today, but by necessity. Our generation has started working on these large problems, but our children will have to finish the job. It is up to us to carefully and appropriately prepare our children to be ready for the world they will inherit. With fitting, careful projects perhaps we can even help them chisel off the corners of the problems they will inherit.

The assembly continued with educational skits and announcements about how to use the blue bins. My colleague, David Lawton, an accomplished musician, led the entire Park Lower School in singing several recycling songs put to the tune of well-known songs like Row, Row, Row Your Boat. (Please see Appendix C.) We ended with our eleven-minute video infomercial projected onto the large theatre's screen and blasting through its sound system.

In January, shortly after the assembly, we had a meeting about sending our video to various television stations. We would educate our community and beyond. The children picked several shows to mail it to, and we had volunteers write letters to accompany DVDs in the packages. Others decorated the envelopes. There was great excitement in the air.

At snack that day, I was talking with several boys, including Tim, about the project. The conversation moved on to career aspirations. Many mentioned a calling to seek employment with the Boston Red Sox or New England Patriots. Then Tim said something to the effect of, "If our video gets on TV, do you think I could get some money for it?"

I told him that was probably not the case.

"Maybe if I'm an actor or model some day, I'll get some money for it?" he pondered quietly.

"Definitely!" I replied. "You're a fabulous actor. You're a good looking guy."

Tim brought up becoming a model or actor out of his own interest less than twelve months after sharing with his parents that he thought he was ugly. This was tremendous progress. Tim was now excited about his skills, and his ability to speak out and communicate with others, all of which was new to him. Tim had turned the corner with a little help from his alter ego: Recycling Boy.

His mother wrote Peter and me a thoughtful note that winter saying,

> I am extremely proud to see [Tim's] growth and development in communicating with others. He is beginning to really find his voice at Park. A special thanks to you both for facilitating this experience and giving him confidence as well as a strong sense of camaraderie with his peers. I remain grateful for this breakthrough and I too have learned more about the importance of recycling. Well done!

By winter, Tim and his fire-engine-red superhero suit with white cape was legendary. Yes, he was getting his fair share of the attention, but his classmates and I did not mind this. For nine years he had hidden from it. Now that the spotlight was on him, we were not going to pull him away just yet.

He did a super job in the video and at the assembly. He was a spectacular Zeus in his December presentation. He was clearly growing in confidence and feeling better about himself.

The shiny red recycling suit was a pretty outrageous thing to wear around school, but Tim never minded during filming. He seemed to enjoy the odd looks he got. And I could tell that others wanted to follow his lead. One day, when a team of four recyclers was getting ready to do their rounds after lunch, I asked, with Tim's blessing, if anyone wanted to wear the suit. It was time to share the spotlight. They looked at each other. Jenny finally said, "Sure. I will."

Then all four wanted to! So when Jenny guessed the number behind my back, she got to wear the suit during her paper recycling rounds becoming the first "Recycling Girl." She and her partner took a while to figure out how to put on the suit; but they got it. She looked snazzy and was excited to recycle. (Please see Appendix photo D.)

As usual, her paper team went to the West Building of our school to collect from paper bins in the Upper School classrooms. They would quietly take bins from each room and dump them into the large garbage can with wheels until it was filled with fifty to eighty pounds of paper. To get to the West Building, they had to pass through the cafeteria, and as I have heard, a wonderful moment occurred.

Jenny was one of the smallest fourth graders and could be easily mistaken for a third grader. Her brother is a six-foot-tall ninth grader who is often attached to a friend who is six-foot-four. When Jenny and her recycling partner started to wheel their paper barrel across the cafeteria, the room erupted in applause. The "big kids" were celebrating Jenny and her great outfit, but also her caring efforts to recycle. As she passed by table after table blushing, her big brother came over and picked her up off the ground in a loving embrace. Recycling Boy and Girl were leading our school and were figuratively and literally embraced by the community.

Near Sightedness

Like Tim, hopefully the educational community can grow and find its voice concerning the importance of recycling as a means to teaching environmental education and instilling responsible perspectives about our limited natural resources and a caring attitude toward nature.

Yes, trends in education point toward short-term memorization, high-stakes testing of the core academic subjects, and immediate, measurable results – *not toward* social studies-centered programs, service-learning, community-building, or environmental education. Many educators feel that this "Academic Achievement Discourse" model is largely a failure and a mistake. "The problem is that when the dialogue in education becomes limited to the narrow framework of grades, test scores, and scientifically based research, then a great deal of what education is about gets left behind" (Armstrong, 2006, p. 23). A more holistic, realistic version of teaching and assessment considers child development across more than a few subjects covered during a few months. The educational community needs an eye exam to correct the near sightedness of its vision.

A more forward-looking, inspiring version of teaching and growth considers our surroundings and current events. And interestingly enough, this kind of clear, commonsensical vision is also what helps us track trends in the health of our planet. Shortsightedness is exactly why our educational system is faltering. And shortsightedness is exactly why we are in an environmental crisis.

Time is in short supply in our classrooms, but it is essential to realize that time is also in short supply for slowing down the negative effects that humankind is having on our planet's health, and ultimately, on our own. All of our efforts to green our schools, towns, businesses, and ultimately governments are necessary. Soon, if they are not already, global markets will be looking for young professionals who are passionately committed to solving environmental problems; let's start preparing these workers today. This can be done in ways that tighten and improve your classroom community, instructional techniques, and overall sense of mission, while also serving the needs of your immediate community and beyond.

Child Centered-ness

Recycling is not always the most attractive task, but it has always felt like the right thing to do. To promote it in your school and to hook your students into the idea of it, you need to creatively pull everyone in. Asking students to lead the effort and putting them in charge is philosophically important. The lessons illustrated above and most of lessons to be described later are "child-centered" lessons and activities. This "child centered-ness" is one of the hooks.

As professional educators, we are *not* simply telling the children, "There is a problem with so little recycling around here and our school's production of thousands of pounds of waste each week. I want you to fix this with posters and a video. Then I'll have teams of two or three give up recess time twice a week to collect recycling around the building, okay?" This is a "teacher-centered," top-down example that probably would not work, as such styles are generally ineffective in the elementary school classroom.

Progressive teaching theory is an underlying theme in this curriculum that allows children to lead, to find success, and ultimately to learn. The problem of reducing our

school's waste via efficient reducing, reusing, and recycling was pitched as one for the students to solve creatively. This empowerment of children – this trust and confidence in them – is hugely important. For the specifics of implementing this program, please read Chapters Five and Six.

The next three chapters are research-based. Chapter Three describes my philosophy of education starting with the crucial component of a social studies-centered learning and tying in a belief that because of climate change (along with many other issues) we should promote more extensive environmental education and awareness in our schools. Chapter Four is a bonus chapter that my wife wrote as part of our original curriculum. It is a glowing articulation of the meaning and purpose of service-learning and why it is so important today. Finally Chapters Five and Six will tell you in detail how to set up and implement a student run a recycling program in your school.

CHAPTER THREE: FOUNDATIONS – A DEFINITION OF SOCIAL STUDIES, A PHILOSOPHY OF EDUCATION

"There is no other way to learn except by doing."

- David McCullough

"Making learning meaningful is the core of teaching. If children don't connect what's going on in the classroom with their minds, their hands, and their hearts, then it seems to me that not much learning is going to occur."

– Tarry Lindquist

To learn best, children must study topics deeply and for long periods of time. Children grow attached to and fond of their school projects while pondering ideas for months. With time and therefore depth, learning becomes interesting and connections are made. Learning becomes meaningful, and therefore memorable, through active hands-on work and problem solving. True learning is interdisciplinary – topics are studied and tinkered with through the shifting lenses of history, geography, economics, science, mathematics, art, and music (to name a few), while also being probed through discussion, reading, writing, computer use, and natural curiosity.

Such a vision of education requires us to allow students to imagine and think openly, as artists do. And for this kind of learning to happen, teachers themselves must detach; they must lean back to candidly question their methods by carefully and calmly breathing in the clean air high above their classrooms.

Albert Einstein once said, "I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world" (BrainyQuote.com). Like this powerful image of imagination, in fact, standing right underneath it – we encircle the world.

Sadly, millions of school children are not encouraged to imagine, while at the same time millions of teachers do not question their methods regularly. They keep filling the pails, as Yeats might say, rather than sparking interest and curiosity through their

expertise. Current policy and the accountability movement unfortunately encourage this faulty 'fill-the-pail' teaching methodology.

I would like to gently tug on your sleeve and pull you into a philosophy of education that I attempt to model in my classroom; a philosophy that I will model in this recycling curriculum.

Social Studies-Centered Curriculum

One key ingredient for establishing this philosophy in the elementary school classroom is to have a "social studies-centered" program. This means having one or two core themes of study in your classroom for the entire year. These studies dominate your classroom and are obvious to any newcomer who enters because of the colorful projects that fill the room. Kids talk enthusiastically about their work and are eager to fill any stranger in on what is going on.

Examples of social studies-centered curriculum might include: a second grade class in New York City studying the Hudson River for the fall semester, and then studying Henry Hudson, explorers, and New Amsterdam for the winter/spring term. Another example would be for third graders to study the Lenape Indians for a full year. Or as in the case of my classroom, our fourth graders study Ancient Greece seven months, and then jump ahead to study Revolutionary Boston and the birth of democracy in America for two months. Ancient Greece and Democracy are our central units of study, but we also do regular service for the school in the form of recycling. For those who cannot change their curriculum to create one central main theme, perhaps it could be the recycling piece that is the constant thread throughout the year? It could be the rallying axis to which the children hold on and connect multiple facets of their learning.

Units described above, such as the river study or recycling, can be thought of as science, not social studies. Some schools, like the Bank Street School for Children in New York City where I taught as an intern, also include science topics as core units. The Park School organizes around a "social studies only" centerpiece; yet in our recycling, we are definitely pulling in science. Any teacher with a class pet, discussions of weather, or

global warming, for that matter, is delving into science topics closely related to the social realm of day-to-day living.

Can you study the Romans and not talk about how volcanoes function? Can you truly study geography and avoid geology? What about the Battle of Salamas or Breed's Hill, but not the technology of warfare? How would one discuss a culture and their diet without moving into agricultural sciences? Science and social studies are easy to integrate, are perhaps inextricably linked, just as reading, writing, and the arts also integrate easily and often into social studies. Not only is such integration easy to the point of happening on its own at times – it is a must.

Science has such powerful influence in our lives, past and present, and it obviously moves into the social world, and therefore, social studies. Science is an essential and fascinating subject. If you are a homeroom teacher who is responsible for teaching science, great. If your kids leave the room for science with a specialist, it is important to get her or him aboard and involved in this unit.

Although we do look at environmental problems through the lens of science, I still think of our work as social studies. This is because our environmental problems are rooted in social patterns and trends. We need to understand environmental problems (and solutions like recycling) through both science and social studies.

Much of this recycling unit is about active citizenship and making decisions that affect a community. The children become problem solvers and then teachers. And as is well known, one of the best ways for someone to learn something is for her or him to teach it. This is one of the forms of "learning by doing" at which McCullough hints. Or as Confucius describes, "I do and I understand."

Students come out of this recycling program knowing the content. Most importantly, they acquire an awareness and a sense of hope that through positive action, they can improve society. Next, to further describe my philosophy of education let me define social studies.

Social Studies, A Definition

Social studies is "the work children do to understand their world" (Jablon, 1992, p. 145). Social studies makes use of a vast range of knowledge and skill. Reining in and defining this rich, unwieldy subject is a challenging task. The wording of some definitions of social studies, such as those put forth by The National Council for Social Studies (NCSS), feel unattainable; and I will never be able to teach all that they describe in a school year. The NCSS has a thorough definition.

> Social studies is the integrated study of the social sciences and humanities to promote civic competence. Within the school program, social studies provides coordinated, systematic study drawing upon such disciplines as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural sciences. The primary purpose of social studies is to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world (National Council for the Social Studies, 2006).

The promotion of citizenship in the classroom is a crucial component here. And although I agree with this definition and understand the necessity of its broad scope, I wish for something specific – something as inspiring for educators as this subject can be for children.

Former Bank Street College of Education instructor Maritza MacDonald provides a much more satisfactory definition. Hers is one that inspires:

> Social studies is the study of how citizens in a society make personal and public decisions on issues that affect their destiny. It should provide students with meaningful experiences in history, geography, economics and other social sciences in a continuum of guided study, values-inquiry and direct experiences (MacDonald, 1992).

MacDonald moves beyond content to imply a progressive pedagogy in saying that students should be provided "meaningful experiences." From this I take it that we should travel slowly and go deeply into content, unlike the NCSS definition that made me feel as though I was about to skim across all of world history via a dozen lenses. MacDonald implies that we should use these many lenses, but focus in on evocative experience.

James Banks might add something to a social studies definition to the effect of*: In a multicultural society it is critical to study our world from many points of view and to understand our own biases and how they affect our thinking* (Banks, 1992, p. 91). We

need better multicultural education as our society deepens its "ethnic texture" (Banks, 1992, p. 93). This being the case, should not a definition of social studies in 2007 mention our growing diversity?

An example of multicultural perspective taking that can be addressed in U.S. History classes is how the word "slave" is used and discussed. For years, history was written and taught through the eyes and voices of white men and rarely reflected on often-overshadowed perspectives (i.e.: Native Americans, African slaves, and women). Thinking about the word "slave" and taking into account emerging research, perhaps we should use the term "colony builder." The role of African slaves as colony builders has recently received attention with the discoveries of African burial grounds in downtown Manhattan dating back to the seventeenth century.

Christopher Moore wrote text for the *The African Burial Ground: An American Discovery* documentary. Middle school teacher (and Bank Street instructor) Stanlee Brimberg showed this to Bank Street School for Children's seventh graders. In a video of the lesson where Mr. Brimberg's students interview Mr. Moore, Moore tells the kids:

> Well, you learned an important part of history in that the presence of Africans on Manhattan Island showed that they were colony builders. That when they came here with the European settlers, they were the ones who cleared the land for the town of New Amsterdam, they were the ones who cleared the roads, they cleared the fields for the farms. And they didn't just do it on Manhattan Island, they did this literally from Albany to Argentina. All along the eastern seaboard in the Americas and the Caribbean, enslaved workers in the 16th century and 17th century were primarily helping to build the colonies (Brimberg, 2007).

Later in the interview, Moore went on to say, "If I had one statistic of slavery to share … it's the fact that from 1492 to 1776, of the 6.5 million people who came to the Americas, 5.5 million were Africans" (Brimberg). Should we refer to these early Americans as "slaves"? Or as "colony builders"? And what are the implications and deeper meanings of such labels? These are kinds of questions and perspectives teachers need to bring up in the multicultural classroom and ask as current scholarship steadily unveils more about our history and culture.

Would Jared Diamond, author of Pulitzer Prize winning *Guns, Germs, and Steel*, add to our definition of social studies? He masters the huge variety of social and hard sciences in his ground-breaking work ultimately for the purpose of defeating racist

attitudes. Perhaps he would add: *Social studies provides many lenses through which to see and respect the beauty and diversity of others.*

My definition includes: *Service learning can build environmental and social awareness to foster stewardship and sustainability for our communities and our planet.* This is something that I believe in. My wife, Anna Wells, writes in Chapter Four of this text,

> Service learning is a long-standing component of progressive education and it is exactly what happens when your students run a recycling program for your school. Service learning as a transformative pedagogy – one that can improve students' academic performance, schools, communities, and perhaps even lead to social and environmental justice world-wide – is gaining momentum across the country.

Banks and Patricia Minuchin support a philosophy that includes service. Banks (1990) writes "The main goal of social studies should be to help students develop the ability to make reflective decisions so that they can solve personal problems and, through citizen *action*, influence public policy" (p. 40, emphasis added). Minuchin (1990) agrees with Banks' forward-looking thinking on social studies in our schools when saying, "[teachers] have geared the curriculum to questioning and discovery ... so that the children might grow as skilled social observers, with a sense of purpose and *action* in relation to their own environment" (p. 3, emphasis added).

John Dewey wanted students to solve life-like problems relevant to society, not problems listed in textbooks (Ediger, 1997). Dewey would like the way this recycling curriculum starts off with posing a problem to the children and leaving it there, open-ended, in front of them (see Chapter Six). This unit proposes many problem-solving situations for the students. Dewey believed that schooling could be a way to develop active, critical citizens with the ability to change society for the better and uphold democracy (Trifonas and Ghirardelli, 2004). The promotion of *democratic ideals and social justice* will conclude my definition.

My definition of social studies printed below includes parts of MacDonald's and ties in the italicized points I have written above. From it one can derive much of my philosophy on education. Please consider it a foundation from which the rest of this text will grow.

Social studies in the elementary school classroom is the study and modeling of how citizens make personal and public decisions about issues that affect their destiny. It provides students with meaningful experiences in history, geography, economics, and other social sciences along a continuum of guided study, free exploration, problem solving, and direct experiences such as hands-on learning, field trips, and service learning. Service learning can be used to build environmental awareness to foster stewardship and sustainability for our communities and our planet. In a multicultural society it is critical to study our world from many points of view and to understand our own biases and how they affect our thinking. Social studies provides many lenses through which to see and respect the beauty and diversity of others and is a way to promote democratic ideals and social justice.

Democracy

During my opening remarks to my fourth grade students on the first day of school the past three years, I spoke of a journey metaphor that would carry us through the year. The children had just finished up a desk-nametag-making project. My first message on this first day spoke to some of my beliefs about creating a tight community of respectful learners and friends. It spoke of my expectations, it illustrated some of my progressive beliefs around power sharing, and it also connected to our yearlong ancient Greece study.

Beyond alluding to C. P. Cavafy's poem *Ithaca*, my words spoke in the interest of raising young empowered citizens. This philosophy ultimately hopes to promote broad based progress through a powerful truth: Democracy brings out the best in individuals and in their communities both large and small. I dive right into many of these ideas during the first period of the first day of school:

> Welcome to the fourth grade. It's *so* great to see you all here today!
>
> We are about to set sail on a great journey. Imagine that this classroom is a large ship and the faces surrounding you are its crew. We are going to get to know each other pretty well this year as we sail the seas of learning. Some things that we will see, most things, will be awesome. The islands of math and recess! The deep rivers of language arts. We will harbor for days with scholars and artists and adventurers in far off lands ... and subjects.
>
> But there will be hard times, there will be tears. Learning is not easy. Being a good friend can be trying. But we will persevere. Whatever we encounter, we will sail through it together and get to the other side – fifth grade. You will be taller (I won't) and you will be smarter and you will be ready.

> I am your guide. And right now, you may see me as the captain of this ship. This is true, but many times each day, I will need to step aside and will ask *you* to take the helm. You are better teachers than I am, kids teach kids really well! My job is just to teach you how to teach each other. I also want to teach you how to teach yourself.
>
> I'm a serious captain and a serious teacher. I'm going to make you work very hard and I expect your behavior on this ship to be extremely friendly and nice. On this ship for nine months we have to get along. If someone doesn't hoist the sail well (or spell well, or do math quickly), you do not laugh at them, you *help* them. If you don't know how to swim (or subtract), that's okay, we'll teach you.
>
> If you're mean to others...? We will talk. If your good – and gosh we're off to a great start, you're all listening so well right now and being so nice! – I will be the nicest teacher in the world, you will have a blast, and we will all feel great.
>
> Now why do you think I'm talking so much about ships and the wine dark seas on the first day of fourth grade?

We then go on to discuss parts of our famous social studies program that most students already know about. I ask them what they thought we would do in fourth grade. We discuss being nervous and how this is normal. I tell them I am also nervous. I then introduce them to their Meeting Seats and teach them about a few of our Class Meeting routines. I blow some bubbles and read Carl Sandburg's poem *Bubbles.* I model some other routines and Class Meeting jobs.

The idea that classrooms can be "apprenticeships in democracy" is important to me (Oakes, 2003, p. 295). To further promote democracy in our real world, schools and classrooms need to let kids feel this power. This can be done through some of the power sharing my open remarks allude to. This can be done through progressive models of teaching all year long where kids search out topics that they want to study and where their voices are heard.

We end our first meeting by starting a chart of "Things that need to happen for this to be a safe classroom where learning happens." This final activity is a democratic one. Rather than imposing "Rules" top down, the teacher lets the kids create rules or "agreements" that they will be more likely to follow as they had the power to make them up. This list of rules changes and is modified over several periods, and then we turn it into a "classroom constitution" soaked in tea with burned edges and signed by all.

I am a big believer in this specific lesson. I first observed it at Bank Street School for Children as an intern and I loved the *feel* of the lesson. Now, after years of further

reading and discussion, I have background philosophy on *why* this lesson means so much to me.

I am very personal and open with my class. I tell them many stories about my life. I also share my weaknesses as a student and thinker. By the second day the kids might notice that I struggle with spelling as I ask for help on the white board and our charts. This takes me off a pedestal as the powerful teacher who knows all. Many students think their teachers know everything. My students are often shocked when I tell them about my dyslexia, and how I struggled mightily with reading and writing in fourth grade, but that I eventually learned how to use these important skills and am still able to lead a successful life.

To some children, this is a huge relief. "Nobody's perfect." I like to talk with them about multiple intelligences, and I read them a children's book by Mel Levine called *All Kinds of Minds*. I think such frank discussions about how our minds work are long overdue and welcome in the democratic classroom (and world) where many different people need to work and understand each other.

In my opening remarks, I was hinting at the powerful idea of democratic rule developed in fifth century B.C.E. Athens. I hope for our classroom to be a model of this idea as often as possible. (For example, notice my reference to it as "our" room, not as "my" room. Kids pick up on these subtle semantics, especially over nine months.) As teachers, our beliefs around creating community and managing children can promote democratic values: democratic values in our small rooms, but also outside of them. Yes, it is "big picture thinking" to ponder one classroom teacher's effect on the larger world – and to some this can seem silly – but is important. Perhaps it should be our ultimate goal?

The optimism and drive for social improvement in attempts to help our democracy was part of the Progressive Era in the early 20th century United States from which Bank Street College grew. Such thinking is a major tenet, but often missed component of progressive teaching today. Bank Street's "Developmental-interaction approach" is complex and includes this often overlooked, but core idea. One summary of Bank Street's philosophy by Nancy Nager and Edna K. Shapiro describes a "coherent philosophy [that] focuses on human development, interaction with the world of people

and materials, *building democratic community*, and humanist values" (2000, p. 1, emphasis added). Nager and Shapiro go on to say that, "one commonly held and fundamental belief was the deeply political nature of education, through which people could create a better world and truly democratic society" (2000, p. 12).

The Progressive era and Bank Street's mission had many goals. One I hope to always hold onto and reflect on regularly is the promotion of a stronger, lasting democratic society. Today when we ponder the future of our society we must also *seriously question* the decline of our natural world's health. Then we must question whether our democracy and our freedoms are in danger if the natural world fails us...*or if we fail it.* Therefore my environmental leanings and drive to work toward a sustainable natural world and school community are a part of my desire to help build an improved, sustainable democracy.

Management and Expectations

I also like to set a firm tone early. "I run a tight ship," could have been mentioned in my opening remarks. As a teacher, I have slowly learned the value of clear, firm management. It is in the best interests of the children's learning. Many of my new students know me from interactions in the hallway the previous year. Third graders are often running in our halls and I stop them and have them walk back to where they started. Sometimes I walk with them and chat. I am always nice, but firm with them and I get a reputation as a strict teacher from third graders, but a year later many of them laugh at their old worry about "tough Mr. Wells."

What systems, rhythms, and expectations does one need to have in place so that elementary school students can navigate through their day with competence and grace? I think that the largest influence over the direction of management in our rooms are teachers' expectations. Yes, systems of scheduling and specific management strategies have much influence over days, or moments in them, but larger still is how the kids read and reach our goals.

We establish ourselves during those first five minutes on the first day of school (if not in the halls the year prior) when we calmly, but firmly settle the kids in. From then on

we start to reveal our expectations concerning behavior, manners, and academic progress. We (hopefully) make it known that things like calling out, running, throwing, teasing, and other such misbehaviors will not be tolerated (which does not mean that those children who engage in these acts will not get the attention they need) while also encouraging curiosity, focus, friendliness, and learning.

Our expectations have so much power over how kids act. If we are unclear or inconsistent with them, we hurt our classroom communities and ourselves. We hurt the students' learning potential by being wishy-washy in regards to expectations. We must demand and encourage them to work hard and act with kindness. Not in an authoritarian way, but in a way that shows how much we care and how far we expect their potential growth to soar. We must guide kids not only in becoming stronger students, but in seeing themselves as capable of this whenever possible.

Hands On Learning, Educational Experience

When attempting to implement curriculum based on personal philosophy and higher values we can do great things. Yet oftentimes we forget our foundational principles and simply teach in ways that "feel right" to get us through our busy days. Hopefully such feelings and impulsive lessons remain true to our core educational beliefs; but I know at times my lessons and methodologies can wander astray.

I know I am not always as democratic as I could be. I need to learn to ask better questions. My math program can feel jumpy. My writing instruction is too focused on inspiration and lacks specific skill work. These are all goals I try to work on. In recent years, I have always wanted to get back to the "hands-on learning" I encountered when I taught at Bank Street where the children are up and interacting with each other, with building materials, and with ideas relating to topics of study.

Such physical construction alongside the building of meaning through exploration may bring images to mind of toddlers in the block area, but let us not limit our vision to this age group. I often think back fondly to Bank Street's second grade eight by four foot plywood based construction upon which a three dimensional recreation of the Adirondacks, Hudson River, and Manhattan stood. The kids built a George Washington

Bridge with Christmas lights and all. There were dozens upon dozens of detailed plasticine boats, barges, and cars.

During this unit, I remember catching fish on the Hudson with nets, dissecting some, and keeping others in a class tank to study further. More recently at Park, I think of fourth graders collecting hundreds of pounds of paper for recycling twice a week. I regularly see them sorting redeemables from non-redeemables. They research facts to include in promotional posters. They script and act out movies. They are far from pondering only the theoretical, they are getting their hands dirty and doing important, meaningful work. All of this helps them "build" lasting meaning and important values.

Hands-on learning happens when children explore and try to figure out new computer programs. Hands-on learning happens when you attempt a new recipe for a meal. Hands-on learning happens constantly in our lives, as well as in the lives of our smallest learners.

John Dewey wrote of the joyous and powerful merging of play into work as constantly possible and powerful for our students. Lessons in our classrooms should be "forms of activity, in play and work, similar to those in which children and youth engage outside of school" (Dewey, 1916, p. 194). Dewey thought teachers should not keep classroom life and home life (play time) separate. He saw the power in play. He saw the power in work.

The classroom that taps into these ideas shows improved, purposeful learning. The fun sounding ideas of play are not simply "agreeable diversions" (p. 195). There are other key benefits; when "going to school is a joy, management is less of a burden, and learning is easier" (p. 194). Why, you ask?

There is much value in children's (and our own)

> native tendencies to explore, to manipulate tools and materials, to construct, to give expression to joyous emotion, etc. When exercises which are prompted by these instincts are a part of the regular school program, the whole pupil is engaged, the artificial gap between life in school and out is reduced, motives are afforded for attention to a large variety of materials and processes distinctly deductive in effect, and cooperative associations which give information in a social setting are provided. In short, the grounds for assigning to play and active work a definite place in the curriculum are intellectual and social, not matters of temporary expediency and momentary agreeableness (p. 195).

"It is the business of the school to set up an environment in which play and work shall be conducted with reference to facilitating desirable mental and moral growth" (p, 196). Unfortunately, many children are not given the opportunity to learn this way more regularly. It is a goal which I reflect upon and one for which I reach. It is a philosophy that melds nicely with a recycling unit for obvious reasons that will be made clear in coming chapters.

Children should not simply study environmental problems and potential solutions in a text or through discussion. They must get hands-on experience in the work on and with the topic itself to build meaning. Dewey describes the example of a boy learning principles of wood by making kites, not through conjecture as a clear reminder of his point (p. 199).

> Witness the different attitude of a boy in making, say, a kite, with respect to the grain and other properties of wood, the matter of size, angles, and proportion of the parts, to the attitude of a pupil who has an object lesson on a piece of wood, where the sole function of wood and its properties is to serve as subject matter for the lesson (p. 199).

Let us allow children to make meaning through hands-on play and work. Let us allow them to feel the joy and value of community service while helping their environment. "Children want to 'help'; they are anxious to engage in the pursuits of adults which effect external changes; setting the table, washing dishes, helping care for animals." (p. 203). Let us add collecting recyclables around our schools and spreading the message of living green lives to this list!

John Dewey would strongly believe in tackling environmental problems because he believed students should actively study and try to improve their world. More specifically, he would see the many benefits of the actual work of responsible environmental stewardship in action in the corridors of our schools. He would value the play that happens in front of video cameras when videos are being made. Environmental curricula can philosophically tie in nicely with foundational progressive principles. Furthermore, it helps a movement that hopes to preserve our natural resources and environment for the sake of a stable and functional democratic society.

Technology in the Classroom

I regularly see hands-on learning through play and work move from the physical three dimensions magically to two dimensions when student video work is projected onto a wall. Every year I have taught, I have completed video projects with my students. We started out making mini-epics (if that makes any sense!) of Homer's Odyssey. More recently, we make promotional recycling videos – one of which has made it onto national television. These creative projects start with brainstorming, group outlining, much editing, and eventually small group scripting and practice. When ready, we make simple props and costumes, and we film.

Teaching the children about the iMovie editing process is something I do on a simplistic level. Video editing of longer (over ten minute) pieces is ultimately up to me, but this work offers a great chance to expose kids to a computer program that will let them explore later in the year with smaller clips and scenes. I feel this video work and use of technology is powerful in the elementary school classroom and I see it taking a large hold there in time as more teachers learn how to integrate it into their work. What a creative way to let children externalize their learning. What a perfect way to help them share important messages with the school community via projector, or with the world via the Internet. What an effective way to bring in skills that many children will depend on in professions later in life.

When you turn a video camera upon a child, interesting things happen. More often than not, children rise to the occasion and shine. Many "quiet kids" will surprise you with a beaming, energetic side that you might not have expected. Everyone wants and deserves to feel important, and the video camera is a tool that when pointed toward a student clearly announces, "It's your turn!"

When combined with environmental education, video work offers an example of what Dewey would call an "educative experience." That is, it takes a learner on a further, lifelong journey to helping their world with habits of mind and an involvement that will last (Dewey, p. 17-18, 1938). These experiences are not closed, but open to new experience later in life. They are part of a larger thinking, not simply one idea in a ten-year-old's fourth grade unit.

Helping the environment is *unfortunately* a great opportunity today. I wish it was not needed, but it is, and I work hard to let kids connect to this necessary energy and to learn from it. With progressive instruction and problem solving curricula (and such examples as this recycling work, I will venture to say), Frank Pignatelli wrote that a progressive philosophy includes:

> a deep and abiding belief in the creative capacity of the individual as a social being to devise intelligent solutions to real problems and to posit meaningful future plans—plans designed to ensure continuous educative growth (Nager, 2000, p. 221).

This work connects in with large ideas, for example, that children can be hugely empowered at a young age to feel the joy of service. This is a great pleasure that many are never given the opportunity to try. Further, it taps into a necessary "interdependence" that is much needed in our world today.

As The Park School child psychologist Olivia Moorehead-Slaughter has written,

> More than ever, our children must learn to view themselves as part of a world gestalt where indeed the interests of the whole world outweigh those of the many individuals who inhabit this planet. Indeed, this is why we encourage their active engagement around helping the victims of Hurricane Katrina, why we encourage recycling, and why we hope that every child will hold the door for the one who follows" (2006, p. 3).

Yes, perhaps the key to our society's future longevity and prosperity can be summed up in children believing in holding doors for those who follow. I am a big believer in the creative independent spirit and self-sufficiency promoted by democracy, but in this day and age, independent values must live beside or with shared values if we are to thrive as a society beyond 2100.

We must all hold doors, recycle aluminum cans, change our bulbs, and preserve what possibilities we were given for those who follow. These acts may be symbolic to some – and herein contain much power – but they are real in their minute, meaningful benefit for the environment. As Carl Sandburg has written, "Let the gentle bush dig its root deep and spread upward to split the boulder."

Undersized acts of spirit can ultimately move mountains. In fact, it will take trillions of small acts (and a few big ones!) to solve the climate crisis. These acts are encouraged and put into a context through environmental education in our classrooms.

Under these circumstances, an ability to connect to others in a larger world to see the necessary connections between each other and our natural world is a lesson that we must all learn in the next ten to twenty years.

If not...fine tuning our educational systems, school missions, and curricula will be the least of our concerns. Yet for now, it seems to this author that our curricula and our philosophies of teaching can be part of the solution.

CHAPTER FOUR: THE IMPORTANCE OF SERVICE-LEARNING – A BONUS CHAPTER BY ANNA WELLS

"Teachers, school administrators, parents and business leaders, based on their familiarity with community and public service, typically assume that 'community service' and 'service learning' have the same meaning. This is not the case"

- Leonard Burns (1998, p. 38)

Service-learning as a transformative pedagogy – one that can improve students' academic performance, schools, communities, and perhaps even lead to social and environmental justice world-wide – is gaining momentum across the country. This chapter describes the effects of service learning and its growing popularity.

For decades, educators have known that students learn best by doing rather than being told. In the early twentieth century, "experience" was central to John Dewey's educational philosophy. He believed that "the institutional context of learning" rendered schooling an "artificial educational environment", and that education should be grounded in the real world (Trifonas and Ghiraldelli, 2004, p. 1). Dewey advocated that students solve life-like problems relevant to society, not problems listed in public school textbooks (Ediger, 1997). Dewey believed that education and schooling could be a way to develop critical citizens who have the ability to change society for the better and uphold democracy for morality and justice (Trifonas and Ghiraldelli, 2004).

These are the ideas upon which the concept of service-learning is founded. Service-learning combines the ideas of experiential learning as an improvement upon traditional pedagogy, development of a critical citizenry, betterment of society, and furthering of democracy. Service-learning moves beyond community service or charity work by integrating service to the community and curriculum-based classroom learning (National Commission on Service Learning [NCSL], n.d.). Students might, for example, study and clean up a polluted waterway as part of a science curriculum, or, as was done in a West Philadelphia school as part of a United States history curriculum, devise a way to improve representation in a regularly underrepresented census tract.

Though a singular definition of the components of service-learning is difficult to settle on, it has three essential components: students learn course content, they concurrently serve their community, and they reflect on the connections between course content and their experiences in the community (Strage, 2004). Other sources agree that to be true service-learning, the components of a unit will include:

- focus on community needs and school/community organization;
- academic curriculum integration;
- thoughtfully organized experiences;
- active participation;
- structured time for reflection;
- opportunities for application of skills and knowledge;
- extended learning opportunities; and
- development of a sense of caring for others and the environment. (Billig, 2000)

Goals and Outcomes of Service-Learning

Service-learning is intentionally designed to mutually benefit both the community in which the service-learning occurs and the learning and development of the students. A growing body of research shows that high quality service-learning benefits students of all ages in various ways. Billig (2000) reviews much of this research and reports that service-learning has positive effects in six areas:

Personal and social development: Students who participated in service-learning showed increases in measures of personal and social responsibility and sense of competence, were more likely to treat one another kindly, help each other and care about doing their best, and were less likely to exhibit behavioral problems and engage in "risk" behaviors. Students who engaged in service-learning were better able to trust and be trusted by others, showed greater empathy and cognitive complexity, and were more accepting of cultural diversity.

Civic responsibility: Students who participated in service-learning showed an increase in their awareness of community needs, believed they could make a difference (over 80% felt they had made a positive contribution to the community), were committed to service and civic responsibility throughout their lives (they were more likely to vote 15 years after their participation than those who did not participate), and increased their understanding of the way government works.

Academic learning: Participation in service-learning was associated with higher scores on basic skills tests, achievement tests, standardized tests, and with higher grade point averages. Students who participated in service-learning were less likely to drop out of school, came to class more regularly and were more often on time for class, completed more classroom tasks and took the initiative to ask questions more often. College students in a service-learning section of a course earned higher grades than those students the non-service-learning section of the course (Strage, 2004). Students felt they had learned more in service-learning classes than in other classes.

Career exploration and aspirations: Students who participated in service-learning reported gaining career skills and communication skills and knowledge of career possibilities. Teachers also believe that participation in service learning increases career awareness.

Schools: Teachers and students that participated in service-learning reported an increase in mutual respect, and peer relations were more positive. Service-learning promotes dialogue about the best ways that students learn and transfer information. Teachers and students reported more positive school climate as a result of feeling greater connectedness to the school after participating in service-learning.

Communities: Community members who participate in service learning as partners with the schools are more likely to see youths as valued resources and positive contributors to the community.

Prevalence and Institutionalization of Service-Learning

Service-learning has been gaining momentum over the past few decades. From 1984 to 1997, the percentage of high school students participating in service-learning nationwide increased from two percent to twenty-five percent (NCSL, n.d.; Billig, 2000). In 1999, the National Center of Education Statistics estimated that thirty-two percent of all public schools organized service-learning as part of their curriculum, including nearly half of all high schools (National Center for Education Statistics, 1999). In 1990, federal legislation was passed to create the National Commission on Service-Learning, which awards grants to states, schools and community organizations to develop and implement service learning. The National and Community Service Trust Act of 1993 provides funds for every state to incorporate service-learning into schools (NCSL, n.d.). At this time, service-learning programs exist in every state in the United States (NCSL, n.d.; Billig, 2000).

Necessary Considerations

Several researchers emphasize the distinction between community service and service-learning as a pedagogy. There is a difference between the kind of school-based community service that "provides direct, charitable services to needy communities (e.g., conducting food drives, painting houses, cleaning up streets, counseling), and that kind of service-learning that engages students in political organizing and social advocacy" (Robinson, 2000, p. 607). "Teachers, school administrators, parents and business leaders, based on their familiarity with community and public service, typically assume that 'community service' and 'service learning' have the same meaning. This is not the case" (Burns, 1998, p. 38). Some researchers believe that, beyond the direct benefits to students, schools and communities, service-learning has the potential "to become a transformative social movement" (in Claus & Ogden, 1999, p. 69, cited in Cipolle, 2004), and to counter the hegemony of American society (Cipolle, 2004).

If service-learning is seen as an altruistic exercise in philanthropy, the service loses its potential to become transformative and counter-hegemonic. In fact, if the

motivation behind a service-learning project is philanthropy or charity (i.e., helping those less fortunate) rather than social justice (i.e. being a responsible member of one's community and acting to make that community flourish), it can foster a paternalistic attitude among students and perpetuate their stereotypes, or racist, sexist or classist assumptions; they will continue to see themselves as above those they are helping (Wade, 2001; Cipolle, 2004; Barber & Battistoni, 1993).

Therefore, caution and care must be taken when creating service-learning curricula. Rahima Wade (2001) wisely details the components of service-learning for social justice, which are reminiscent of the major tenets of progressive education:

Student-centered: Students are involved in choosing the issue of concern for their service-learning project and asked to explain how this issue connects with their own lives.

Collaborative: Students collaborate with their classmates, others in the school and, most important, service recipients, in the design and conduct of the service-learning project.

Experiential: Students are actively engaged in community needs assessment, research and project development, as well as service activities in the school and/or community.

Intellectual: Students seek out a variety of sources with multiple perspectives as they study and analyze the issue they have chosen. They use subject-matter skills and knowledge to plan and carry out their service-learning project.

Analytical: Students examine the root causes of the problem they are addressing. They consider whose voices have been excluded and what their own role is in relation to the problem.

Multicultural: Students adopt an inclusive approach to the problem they are addressing, in terms of understanding the issue from diverse perspectives and also in terms of whom they involve and how they work together on the problem.

Value-based: Students acknowledge the controversial nature of the problem they are addressing. They examine and discuss the values involved.

Activist: Students engage in direct action, as well as advocacy aimed at creating a more socially and environmentally just society.

CHAPTER FIVE: SETTING UP TO RECYCLE – MINDSET, LOGISTICS, AND MATERIALS

"You must be the change you wish to see in the world."
– Mahatma Gandhi

To start a recycling program in your school and to nudge your community's outlook in the direction of forward-looking environmental sustainability, several ideas need to be set in motion months prior to the initiative. Some of these ideas are personal – they involve one's own mindset and learning – others are organizational. These items are important so as not to step on any proverbial toes and/or turf. It is important to prepare yourself and your school for the hard work ahead.

Always remember that in doing this work you will be paid back in myriad ways, some obvious, others small and unquantifiable. Every school needs an environmental consciousness which is sometimes embodied in a hard working teacher. And every school's environmental consciousness is appreciated.

Below are three personal steps and three logistic steps to take before starting the classroom curriculum outlined in Chapter Six. These steps are important so that the lessons and projects in Chapter Six can flow smoothly and most effectively. I often bumped and bumbled my way along in creating my school's recycling program mixing Chapter Five set-up ideas with Chapter Six lessons simultaneously; I hope to help others learn from some of my missteps. Furthermore, these first three steps are very large ones, in fact, much of what they embody will take place for the rest of your life!

A Three-Step Transformation into "Recycling Coordinator"

1. The first and perhaps most important step in getting started is to establish yourself has a hardworking, well-respected member of your school community. I waited three full years before morphing into my school's recycling coordinator. If I had tried to

green my school during my first year, my efforts may have been rejected by the faculty, administration, and staff, although a few good souls might have joined me. I also would not have known whom to turn to and when. I waited a few years getting comfortable in the community and earning others' respect. This waiting period was not planned, as my environmental activism and concern was not fully formed until recently.

So establish yourself in a positive light if you have not already done so in your school. You are going to need the help of others, mostly children, but also the adults that surround you. You are about to become a herald marching in the name of nature and under the flag of sustainable progress.

2. Read up on "E.S." (Environmental Studies) texts. Become familiar with recycling, but also with land conservation, pollution, waste reduction, biodiversity, public health, environmental justice, climate change, and other science and environmental topics. Read National Geographic, Orion, and The Nature Conservancy magazines. Visit websites like Grist.org, Treehugger.com, AlGore.com, and StopGlobalWarming.org (other great resources are listed at the back of this text). Become an expert. The more you learn about the environmental degradation of our world, the more passion and expertise you will bring to this job and the more connections you can make between these things to reinforce the importance of recycling with your students. When environmental work becomes a passion, your heart is engaged in your work. As Don Juan once said, "A path without a heart is never enjoyable. You have to work hard even to take it. On the other hand, a path with a heart is easy; it does not make you work at liking it" (Merkel, 2003, p. 164).

3. As you learn more about ways to make your life greener, try to act on them. If possible, drive less, bike more, don't buy plastics (except for a reused rain barrel, perhaps), start a composter in your yard, read library books instead of buying them, eat locally grown foods, eat less beef, use compact florescent bulbs, insulate your water heater, hang your clothes to dry, recycle. Walk the talk. Use less electricity and consume less. Go on a "carbon diet." Go "carbon neutral." These are the clearest ways to help the planet.

When you start living out these ideas and learning from them, you can more truthfully talk about them with your students and colleagues. Your students will spread this living message to their families and friends. Other faculty members can learn from your example.

Ripples. You are a stone plunking down into a pool of still water. As the ripples grow outward from your leadership, you may be influencing people you do not even know. Students create their own splashes and ripples. This type of grassroots energy is wonderfully cohesive and effective, especially when the governing bodies eventually catch that spirit and turn it into legislation. This cannot happen soon enough, and I believe it will ultimately. Soon, we must hope.

Become a living example of sound environmental stewardship and your ripples will authentically reach their full potential. They will become waves! Waves that travel for longer than you know – probably longer than your breathing life. Is this now why we teach? To help the world – one student at a time – become a better place? To make a lasting impact on others and help them help themselves and their surroundings?

A Logistical Checklist for Getting Started

1. Ask for help and get the support of your grade level or department colleagues. One class running a recycling program will be hard, unless it is a small school with under 200 students. One grade level feels right to me for larger schools. If your colleagues are unsure, ask if they will observe how you start the program and the energy it brings to your students. If they like it, perhaps they will be willing to help out around the edges, and jump in with full force after it is fully implemented. This is what I did. And I am so thankful for my fourth grade colleagues, Nell Broley and David Lawton, and for their students' help. We could not do it without them.

2. Inform your school's administration that you are interested in starting, or in rejuvenating an existing recycling program. This might mean sitting down with a division head or principal, the head of maintenance, and/or a business office administrator. Take along colleagues from your grade level who are willing to help out. Give the

administrators a simple description of your plan and be sure to exhibit a knowledge and understanding of what it will take.

Do some research on the amount of paper used in your school each week. Mentioning the hundreds of pounds of paper your recycling program will streamline out of the trash bins can bring up the financial benefit of less waste removal costs – think custodian hours and trash removal services. My school of 515 students uses *20,000 pounds* of copy paper per year. This should get them to perk up their ears if their hearts are not perked up by the environmental benefits about to come their way.

Describe the plan as a curricular activity including many service-learning projects. Remember, this is more an educational opportunity than it is work. It will often look like work, but will mostly be teaching and learning: kids learning and then teaching their school how and why to recycle – and how and why to care.

Make a simple outline of some things that you wish to set into motion: a. Putting labeled blue bins around the building; b. Marketing the projects to the school through announcements and assemblies; c. Collection teams of fourth graders combing the school during recess collecting recyclables; d. Helping the school lighten its environmental footprint.

Let your administrators know that you want to touch base and communicate about the program's effectiveness, progress, and messiness at times. Depending on your school's curricular model and power structure, these notification meetings and steps might also be necessary for starting a new academic program in your classroom. This program can take as much or as little of your classroom instructional time as you want it to. Many principals and/or curriculum coordinators will want to know what you are up to before you begin. Be sure to communicate your intentions well in advance.

3. You will need many storage containers and boxes in order to recycle at your school. For example:

Paper: You will need a cardboard box paper-recycling bin in *each* classroom and office. You can ask teachers to each get their own in a friendly email or verbal announcement to the entire faculty and staff. Recommend having their students decorate the boxes to take ownership of them, but you should also have extras handy. I

recommend getting empty cardboard boxes from your kitchen staff or using copy paper boxes. Buying attractive plastic ones might have to wait until later down the line and is expensive; reusing cardboard boxes is also more environmentally-friendly.

You will need wheeled 30-gallon garbage cans for children to push around school to collect this paper. It's heavy. My students collect about 600 pounds a week. A head custodian can help you find and order these bins. They had an extra at my school. Make sure they have wheels. One should be enough unless your school is over 1,000 students, in which case you'll need two paper teams out twice a week collecting.

You will need to rent three or four large fifty-gallon paper recycling bins to store paper for weekly pick up. You will need to arrange for this pick up. Call a paper-recycling collector such as "Waste Management" or "Save That Stuff." See www.wastemanagement.com or www.savethatstuff.com for contact information. You may have to pay a small monthly bin rental and pick-up fee. My school pays $5 per bin and $15 for removal all of them each month to our hauler.

Bottles and Cans: For recycling bottles and cans, you will need about a dozen blue bins to put around your school. I got these for free from our town's recycling coordinator. The bottle/can collecting team also uses a blue bin when collecting from around the school. You will need a storage bin such as a 30-gallon trash can lined with a large garbage bag for dumping and storage after teams have collected recyclables. Thus, you will also need access to large garbage bags. We keep a separate bin for redeemable containers so we can raise money, too.

Finally, you will need a way to get these cans and bottles to a supermarket redemption machine, curb, and/or recycling center. I have arranged parent pick-up of bottles and cans once a week. They take two bags each week. One for non-redeemable items that can go on their curbside or to a recycling center (it is up to them). The other smaller bag is full of redeemable containers that they take to the grocery store for nickels that will end up in our class piggy bank. Getting parents on board is a great way for them to help the cause and learn from their kids. This also lets different children each week see one more step in the recycling process.

The logistics of calling paper collection companies and setting up payments from the school's business office takes a few phone calls and emails, but once set up, it should run itself. Finding the necessary containers is an ongoing process that improves with time. These are seemingly simple yet crucial steps you must take prior to starting your recycling program. I was able to do them while starting my efforts, as I was jumpstarting an old, inefficient program. I suspect many of you will be jumpstarting and reenergizing existing programs. If this is the case, you are already part way there.

Summary of Containers and Equipment Needed

Paper

- 1 cardboard box for paper waste disposal in *every* classroom and office
- 1 30-gallon paper collection garbage can on wheels for students to collect paper
- 2 to 4 large 50-gallon paper recycling storage containers rented from paper collection companies (the amount of paper you collect will continue to grow as your community gets used to the system, then with time, ideally, less paper will be used)

Bottles and Cans

- 8 to 12 "blue bins" for collecting bottles and cans (be sure to tape up any drainage holes in the bottom of the bins to keep carpets clean of dripping juices or cola)
- 1 to 3 outdoor recycling bins for bottles and cans near athletic fields
- 1 regular blue bin to use when collecting bottles and cans (or simply use a garbage bag)
- 1 large garbage can to store bottles and cans in (line this with a garbage bag)
- 1 regular classroom trash bin to store redeemable bottle and cans to return for nickels

Miscellaneous

- A supply of large garbage bags
- A supply of regular garbage bags
- Cleaning supplies for cleaning blue bins twice a year (hose, water, soap, sponges)

Mandatory

- 30 to 50 helpful students!
- 2 or 3 helpful colleagues!
- 1 YOU to lead the march for change and for a more sustainable environment at your school and beyond!

CHAPTER SIX:
LESSONS AND PROJECTS – A STEP-BY-STEP RECYCLING CURRICULUM

"Never doubt that a small group of thoughtful,
committed citizens can change the world;
indeed, it's the only thing that ever has."

- Margaret Mead

Service-learning benefits students, schools, and their communities by creating ties between these groups and, like the merging of rivers, pulling their once distinct identities together into one powerful current. "Service learning is a teaching and learning method that connects meaningful community service with academic learning, personal growth, and civic responsibility" (Domingues, 2005, p.13).

Linking service to the classroom curriculum – not simply doing community service on the side – first involves choosing a project. Ideally, such choice would be sparked by student interest directly (if they bring it up) or indirectly (if you ask them about ways they can help the environment and then they bring it up). "The most successful service-learning projects are those initiated by students" (Domingues, 2005, p. 14). This empowerment of students and their central voice is crucial in the success of this program.

This chapter describes several key lessons and projects in the recycling curriculum that the fourth grade at my school currently implements. The most effective service-learning projects – those that benefit the community, school, and students – incorporate basic progressive teaching methods, the major tenets of which are cooperation, learning by doing, and real world experience (Spring, 2004). The least effective unit would be the "teacher-centered" one. The progressive teacher would *not* say to her or his class, "We are going to start a school recycling program. I want you to market this plan by making clever posters and colorful collection bins. You will collect

and empty bins on Tuesdays and Thursdays in teams of three during recess. Then we will make a video teaching the community about 'our' great ideas. Okay?"

The teachers will be guides – facilitators – not lecturers. The following is a series of ten lessons and ten projects that make up the core of my curriculum. Tweaks, alterations, and additions will obviously be needed depending on the circumstances of your setting, and are in fact appropriate as your creative mind and the creative minds of your students think of better and more fitting approaches to this work. The sequencing of lessons and projects is somewhat flexible depending on student energy and initiative.

A RECYCLING SERVICE-LEARNING CURRICULUM

LESSONS

Lesson 1: Establish the Problem

If students wonder why their school does not recycle, in your first meeting mention, "I overheard some of you talking about the fact that our school doesn't recycle. What can we do about this?".

Or start with an indirect student initiated statement, "I noticed Suzy was wondering where to put her empty juice bottle yesterday, then she put it in the trash, and that Jim and Chris put lots of paper in the trash, too. Does this feel right?"

If you do not notice students wondering about a lack of recycling ask, "Our world is working hard on becoming 'green.' Do you know what this means?" Then, "How can our school be more green? And how could we help?"

Whichever way the problem is established, the next step is to chart your discussions of the problem and possible solutions on a poster. Brainstorming is a wonderful group (or individual then group) activity. On a chart, the conversation can be picked apart, reflected upon, or added to.

Some children might start talking about how to convince the community to recycle. If so, this is a good time to ask them about ideas. "How can we teach the school to recycle?" And, if you want to hint at the final video project (Project 10), you could ask,

"What are some of the different ways that messages are delivered in our world today?" Keep the energy of their proposals in check and be prepared to tap back into it later.

Lessons 2: Individual Wordsplash Brainstorm

A simple lesson early in the unit is for the children to complete a brainstorming "wordsplash." This is an activity where a word or theme such as "recycling" is written in the center of a blank piece of paper with a puffy cloud encircling it. Then for two or three silent minutes the students "splash" down as many things they know about this word on the paper. Words can be written anywhere on the page in any fashion. It is a liberating, free way for children to express their ideas.

If any children are stuck and need a prompt, mention, "Do any of you recycle at home?" Followed by, "List some words that describe this. What are the steps of recycling? What can we recycle?"

When the kids seem to have "emptied" or "poured out" all of their ideas onto their sheets, they are ready for sharing with the group. The best way to do this is to start KWL Charts (what you Know, what you Want to know, and what you've Learned).

Lesson 3: "K.W.L." Charts

Right after the splash lesson, have the kids start two large charts. On top of one poster write, "What do you KNOW about recycling?" You write the children's verbal responses below this question and hang it in the room. This is a logical next step from the splash exercise to take their individual reactions from the splash and using discussion to connect them to larger ideas such as reducing waste, the trash problem, helping the environment, and helping our community.

During our discussion of what kids know about recycling this year, the following conversation ensued:

"I know recycling means to reuse things," Bill said.

I quickly responded, "Like what?"

Bill continued, "Like old cans can make new cans?"

I write on the K chart, "Old cans can make new cans! – Bill."

"Cool! Does anyone know how that works?"

"Are the cans melted down into new cans?" Sarah questioned.

"Yeah, they are," said Tim quietly.

"Why is it important to recycle in the first place? No one's mentioned that yet."

And the discussion and charting continues.

Next, on a second piece of poster chart paper you write, "What do you WANT to know about recycling?" This second chart pushes kids to ponder what they want to get out of the unit. It is a chart they can refer back to later in the year to see if they have answered the initial questions they had about recycling.

Finally, after a few months of this unit, a class can reflect together on what they have learned (or as an assessment on individual pieces of paper or on Post-Its) by answering the question, "What have you LEARNED about recycling?"

K.W.L. charts are wonderful child-centered ways to start and end almost any social studies or science unit. It allows the children's funds of knowledge to be tapped so as to access their prior knowledge. This can also be done with an introductory exercise called the "Filing Cabinet." Lessons start with, "Kids, open the math drawers in your brains. Flip to the fives tables sheet in the times table file. We're going to play a game with this information today. Before we start, can anyone tell me what they see in there?" This can be done with some animated hand and finger movements. Tapping into prior knowledge is an important way to start any lesson, discussion, or activity. It gets brains warmed-up.

Lesson 4: Discuss and Chart a Solution Strategy

After the kids established and explored the recycling problem through a wordsplash and K.W.L charts during my first year with this program, I said to my students, "Would you like to try solve this wasteful problem here at school?"

"Yes!" Tara blurted out.

"That depends…" Sam questioned.

"How will we solve it, Mr. Wells?" Jose asked.

"That's a great question, Jose. I'm not sure how we will solve it, that's up to you." I said.

I continued with, "Our BIG school recycles some of its paper, but not very well. And, they do not recycle glass or plastic bottles and aluminum cans, as some of you have noticed! Some people may say 'Who cares?' but I say this is sad, it hurts our environment, and let's do something about it!"

"Like what?" Jim will ask.

"That's up to you, Jim, and all of your friends here. What do you all think we should do about it?"

At this point, the dilemma was hovering in the air of our meeting circle and sinking into thirsty young minds. A challenge had been thrown down. The power to take on and solve this problem had been clearly handed-off to the class. Here the kids need some "think time." Grab a thick, smelly marker and a clean poster chart. At the top of the chart, write, "*Our school has a problem, we don't recycle. How can we fix this problem to help our school, our community, and our planet?*"

Record the kids' ideas on the chart and leave it open to other ideas over the next few weeks where you will guide them into making an "Action Plan" for recycling.

Lesson 5: How to Recycle Paper and Containers

Teaching children the day-to-day responsibilities of recycling work is ongoing and changes with time. Early in the year – preferably the first week or two – you need to ask the children where to strategically put your blue bins (for bottles and cans) and cardboard bins (for paper waste) around the building. You need to ask them how you will collect paper and containers. With student input, organize a system so that the kids are clearly and smoothly doing the work of recycling collection. (This can be incorporated into Lesson 4.) The next day, come back to them with a sign-up list and set of instructions for them to follow based on the previous day's conversation. (Please see Appendices E and F for a sample of a sign-up list and instructions.)

Go over the instructions clearly with the kids so they all understand their responsibilities. Review them each day before the children recycle at recess in teams. Recycle with your students at first. And review how their work went in front of the whole class after recess to work out any problems as a group. Front-loading this work and carefully setting it up will save you much time and energy later in the year.

The recycling work is a two-pronged approach. A) Paper collection is a huge task requiring the collection of hundreds of pounds of paper twice a week, yet it is a simpler and cleaner job as teams must visit *every* room in the building with a wheeled garbage can. This usually means half the building on Wednesday, half on Friday. All these rooms use old cardboard boxes as paper recycling bins. B) Bottle and can collection is a little more tricky as teams have to find the twelve bins and it is a more sticky process. This group uses one blue bin to collect from the other blue bins. They must collect from all bins twice a week, lest they attract flies or start to smell.

Once my class has started the recycling process during the first month of school, we show the rest of the grade a slide show about where bottle and can blue bins are. I use photographs and one clear and thorough thirty-minute lesson on HOW to pick up recyclables. This is their big job. Teaching the grade clearly one time will save you much time later in the year, although review will be needed. I spend ten to fifteen minutes going through the two processes: A) paper and B) bottles and cans.

I do a follow-up lesson with my class in the classroom and at our "Recycling Center" where we store accumulated paper, cans, and bottles in large trash and recycling receptacles. Once again, we talk about safe ways to dump bins, tie off garbage bags, clean up spills, and sort redeemable containers from non-redeemable containers. With time comes almost total independence as teams do their work. Problems come up, but the kids can help each other through these moments. And of course we must be around to help dump heavy loads, wipe up messes, replace needed bags, and constantly encourage and inspire.

Be sure to communicate regularly with the recycling teams. I usually have a quick "How did it go?" chat with my recyclers after each session in front of the whole class to touch base. It is a time to find out where new bins are needed or what problems they may face – and problems will certainly occur! Do not expect to set things up and have them all

work perfectly. That is not going to happen. Blue bins will disappear, spills will happen, children will get in trouble for yelling in the elevator, a millipede will crawl across Alice's hand, etc. Work hard to put out any fires in such a way that they are less apt to occur in the future. Also, be prepared for setbacks. They are a natural component to starting a recycling program. Our paper pick-up service just took two weeks off due to ice storms and you can imagine the back-up in our paper bins. These types of situations require some extra work, diplomatic emailing, and creativity.

Each month a different class takes over these jobs. At The Park School we have three sections of fourth grade. The classes have one month on, two months off. Yet at the end of the month, they never want to let go of their jobs. For smooth transitions month to month, a few kids from one class volunteer to help the new class with the work and to answer any questions. The children become experts.

Recycling takes place during recess in our system, but kids do not seem to mind missing two or three during their month. They love the work, the attention and praise received, and they believe strongly in their cause. Occasionally there is a student who does not want to give up any recess and does not sign up to help, but by the end of the month, he puts his name down. He has caught the spirit.

The appealing nature of helpful, necessary work drives the success of the program. Kids need this. It will also hopefully be part of your inspiration as you head up this operation. You will need to replenish your energy stocks from time to time and the ultimate goal of this work – to preserve our natural world – should drive you.

Lesson 6: A Recycling Book Bin

Read recycling (or any environmental) picture books to your class. Talk about them. As you may know, picture books are magical in any elementary (and high) school classroom. There are many texts about the 'how's' and 'why's' of recycling. These include important photographs and illustrations of what recycling looks like beyond the big truck. Create a small book bin of recycling texts from your library or Amazon.com. These will be crucial resources for this study and can be passed between classrooms.

It is also important to locate age-appropriate picture books that explain the Greenhouse Effect and global warming. Read these with your class while also sharing recent clippings from newspapers and magazines. Slowing global warming is the ultimate goal of most environmental work. It is a tricky, sometimes scary topic, but get it out there clearly so that you can discuss it in an optimistic, age-appropriate way (even if it terrifies you). There are many lessons and activities to help children and your communities use less energy to help reduce carbon dioxide emissions. Incorporate conversations about energy use and conservation. Track things children can do to use less electricity: use less water, change bulbs, walk to the store, play in the woods instead of on an X-Box 360, etc. on a poster where each child gets a sticker for each "green deed."

Try to read several recycling texts early in the year. I have noticed that children know very little about the actual process and rationale for recycling. We make assumptions about their knowledge that may not be accurate, and they blindly trust that "it is a good thing to do" without fully knowing why. Further, make the children accountable for knowing and holding on to this information. Such thinking can be encouraged and assessed through a seemingly simple project, "Why Recycle?" paragraphs (Lesson 9).

Lesson 7: Fact Finds

There are many facts out there about recycling (see Oberlin College's www.oberlin.edu/recycle/facts.html or my fact sheet Appendix G). Some facts are startling, some are sad, many are mind-boggling, and all are interesting and persuasive. A teacher could simply pass out sheets of facts, such as those attached, but this teacher-centered approach will not draw much interest from the class and does not respect their abilities. A much better method of getting some of the many interesting facts about recycling into the hands (and minds) of the kids is to tell them to go out and find this persuasive information! Tell them they will need this research data for other projects later in the year (such as Lessons 8 and 9).

Using a template such as Appendix H to take notes, have the students use the picture book bin and Internet to research recycling facts. This can be done in pairs or

individually, if there are enough computers. Having kids use a children's search engine such as *Ask for Kids* at askforkids.com or *Yahoo's* child search engine kids.yahoo.com is the safest bet. Yet Google will find much more on the topic and is pretty safe when researching these topics. (Warning: Google searches are not always accurate or safe for elementary school kids and restrictions and or filters should be in place.)

Kids should not simply search for long lists of facts. They should search for "the five most interesting and telling facts." Kids would later be told that they pick one or two from their lists to use in projects such as posters, paragraphs, and videos. Charting their favorite facts and reorganizing these charts into categories such as Aluminum, Glass, Plastic, and Other would be helpful.

Lesson 8: Place Value

Many fourth graders struggle interpreting the data they find in their recycling research. It will be hard to understand the mathematics behind some statistics. If a student finds that "Twenty-five trillion Styrofoam cups are thrown away each year in the United States," they might understand that this is a large amount, but would they know it is numerically represented as 25,000,000,000,000?

To help them start to understand this number, they must have a firm grounding in the mathematical concept of place value. Early in the year most third to sixth graders study place value. This provides the perfect opportunity to integrate the service-learning theme – recycling – with math class. There are many place value games to play, hands-on activities, and discussions to help this concept become more approachable.

A great activity for understanding the value of one million (and beyond) is to ask the kids to find out how many pennies stack to one inch in height. The answer is fifteen. If fifteen pennies are one inch, how many are in ten inches? 15x10=150 pennies. In one foot? 15x12 = 180 pennies. Have the kids try to stack 180 pennies then ponder 1,800 pennies in ten feet.

Many other conversions could take place with the pennies or in abstraction (although I recommend concrete representations). End by asking your students to guess how tall a pile of 1,000,000 pennies would be. Over one mile high! How tall is one

trillion? A billion would be 1,000,000 miles. How about 25,000,000,000,000 pennies stacked? How about 25,000,000,000,000 Styrofoam cups stacked? Would we hit the moon? Would we hit a planet? Which one? These all would be great, exciting explorations in mathematics that would also help your recycling unit.

In November, 2006, my class worked hard to unpack the fact that our school uses 4,000 reams of paper per year. Through a number of conversions we found that this equals 20,000 pounds of paper, 2,000,000 sheets, and would stack to a height of 666 feet (111 feet taller than the Washington Monument)! Our next step was to convince our school to use less paper and for our administration to buy paper with 30% recycled content. We recently found out that this will happen in upcoming months!

Other mathematical concepts will be covered. If a student read that, "Americans throw out more than 2.5 million plastic bottles every hour" she must have an understanding of decimals to absorb this information. If not, do not hesitate to bring in a lesson on decimals to understand a real world situation. Converting decimals to fractions could bring about discussions of fractions. These are current fourth grade units later in the spring, but we get a head start in the fall recycling Fact Find project. If you teach third or sixth grade, these topics are equally relevant, but you will need to craft your math connections with developmental appropriateness. Whatever level you teach, these mathematical connections are numerous and should be taken advantage of.

Lesson 9: "Why Recycle?" Reflection Paragraphs

As kids listen to and read recycling picture books and as they start researching recycling facts and understanding them through math lessons, they will also start to more clearly realize why recycling is important. To push this point further, read picture books about global warming and our need for broad societal changes starting with concrete steps like recycling. Deep meaning will come up in early lessons, but this only sinks in with time and experience. During Fact Finds and while reading books, students will start seeing specifically why we need to do more to preserve the health of our planet.

Starting a chart that says "Why is recycling so important?" at this point would be *critical.* It would be an ongoing chart that grows. Having a public chart that kids can

write on themselves often sparks interest. Kids love picking up the thick chart markers and doing "teacher work."

When the class seems ready, after books have been read and discussed, charts have been made, and teams have started the work of recycling, ask your students to write one clear paragraph titled "Why Recycling is Important." Discuss clear organization of a paragraph and see what you get!

These recycling paragraphs can be helpful throughout the year. Students can read them to larger audiences, or include them in your class video or school presentations. This year, ours are posted on a student-created class recycling website (projects.parkschool.org/~recycle).

In fact, in October, 2006, The Weather Channel asked me if they could show parts of our "Recycle Please!" final video project from 2005 featuring Recycling Boy on their weekly climate change program "The Climate Code with Heidi Cullen." They also asked us to film interviews with students asking, "Why is recycling important?" I was all set as we were working on these paragraphs when I received this request. Several of these interviews made it onto national television. You can imagine how thrilled the kids were.

Students can write Letters to the Editor of a local newspaper or kids magazine. The assignment would be to "write a persuasive letter that attempts to convince the reader to become a good recycler." The students would map out their letters with prewriting organizers so that they are well prepared. If you mail them a month prior to Earth Day in April, you might have luck getting them printed in the paper.

To prepare for these letters, having kids write single paragraphs about "Why Recycling Is Important" can be helpful. These paragraphs can be useful all year long and they help you assess if the children actually understand the importance of recycling. In fact, I have my students write variations of the "Why Recycling is Important?" paragraph three times a year as it is a great way to track their growth as writers, but also in understanding the true reasons for recycling.

Lesson 10: Recycling Songs

Including music as part of the unit is fun. Appendix C has several great recycling songs based on classic tunes such as *I've Been Working on the Railroad* and *Row Row Row Your Boat* (Harold Martin School curriculum, n.d.). Children who thrive in musical ability, but who might struggle with some of the math place value work or paragraph writing would be thrilled to exhibit their musical skills in class. Howard Gardiner's multiple intelligence theory helps to value not only the great letter writers, or place value manipulators, but the musicians, the artists, the team players, the good listeners, and many others. These are memorable, up-beat songs that are fun and that have great messages.

Having the kids write their own songs to popular music about recycling would be an effective way to get them to think more about their learning. Rap songs might be popular. The web site at "Ollie's World" olliesworld.com/planet/usa/rapsong.htm has a great rap that would inspire. Including these songs in the final project is a must.

PROJECTS

Project 1: Containers

I clearly remember standing next to a tall pile of ten brand new blue bins from the town of Brookline, MA recycling department. They were clean, shiny, royal blue and we were all excited. As described in Lesson 5's conversations, collection containers need to be placed around the school to get things started. Have your kids tape up all of the holes with wide clear packaging tape, to prevent sticky soda and juice from staining carpets.

Have your students make a list of heavy traffic locations where they should put them (faculty room, by the gym, in the lobby). Finally, the kids go out in groups to drop them off. Next, start talking about making posters. This was one of my students' first marketing ideas during our early conversations.

Design your own classroom cardboard box paper-recycling bin. I remember fondly when three children playfully decorated our first paper bin with bubble letters...and with spirit. We made several others that week to give to teachers and staff

who needed them. It was a slow process to get them into every room in the building, but we got there. Ultimately, you need to ask all the other teachers to find and make them in a polite email or faculty meeting message. Be sure to offer tips on where to find boxes or what they might say on them.

When we first started, I noticed custodians throwing this paper waste out with the regular trash and talked to them about our new program. These conversations and some emails to the Head of Maintenance helped bring the custodians into the loop and into a position where they appreciate our help in removing hundreds of pounds of waste from regular garbage cans each week. Have custodians come to class and talk about their work and how your recycling helps is another exciting possibility.

Project 2: The Poster Contest (as described in Chapter 2)

The blue bins will advertise themselves to a point, but the kids need to do more to get the word out early in the school year. Initiating a poster-making contest for the bottle and can blue bins based on research from the Fact Find (Lesson 7), is perfect for marketing the program. Kids could also work on making clever slogans or catch phrases. This year, Omar came up with, "It's your world. Keep it clean!" and his rallying call rings loud and clear from many voices now. It was especially exciting when the Weather Channel focused in on several kids singing out our rally cry in their feature about our class efforts as "Climate Changers."

Find an unbiased judge who can determine the winner of the poster contest. Give the children several nights to complete the assignment on the back (to save paper) of the instruction sheet (Please see Appendix B). When the posters come in, put them up on a bulletin board and have your judge pick a winner. Recently our year-two winner was announced in a Morning Meeting assembly to grades four through nine by my colleague David Lawton. David displayed several runners up on the overhead document camera to an impressed audience. He described how the winning poster would be reproduced, laminated, and put on all the blue bins. Finally, he shared the winner's amazing poster (see John's poster as Appendix A3) and in the middle of the excitement, Mr. Lawton put

on our purple Recycling Cape and pleased hundreds of kids with his energy and humor. Then he flew back to his seat to laughter and applause.

Project 3: Email Your Message

Write an email with your class to the entire faculty encouraging their help and participation in your efforts. I write an email once a month to the faculty and staff at The Park School to teach them more about environmental issues that are important to me and to the children in the class. The Internet is a great way to connect and share important environmental thinking, in fact, it has helped mobilize the green movement on a larger scale with events such as the Step It Up 2007 rallies across the country on April 14, 2007. Creating a class recycling website is a great idea if you or your kids know how!

An early email or faculty meeting announcement about your intentions can work wonders. Many will appreciate your work, but if you can get them to join you in modeling caring environmental behaviors, you all will be teaching by being role models for the student body.

Project 4: A Trash-reducing Action Figure or Mascot or Super Hero

The average American produces over thirty pounds of trash each week. At 4.4 pounds per day, many of us will leave behind over 100,000 pounds of trash in landfill during a lifetime. Recycling can cut these numbers in half, save valuable resources such as trees, and slow global warming because fewer raw materials will be acquired through the energy intensive process of being mined.

The United States has only six percent of the world population, but produces half of the world's garbage (Royte, 2005). Americans make more than 200 million tons of garbage each year, enough to fill Fenway Park from top to bottom more than three times every day (2005)!

What is the best way to share such startling news? How can you educate many in a memorable way? To do this your class needs to create a mascot for our efforts to reduce trash. Perhaps she or he is "The TRASH BASHER!" and fights for a clean and healthy

planet. The kids might decide that the mascot is "Ralph the Recycling Raccoon" who goes through our trash and picks out what should not be there. This mascot will be up to the kids to decide and vote on. Such a mascot would be fun to rally around and to symbolize their unity and cooperation for this project.

From Chapter Two you know that we decided upon a superhero "Recycling Boy" early in the first year of our project. This role has expanded to Recycling Boy and Recycling Girl in our public announcements at assemblies. Last summer, I found a second red CB ski racing "GS Suit" so that two kids can dress up at once and recycle during recess with style.

I am not sure how necessary these red suits are to our success, but they create such energy and joy in the children and give us a rallying story to propel our efforts. This year, for our final class project we have a third racing suit and three super heroes: Reducing Girl, Reusing Girl, and Recycling Girl. I urge you to find a mascot to give an identity and a central voice to your program. This will help to market the work and educate others.

Project 5: Packaging Monster Project

One of the major sources of waste in our society comes from the packaging of goods. For this project, students save packaging from things their families buy at the store (such as Cheerios boxes, washing machine boxes, laundry detergent bottles, etc.) and your class makes a large packaging monster! A monster for Ralph the Recycling Raccoon (or Recycle Girl, or Trash Basher, or whomever you come up with) to defeat. This character can become a "bad guy" of sorts. Kids could come in with items that they think have excessive packaging. For example, in 2004 my small Apple iPod came in a very large 9x9x9 inch cubic box. CD computer programs come in boxes dozens of times their size filled with cardboard, plastic, and bubble wrap.

Perhaps one class will make a cardboard packaging monster while another makes a plastic one? These could be seven feet tall beasts that are easy for the school community to see standing in the school lobby. Perhaps they talk of their wastefulness

via tape recorder, computer, or poster and educate others about recycling or shopping with an eye toward minimal packaging.

Below are several striking facts your students might find in their Fact Find activity (Lesson 7) about plastics that could be on a poster attached to the plastic packaging monster:

- *About 100,000,000 pounds of plastic are made each year.*
- *Half of these are for disposable packaging.*
- *Most are not recycled.*
- *Plastics last at least 400 years in a landfill.*
- *We make enough shrink-wrap each year to cover Texas.*

These two monsters would be vivid and powerful communicators to others in the school community. They could also share part of the spotlight in the final video project (Project 10).

Project 6: The Great Wall of Waste

The amount of paper that Americans throw into the garbage is mind-blowing. The following facts are some of the most shocking I have come across as examples of our culture's extreme consumption and wastefulness:

- *Americans throw away enough office and writing paper annually to build a wall twelve feet high stretching from Los Angeles to New York City.*
- *Recycling one-tenth of American newspapers could save 25,000,000 trees every year.*
- *Every day Americans buy 62,000,000 newspapers and throw away 44,000,000 of them. That's the equivalent of dumping 500,000 trees into a landfill every week.*
- *It takes 75,000 trees to print a Sunday Edition of the New York Times. Only a small percentage of them will be recycled.*
- *One ream of paper (five hundred sheets) uses up six percent of a tree.*
- *Recycling a stack of newspapers just three feet high can save one tree.*

Imagine sitting down with a class with this information on the board (hopefully found in their Fact Finds (Lesson 7) and asking, "Kids, how can we share this news with the community? What could we build to educate others about this? How can we represent these statistics to the community?"

There are many possibilities ranging from stacking a simple three-foot pile of newspapers that represents the life of one tree to stacking a twelve-foot wall. Above this pile could be a poster stating some of the other facts. Better yet, next to this could be a ream of paper and a sign about what it represents. Or seventeen reams in a tall pile representing one tree. Each display would have signs asking others to reduce usage, reuse paper when possible, and recycle it when we are done.

The project could really shake people. You could collect used standard copier paper. Collect *lots* of it. When ready and armed with huge piles of paper, imagine building a wall that was six feet high and six feet long. Or use packaged reams of soon-to-be used copy paper. It would have to be up against a secure wall and, for safety's sake, covered with a large piece of Plexiglas. On this wall could read a sign and a map depicting this fact:

> *Americans throw away enough office and writing paper each year to build a six-foot wall 6,000 miles long. It would stretch from Paris to Tokyo or from Boston to Baghdad. If recycled, this wall would save tens of millions of trees. Please recycle paper. Better yet, try not to use so much.*

What an image; one that might get some people to work harder on their reducing and recycling. Post this above each of your school's copy machines.

This project will encourage people to recycle their writing paper and newspaper, but we can also encourage them to use alternative sources of print. Using the Internet offers many possibilities for paperless communication and data storage. You can also "Write, edit, and deliver paperless documents to far-flung family members by sending e-mail appendices" (Newman, 2003, p. 80).

Suggesting the purchase of products made on recycled paper helps the effort. I found Harry Potter and the Half-Blood Prince printed in Canada by Raincoast Books on

"100% ancient-forest-free paper, 100% post-consumer recycled, processed chlorine free" (Rowling, 2005, copyright page). The entire printing of the seventh book in this famous series will have thirty percent recycled content and the other seventy percent will come from sustainably harvested forests. The green message is growing. It is important to show kids books like these and encourage them to look for recycled paper in products they buy.

Does your school purchase paper with any recycled content? If not, find out how much paper you purchase a year. Use this fact to educate others and ask for your principal or Head to come in for a meeting. I bet your students can change your administration's shopping habits. Ours did.

Project 7: Recycling Art Projects

Like the Great Wall of Waste (Project 6), recycled art projects are made of old paper products. The major difference is that they are much more open-ended and creative. Many artists are now creating inspiring work out of reused materials. Share some of this work with children by having them Google "recycled art" or see Appendix I photos of a chair and a lantern made out of reused and recyclable products.

Potential projects could include anything from recreating chairs and lanterns from recycleable goods to building the Acropolis of Athens with Parthenon and Temple to Nike included. Your children will amaze you.

Project 8: Bag Messages

Kids design posters that say, "If every household in the United States reused a brown paper bag for one shopping trip, about 60,000 trees would be saved" (Oroloma Sanitary District, 2003). What if this message was written on old brown paper shopping bags and put around your school. What if it was written on old brown paper bags and posted in a super market? What if it was written on NEW brown paper shopping bags that were about to be used? Your students could do this. They could come up with their own catch phrases and images. They could encourage reusing bags or better yet, using cloth

shopping bags or backpacks. And they could reflect upon why American society has so many bags that are only used once?

Projects 9: Other ideas!

Ultimately your school's recycling program is its own and is not locked in to any one curriculum or set of recommendations. You should consider the few lessons and projects of this text as a starting point. You should feel comfortable diverging from this regularly. This plan will not fit the circumstances of your setting perfectly and you will have to be ready to make your *own* recycling program.

There is an infinite number of other lesson plans and projects on the Internet, and most importantly, in your teaching team's and your students' minds. Tap into this good energy and allow it to carry the program.

Before you read about the final video project (Project 10) consider making your school's own version of the famous three arrow reduce-reuse-recycle symbol; marching in a recycling awareness parade where students dress up as recyclable goods; making reused product Piggy Banks to store coins from bottle and can redemption; making recycled paper; have a rechargeable battery drive or a cell phone disposal drive; creating a recycling calendar decorated with photos of sculpture built with recycled goods; watching videos about recycling (there are many on YouTube); going through a garbage bag to determine what could have been recycled, reused, composted, or thrown out; and consider starting a compost bin. The topic of composting could be rich, especially if a classroom has a worm farm terrarium.

Project 10: Class Recycling iMovie

The final project in all of your recycling efforts could be a class video promoting your message in order to educate a broad audience. This is a "final project," yet it should take place mid-year, because it is a long-term project that has potential to cause ripples for months. It is "final" in that it is the biggest project of the recycling curriculum, but it is certainly not the last.

To start, I recommend establishing the problem (as described in Lesson 1), ending by asking your students how messages are spread in the world. If they bring up television or film, super! Then simply ask if they would like to create their own and mention that this will happen later in the year. If they do not, you can ask them, "What is a way to reach a large audience in a creative way?"

"Video?" Suzy might question.

"Let's make a video!" Samantha will exclaim. And you will be off.

There are numerous steps to the video making process. Before considering them, you must have some foundational knowledge in the use of a DV (Digital Video) camera and the Apple program iMovie (or a similar "easy to use" digital video editing program). I will not explain DV cameras or iMovie in this text, but I recommend seeking help from a colleague with these skills and whose equipment you can borrow. There are also many books such as *How To Do Everything with iMovie* by Tony Reveaux and Gene Steinberg, *iMovie HD 6 + iDVD 6 Essential Training* by Max Smith, or *Making a Movie in iMovie HD and iDVD 5: Visual QuickProject Guide* by Jeff Carlson that are helpful to a beginner. Best of all, take a tutorial in iMovie with a technology teacher you know.

When some of your skills are in place, moving on to the actual project will actually be the best place for you to learn as the kids excitement will help you work hard on the video editing process (the teacher's part, although some older children may be capable of this). Other steps such as loading video onto the Internet or creating a class webpage can be fabulous to truly reach a broad audience, but they are the icing on the cake. I highly recommend these final steps, but do not take on too much with your first video.

Before filming, you need to do several group outline sessions with your whole class to determine what kind of film or show you will be making. You can brainstorm plots and characters. You can bounce ideas around until you have a nice list and then let the kids vote on their favorite ideas. Constant tinkering and a diplomatic process is crucial throughout the project.

Will it be a game show? A story with a plot? A series of commercials? A clay-mation adventure? A cartoon sequence? There are many possibilities.

Once big-picture ideas are firmed up with the whole group and mapped out on a chart, break the class into writing teams to work for about a month on writing, editing, and eventually rehearsing their scenes. When groups appear to be ready, dive into simple props and costumes and get filming.

When filming is done, you will have about an hour of video editing per minute of final product video. So if your class project is eight minutes when complete that will mean you potentially spent eight hours on editing (over the weekend perhaps). So be careful not to take on too much. I have learned this lesson the hard way. Aim for a five-minute final video project, maybe eight minutes. Keep it short and sweet, as they say.

If you are a natural and really enjoy this work, you could video several of the recycling projects to share with a wider audience. If you teach fifth or sixth grade, perhaps your students do much of the cinematography and can handle the editing process? There are many ways to delegate all the work. Perhaps you start a class webpage. This year I had a ten-year-old, "Webmaster J," as he is now called, create a website to gather and share much of our work in the form of writing, photos, and video. It is a terrific extension for a class that is ready.

I love the way that video projects build community and pull together a class around a common goal. Furthermore, children gravitate toward areas of expertise. Some children will enjoy working on set design and artistic portions of the work, others will enjoy the writing, and some will crave being on center stage so they can act. This draw toward strength is wonderful; but you as the leader must be careful to share the spotlight with all and to notice who needs pushing and who needs reining in.

The use of video production in the classroom is an effective way to reach a diverse group of learners. When teams of students meet, write, work with their hands, build, act, and much more, there are opportunities for different strengths to emerge and flourish. I see this every year and am thrilled to see so many different kids feeling so good about themselves as students, especially when they sit down for the first time to view the movie on a large projector screen.

Strong, progressive teaching units often culminate in hands-on projects that allow children to "externalize" or retell what they have internalized over the course of the unit. This is also a vital aspect of a successful service-learning unit. Making a movie is the perfect venue for such retelling and sharing. It is also an effective way to pass on a message to others – one of our major goals.

As times change, so do students. Progressive teaching adapts and changes. Progressive teaching takes into account a changing world and the malleability of knowledge (Szamreta, class discussion, July 11, 2005). The "use of audio/visual tools increases student attention and retention of information" (Brooks-Young, 2005, p. 21). Children today in 2007 are overly-stimulated by mass media. It is no wonder that the classroom struggles to hold their focus. Perhaps it is time for more teachers to use some of these mass media methods, as some students have expressed:

> Students participating in the NWREL [Northwest Regional Educational Laboratory] collaborative think that classroom instruction would be improved if teachers would vary their instructional methods and use more creativity. Suggestions for change include fewer lectures and less whole-class instruction, and more time for active learning. Digital video can be used to address these suggestions by offering students a media-rich classroom environment using a medium that students know and value. (Brooks-Young, 2005, p. 22)

The careful viewing of high-quality streaming video from online sources related to units of study is one way to achieve such goals (Brooks-Young, 2005). Using hands-on, child-centered lessons and projects as described in this chapter are other possibilities. In the case of movie making or play writing and performance, kids will know and remember material they research, find, study, rewrite, act, and watch. Some of my students watch the DVDs of their class movies over and over again. As teachers know, the best way to learn something is to teach it to someone else – this is what children will be doing with this final project.

Though I have many ideas about how my class videos could turn out, as will you, the kids dictate its ultimate direction. Such group collaboration is democratic and the planning stages are much fun to map out on charts. John Dewey would love the amount of cooperation necessary for this assignment.

Using earlier characters such as the Plastic and Cardboard Packaging Monsters, Ralph the Recycling Raccoon, and the Great Wall of Waste would be wonderfully effective. Having a large nursery of raccoons singing some of the recycling songs would be great fun. The songs could be a simple soundtrack in the background. Imagine children standing in a forest dressed as trees talking about their value in cleaning the air and how their protection is necessary. "Trees, trees, when they breathe/ clean the air for you and me./ They make oxygen/ and shade our houses from the sun and wind./ Trees, trees, we will always love you/ and all the things you do./ So plant some seeds everywhere/ and show the Earth that you care."

The basis for such a message can be noted in the fact that a single mature tree can absorb carbon dioxide at a rate of forty-eight pounds per year and releases enough oxygen back into the atmosphere to support two human beings (McAliney 1993). Powerful.

There are many possibilities for taking original statements from the Fact Find and bringing them to life visually in a class video. Just wait to see what your kids come up with.

The video would logically end with tips for how people can change their habits to better recycle and protect natural resources or reminders for how to reduce consumption and reuse materials when possible. Kids can act out these lessons.

Your students will learn various academic, social, scientific, and moral lessons. They will be cleaning up the habits of their school and report back to it on other ways to continue this work. They will help their parents and other members of the community mend their ways. Their ripples will move on and will be lasting during a time when our natural world desperately needs this assistance. Families of these students will most likely get more involved and the fourth graders will end up changing the world for the better.

Throughout this process you will be the consistent spark and inspiration for your students. You will be challenged to learn about the now critical nature of environmental stewardship and the creation of a sustainable world. You will learn iMovie as well as cutting edge progressive teaching methods. You will be changing the world. As Matthew Eide, a first year teacher in Oakes and Lipton's *Teaching to Change the World* said, "It is

not enough for me to encourage my students to become more active. I must walk the talk myself" (Oakes, 2003, p. 418). This project will take you beyond the simple talk you have done with past years' classes, usually on Earth Day only, and – with the help of your kids – you will walk.

CONCLUSION: HOPE – PLANTING SEEDS TO PROTECT THE PLANET

"All my life I have tried to pluck a thistle and plant a flower
wherever the flower would grow in thought and mind."

- Abraham Lincoln

"Let the gentle bush dig its root deep and spread upward
to split the boulder."

- Carl Sandburg

Imagine a plot of land. Close your eyes and picture it in early May. It is a beautiful, old pasture that has not been tilled in years; wild flowers have broken free; many weeds are present; and tall deciduous trees rise in the distance, against a background of calm, blue mountains. The forest and mountains are far away but we wade through tall grasses and plants together toward them. It is obvious that this land has been fallow for many years. Here, we are going to plant a garden.

Pounding with heavy rocks, we stake off a large rectangle together in the field. We till the grasses under after picking a wild bouquet. The dark earth turns up easily under the plough. After a few hours, having been organized into rows, it is ready to work. We will seed tomorrow.

This will be our garden. We will look after it caringly – like teachers tending to students – so that our harvest will be a celebration of the land's power.

Now picture the faces of the students in our schools. Most know almost nothing about the natural world except what they see, play in, or swim in. Their lives are too short to have seen or truly understood any negative environmental change. They are the fertile garden ready to grow and learn about how to best tend to their own future. We all know how earnest children can be when given powerful work to do. All they need is a framework for this work – a curriculum that unleashes their potential.

Let us lay this opportunity in front of our students so that their work – their harvest – is a celebration of humanity and hope. Ultimately it is their plot of land and we must do our best to teach them how to care for it.

Service-learning, when implemented carefully, adds an exciting element to any classroom. Children naturally want to be helpful and to please others. They care about their world. They want to learn with their hands. By being in service to their communities and studying themes related to their environmental efforts in great depth, they are able to do all of this. Most importantly, service gives them and lets them act out hope.

Paulo Freire believed that "hope is something one *does* as much as it is a feeling" (Oakes and Lipton, 2003, p. 433). In promoting better, more democratic, progressive classrooms full of students who believe in improving the environment through service, we are teaching the action of hope. Is there anything more important? Challenges we face such as global warming may feel insurmountable, that is, unless a few of us dare to inspire our children and our leaders to hope and to act.

"Do not wait for extraordinary circumstances to do good action;
try to use ordinary situations."

– Jean Paul Richter

APPENDICES

Appendix A1 – Sarah's 2005 winning poster

Appendix A2 – Tim's poster that inspired the superhero "Recycling Boy"

Appendix A3 – John's 2006 winning poster

Appendix B – Poster contest homework assignment

* RECYCLING BIN POSTER CONTEST *

Design a poster on the back of this page. The poster should advertise our Grade IV recycling project. The best poster will be displayed on all of our "Blue Bins" around the school. Mrs. Halsey Cope is the judge! All runners up will be used for additional marketing around the building. Good luck!

YOUR POSTER MUST INCLUDE:

- A clear design that grabs the viewer
- Some polite words telling people to recycle
- A clever symbol or drawing about recycling

YOUR POSTER MIGHT INCLUDE:

- A catch phrase or motto
- A cool frame around the edges
- Facts about recycling from Mr. Wells' JUMP web site

Appendix C – Recycling Songs

Working on the Trash
(Sung to: I've Been Working on the Railroad)

We've been working on RECYCLING all the trash we can,
We've been working on recycling, It's a very simple plan,
Separate your glass and paper, Separate your plastic and tin.
Take the trash that you've recycled To your recycling bin!

We've been working on REDUCING all the trash we can.
We've been working on reducing It's a very simple plan
Don't go wasting any products, Use just exactly what you need.
Don't buy things in extra wrapping, Reduce and you'll succeed!

We've been working on REUSING all the trash we can.
We've been working on reusing, It's a very simple plan.
If it's a paper bag you're using, Don't use it once, use it twice!
Give old clothes and toys to someone, To reuse them would be nice!

Hear the Cans Go Crunch, Crunch, Crunch
(Sung to: Mary Had a Little Lamb)

Hear the can go crunch, crunch, crunch,
Crunch, crunch, crunch.
Crunch crunch crunch.
Hear the cans go crunch, crunch, crunch.
Recycle for our Earth.

Hear the paper go crinkle, crinkle, crinkle.
Crinkle, crinkle, crinkle.
Crinkle, crinkle, crinkle.
Hear the paper go crinkle, crinkle, crinkle.
Recycle for our Earth.

In We All Pitch In
(Sung to: Row Row Row Your Boat)

Save, save, save the cans, throw them in the bin,
We can help to save the earth if we all pitch in.

Save, save, save the paper, throw it in the bin,
We can help to save the earth if we all pitch in.

Save, save, save the bottles, throw them in the bin,
We can help to save the earth if we all pitch in.

Save, save, save the plastic, throw it in the bin,
We can help to save the earth if we all pitch in.

Appendix D – Photo of Jenny the first Recycling Girl

Appendix E – Sample Recycling Sign-Up Sheet

JANUARY RECYCLING SIGN-UP SHEET!

Paper – Three students collect from all classrooms and offices at Park using the BIG GRAY PAPER BIN. Hit the West Building on Wednesdays and the Main Building on Fridays. Be efficient and get to as many classrooms as possible. Have a teacher help you empty the bin if necessary.

Jan 3 _____
Jan 5 _____
Jan 10 _____
Jan 12 _____
Jan 17 _____
Jan 19 _____
Jan 24 _____
Jan 26 _____
Jan 31 _____

Cans and Bottles – *Two students collect every Wednesday and Friday at recess for the whole school. See attached list of steps for additional help and reminders.*

Jan 3 _____
Jan 5 _____
Jan 10 _____
Jan 12 _____
Jan 17 _____
Jan 19 _____
Jan 24 _____
Jan 26 _____
Jan 31 _____

Faulkner House – *Two students collect bottles and cans every Wednesday at 10:15 from the Faulkner House.*

_____

Appendix F – Recycling Guidelines for Recess

Recycling Bottles and Cans at Recess

1. At recess on Wednesday and Friday two students start collecting with the blue bin from PA300
2. Take a pocketful of paper towels from the project area with you
3. Walk to the West Gym lobby and start collecting there
4. Be sure you wipe up each floor area or blue bin if there are any spills
5. Collect from the following locations

    - West Gym lobby
    - By math office on third floor of West Building
    - End of lunch room near tunnel
    - Main lobby in corner by the coffee
    - In the Faculty Room under the toaster
    - Library
    - Project Area 400

    - Second Grade Hallway (if time)
    - Mrs. Segar's room (if time)
    - Above the N/K "Race-Around" (if time)
    - Ms. Sparks' room (if time)
    - In the Business Office (if time)

6. Whenever your blue bins fill up return to PA300 to empty it
7. Put any "redeemable" soda cans or bottles in the special can
8. Dump all other bottles and cans into the gray bin IN THE GARBAGE BAG and then go collect more
9. THANKS FOR YOUR WONDERFUL HELP!!!

Appendix G – Ted Wells' Garbage and Recycling Fact Sheet

Did you know...

- In a lifetime, the average American will throw away 600 times her or her adult weight in garbage. This means that each adult will leave a legacy of 90,000 pounds of trash for his or her children.
- The United States has only 6% of the world population, but produces 50% of the world's garbage.
- In the next ten years, it is projected that Americans will throw away over 1 million tons aluminum cans and foil, more than 11 million tons of glass bottles and jars, over 4 and a half million tons of office paper, and nearly 10 million tons of newspaper. Almost ALL of this material could be recycled. Can you convert these tons to pounds?
- Each year, Americans throw away 25 trillion (25,000,000,000,000) Styrofoam cups.
- If we recycle we can reduce the amount of waste going to landfills by 25 – 50%.

Paper:

- Americans throw away enough office and writing paper annually to build a wall 12 feet high stretching from Los Angeles fro New York City.
- Recycling a stack of newspapers just 3 feet high can save one tree.
- Recycling one-tenth of their newspapers could save about 25 million trees every year.
- Everyday Americans buy 62 million newspapers and throw out 44 million. That's the equivalent of dumping 500,000 trees into a landfill every week.
- Every Sunday, Americans don't recycle 90% of recyclable newspapers. This wastes 500,000 trees!
- New York's largest export is waste paper.
- Americans use more than 67 million (67,000,000) tons of paper per year, or about 580 pounds per person.
- Paper products make up the largest part (approximately 40%) of our trash.
- Every day American businesses generate enough paper to circle the earth 20 times!

Aluminum:

- Recycling one aluminum can saves enough electricity to run a TV for three hours or one 100-watt bulb for an entire day.
- If Americans recycled the aluminum trash we throw away, we could rebuild an entire U.S. airline fleet three months.
- You can make 20 cans out of recycled material with the same amount of energy it takes to make one new one.
- We use about 392 cans per person per year.
- Recycling aluminum saves about 95% of the energy it would take to produce aluminum from its original source, bauxite.
- Aluminum recycling is so efficient that it can take as few as 60 days for a can to be collected, melted down and made into a new can sitting on a grocery store shelf.

Plastic:

- Americans go through 2.5 million (2,500,000) plastic bottles every hour, only a small percentage of which are now being recycled.
- Five recycled two-liter PET bottles can be used to make one square foot of carpet.
- Plastic lumber, made with recycled plastic, holds nails and screws better than wood, is virtually maintenance free and lasts for fifty years!
- Products made from recovered plastic bottles include drainage pipes, toys, carpet, filler for pillows and sleeping bags, and cassette casings.
- Half of all polyester carpet manufactured in the US is made from recycled soda bottles.

Glass:

- Americans discard enough glass containers to fill the former 1,350 foot Twin Towers of New York's World Trade Center every two weeks.
- A glass bottle can be recycled time and time again into another glass bottle or product, without any loss of quality. Glass is 100% recyclable.
- Recycling one glass bottle saves enough electricity to light a 100-watt bulb for four hours.

Steel/Tin:

- The average American uses 142 steel cans annually.
- We throw away enough iron and steel to continuously supply all the nations automakers.
- The steel from the more than 84% of appliances (39 million) recycled last year yielded enough steel to build about 160 football stadiums.
- Recycling just one car saves 2,500 pounds of iron ore, 1,400 pounds of coal and 120 pounds of limestone.
- 95% of scrap automobiles were recycled in 2000 in the US, at a rate of 25 cars every minute.
- Through recycling each year, the steel industry saves enough energy to power 18 million homes - one-fifth of the households in the US.

Food/Yard Waste/Water:

- Americans dispose of 24 million (24,000,000) tons of grass clippings and leaves. This can be composted at home for about 10 minutes a week.
- Through composting, nearly 25% of a household's waste can be diverted. A family of four will generate nearly 1000 pounds of food waste per year.
- 40% of municipal garbage is made up of kitchen and garden waste.
- 18% of residential waste is grass clippings and yard waste, second only to paper and cardboard products.
- Only 1% of the world's water supply is usable; 97% is in the oceans and 2% is frozen.
- A silent leak in your toilet can waste up to 150 gallons of water a day.

Clothes:

- In one year an estimate seven million tons of clothing and other textiles are thrown away. Only 12% are reused or recycled.
- Disposable diapers last centuries in landfills. An average baby will go through 8,000 of them.

Appendix H – Fact Find Template (additional facts can be put on the back)

Recycling Fact Search Name _____

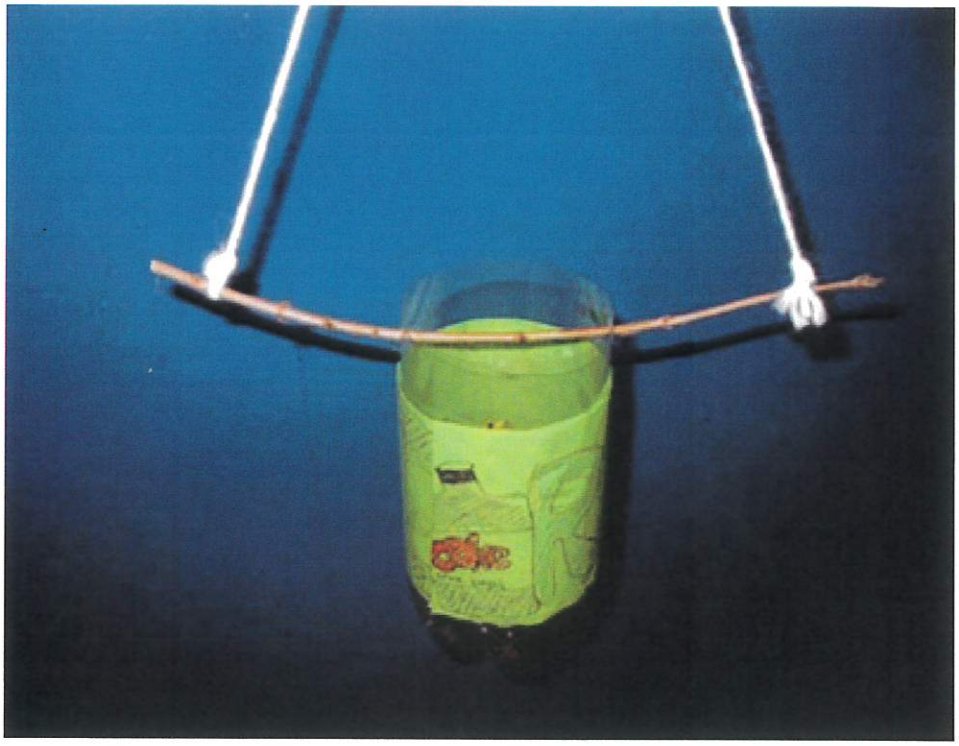
Directions: Search carefully through the web pages on my JUMP site and through our classroom collection of recycling books. Look for three powerful statistics that we might use in our letters and movie. Find facts that you think can help persuade others to recycle.

Write your three facts below. You cannot misrepresent this information! So write it exactly as you find it.

Be sure to "cite," or note, where you found your information. This gives credit to the person or organization that published it.

Fact:	**Where you found it:**	**Topic:**
"Americans throw away 44 million newspapers everyday. That's the same as dumping 500,000 trees into landfills each week."	*Recycle Facts 4 www.oberlin.edu/recycle/facts.html*	*paper*

Appendix I – Recycled Art Projects: A chair and a lantern



Appendix J1 - Permission Letter to this year's class

October 13, 2006

Dear Parents,

Your children have started doing some spectacular service work for Park in their efforts to help the school recycle! We should all be proud of their hard work.

I have recently started my thesis for Bank Street College of Education by documenting this recycling curriculum in action. I am sharing my curriculum plans and trying to teach other teachers how to do this important work. To portray the power and energy of the program, I would like to include stories from the classroom, photographs of the children, and some video projects that we will make later in the year.

I am writing to ask your permission to share such visual media as well as written descriptions from the classroom in my thesis. I am also writing for permission to put this future video work on the World Wide Web.

Your child's name will not be attached to the video or photographs in accordance to Park School policy for published materials. And of course, pseudonyms will be used in the text in place of the children's names.

The final thesis will be on the shelf in Bank Street's library in Manhattan and available to many teachers there and in other institutions through interlibrary loan. I am also considering trying to get my curriculum/thesis published in book form so that it would be more widely available to the educational community.

Please return these slips to my mailbox or classroom by September 29.

Thanks!

Ted Wells
ted_wells@parkschool.org

appr:

My child's name is _____.

☐*You DO have permission to share visual and anecdotal information about my child in your thesis and on the World Wide Web.*
☐*You DO NOT have permission to share visual and anecdotal information about my child in your thesis or on the World Wide Web.*

_____
signature

Appendix J2 - Permission Letter to last year's class

September 1, 2006

Dear 2005-2006 4WB Parents,

As many of you well remember, your children did spectacular service work for Park last year with their efforts to help the school recycle! They also created some memorable video commercials and music videos to promote the cause. I sure miss your kids, but I am planning to relive some of those memories through my own writing.

I am about to start my thesis for Bank Street College of Education by documenting this recycling curriculum in action. I am sharing the original curriculum plans, developing new ones, and trying to teach other teachers how to do this important work. In my thesis I will share stories from the classroom from last year. To accurately share this work with the Bank Street community, I would also like to include photographs and the videos that were made.

I am writing to ask your permission to share such visual media as well as detailed written descriptions from the classroom.

Your child's name will not be attached to the video or photographs in accordance to Park School policy for published materials. And of course, pseudonyms will be used in the text in place of any real names.

The final thesis will be on the shelf in Bank Street's library in Manhattan and available to many teachers there and in other institutions through interlibrary loan. I am also considering trying to get my curriculum/thesis published in book form so that it would be more widely available to the educational community.

Please return these slips to my mailbox or classroom by September 15.

Thanks!

Ted Wells
ted_wells@parkschool.org

appr:

My child's name is _____.

☐*You DO have permission to share visual and anecdotal information about my child in your thesis.*
☐*You DO NOT have permission to share visual and anecdotal information about my child in your thesis.*

_____
signature

Appendix J3 - Permission Letter to Park School faculty and staff members for use of their names in this paper

May 23, 2007

Letter of Permission – Name Usage in Bank Street College Independent Study

By signing below I am giving Ted Wells permission to use my name in the Independent Study option of his Masters degree Final Project at Bank Street College of Education.

My printed name is _____

Signature _____

INTERNET RESOURCES

projects.parkschool.org/~recycle – Ted Wells' 4th grade class website

www.youtube.com/profile?user=twells2 - Ted Wells' YouTube website

meetthegreens.org – WGBH's environmental website for 5th to 7th graders

olliesworld.com/planet/usa/rapsong.htm – A sustainability rap song to teach your class

epa.gov/kids

epa.gov/recyclecity

www.epa.gov/epaoswer/osw/kids/pdfs/4-6.pdf

dnr.state.wi.us/org/caer/ce/eek/earth/recycle/index.htm

greenvalley.com/coloring/colorme1.html

www.oberlin.edu/recycle/facts

thegreenteam.org/facts-tips

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