

A Rationale and Guide for Deans of Colleges of Education on How to Introduce Ecologically Sustainable Reforms in Teacher Education and Other Programs

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2008

Colleges of education across the country will shortly be held accountable for meeting the certification goals being promoted by the American Association for Sustainability in Higher Education. The rating system for certifying colleges and universities is called STARS (Sustainability, Tracking, Assessment, and Rating System). It is a self-evaluation system for determining progress toward sustainability goals in different sectors of the university: administration, finance, education, research, and operations. Ninety colleges and universities have already agreed to participate in this pilot program. One of the outcomes of the STARS system of certification will be the growing number of students concerned about environmental degradation who will enroll in institutions with the highest Stars rating. These students will be tomorrow's leaders in sustainable living.

The following guide for deans will facilitate the ability of colleges of education to demonstrate leadership in meeting the STARS certification goals of the university, as well as the potential certification criteria of other national organizations such as the Higher Education Association's Sustainability Consortium, the American College and University Presidents' Climate Commitment, and the Disciplinary Associations' Network for Sustainability.

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Environmental Challenges

Deans and department chairpersons in colleges of education are now being confronted with a new set of challenges. The need to reduce the environmental impact of our culture is being documented by the steady stream of scientific reports on the declining state of natural systems. These new environmental/cultural challenges will not reduce the importance of addressing traditional social justice issues—including the pressures from local communities and the federal government. These will remain important challenges, but the challenges we now are becoming increasingly aware of, given the consensus of scientists, is entirely different—and have consequences that are already set in motion on a global scale.

Leadership is needed in preparing classroom teachers with the necessary knowledge and pedagogical skills that will enable students to live a less consumer and thus less individualistic and change-oriented lifestyle. One of the paradoxes that few faculty recognize is that the ideal of the autonomous individual who has not learned the value of the intergenerational knowledge, skills, and mutually supportive relationships that are the basis of greater community self-reliance, is the kind of individual required by the industrial system of production and consumption. Overcoming faculty resistance to recognizing how many of the ideas and values that have guided their own approaches to education contribute to the consumer dependent lifestyle that is one of the major contributors to degrading the ability of natural systems to renew themselves will be a difficult challenge—especially since many will claim that academic freedom protects their right to promote educational reforms even though the reforms contribute to overshooting the sustaining capacity of natural systems. The dawning of a new consciousness, which the civil rights and feminist movements are still struggling to achieve, requires both conceptual and moral leadership. The same conceptual and moral leadership will be required in transforming the long-held traditions of thinking in colleges of education.

Before spelling out the broader implications of basing educational reforms in teacher education and other areas of study on ecologically sustainable ideas and values, it is necessary to summarize the nature of the changes that the Earth's natural systems are

undergoing. It is important to keep in mind that this summary must take account of the realities of the world in which we now live. **Changes in natural systems:** The industrial system of production and consumption, along with the decline in the ability of species and habitats to regenerate themselves, are increasing the rate of global warming as well as changing the chemistry of the world's oceans. Degraded habitats in oceans and in different regions of the world are leading to the disappearance of species (including a rapid decline in the viability of the world's fisheries). Other environmental changes include the spread of deserts, the melting of glaciers that are the source of water for hundreds of millions of people. The loss of topsoil, depletion of major aquifers, and the destruction of forests, are also major sources of change already influencing the prospects of the current and future generations. **Increase in world population and the spread of poverty:** Over the last hundred years the world population has increased by five and a half billion people at the same time the natural resources have been exploited in ways that have led to the impoverishment of more people. The current estimate is that over 2 billion people live on less than two dollars a day. For the different groups in American society, the era of cheap food is over—which, along with the rising cost of fuel and other basic services will force many people further into poverty. **Changes in Lifetime Employment:** Economic globalization, along with the spread of the morally unrestrained culture of corporations, will cause more people to outlive their savings in the increasingly privatized retirement programs. The lack of health insurance now experienced by nearly forty-seven million Americans is the leading cause of bankruptcy and homelessness. Youth entering the job market will find that the outsourcing of work to low wage regions of the world, even in highly skilled occupations, will limit their possibilities—and thus their ability to educate their children, to own a decent house, and to save for retirement. The present plight of older workers will also be the plight of younger workers as the government safety nets become further overwhelmed by the current shift in the distribution of wealth in society.

The future is made even more uncertain by the current globalization of an industrial/consumer oriented lifestyle. While economic globalization is being viewed as the expression of progress, it is increasing the rate of global warming and the depletion of the Earth's natural resources. Unfortunately, scientists and other experts have no way of

knowing the regenerative capacity of the natural systems that are being exploited at an accelerating rate. How long will it take for various fish stocks, such as the codfish once so abundant and the blue fin tuna now on the verge of extinction, to recover? Can the aquifers that are being mined as though they are an infinite resource regenerate themselves within our lifetimes—or even the seventh generation from now? Can the world's oceans reverse the acidic levels and warmer temperatures that are now contributing to the death of coral reefs that nearly 25 percent of fish species depend upon? What is the time frame for regenerating the glaciers that are the source of fresh water for hundreds of millions of people? Even though we do not have the answers to these questions, more of the world's governments have made the adoption of the American consumer lifestyle their goal. Many regions of the world are already experiencing the degradation of natural systems that were assumed to be inexhaustible—such as potable water, forest cover, topsoil, fisheries, petroleum, and other natural minerals.

Globalization is dependent upon an increased reliance on Western technologies—especially technologies that rely on microchips. While there have been genuine benefits from the development of computer-based technologies the increased reliance on these technologies has led to losses that go unnoticed. Many of the losses are the very traditions that would enable us to slow the rate of environmental degradation and the depletion of natural resources. For example, as youth become increasingly dependent upon cell phones, and on Internet based relationships, learning, and gaming, it is assumed that they are gaining more control over their lives—such as participation in a peer culture of their choice, directing their own learning, and in pursuing their own form of entertainment. The more time youth spend in the online culture the less likely they will become aware of the local cultural commons that provide alternatives to being dependent upon the industrial/consumer-based culture. Instead of becoming increasingly empowered, they are, in effect, becoming more dependent upon an economic system that is under stress from outsourcing, the increasing cost of basic materials and transportation, and competition from regions of the world where wages are low and environmental regulations non-existent. As the ecological crises deepen they will be unaware of how much of the intergenerational knowledge of how to live more mutually supportive and

less money dependent lives will have been lost. While living in the Internet cocoon will continue to isolate them from engaging in the renewal of the intergenerational knowledge, skills, and mutually supportive relationships of the local cultural commons, they will still experience the shortages and dislocations resulting from the twin crises caused by global warming and economic globalization

Briefly, the **cultural commons** encompass those aspects of community life that are less dependent upon a money economy and thus are less environmentally destructive. The cultural commons include the intergenerational knowledge, skills, and relationships that are relied upon in the areas of growing and preparing food, expressive arts, craft knowledge and skills, narratives and ceremonies, civil liberties, healing practices, games, and even language itself. Communities in every culture are sustained in part by the intergenerational renewal of their cultural commons—which may also include traditions that do not meet today’s social justice standards. The important point, however, is that the local cultural commons include relationships characterized by mutual support, mentoring, and the development of personal talents and skills—all of which are fundamentally different from being dependent upon what is industrially produced or that involve monetized relationships. To reiterate a key point, as youth become increasingly dependent upon the new Internet technologies the less likely they are to participate in the cultural commons of their communities in ways that enable them to discover personal talents and skills that strengthen the bonds of community. And the less likely they are to be aware of how ideologies, technologies, and economic forces are enclosing more aspects of the cultural commons—thus forcing them to become increasingly dependent upon a money economy that is becoming less and less reliable.

Initial Awakening to the Importance of the Ecological Crises

Increasing attention is being given to reducing the human impact on the natural systems at all levels of government—from the United Nations, federal, state, and even to city government,. While primarily motivated by the possibility of increasing their profit margins, businesses ranging from mega corporations to small one-person operations are attempting to use energy more efficiently and to be more mindful of reducing excessive waste. University presidents across the country are signing declarations promising to

exercise leadership in promoting ecologically sustainable reforms--though most of the reforms are limited to recycling programs and to the introduction of more energy efficient technologies. While science faculty have made the environmental crises a major focus of their research and teaching in the sciences, the situation is quite different in other areas of the university. For example, in the social sciences and the humanities the reforms are being undertaken by a distinct minority of faculty, and mostly consist of adding readings by environmental authors to existing courses in the traditional disciplines. Exposure to environmental writers raises awareness of the many ways in which the environment is being degraded, but it does not provide students with the practical knowledge of the community-centered alternatives to consumerism and the so-called "progressive" forces that are enclosing the world's diverse cultural commons. The sustainability initiatives listed on the website of the American Association for Sustainability in Higher Education bulletin@aaashe.org demonstrate once again how relying upon technological solutions is being viewed as more important than the need for a fundamental change in consciousness.

What is happening in colleges and departments of education is typical of the rest of the university. Just as in the sciences, the environmental educators engage students in learning how to introduce such environmental issues as the degradation of local habitats, the loss of species, and the industrial sources of environmental damage into their public school classes. Introducing students to environmental authors can only be found in courses taught by a few faculty in the area of educational foundations. The limited interest in environmental issues by faculty in colleges and departments of education is illustrated by the fact that of the over 10,000 faculty who attended the 2007 meeting of AERA in Chicago there were less than 20 papers that focused on environmental issues, and less than 5 papers that addressed educational reforms related to introducing students to the mutually supportive nature of the local cultural commons. The irony is that even though such groups as Real Estate organizations are requiring their agents to pass a test certifying their knowledge of the ecologically sustainable characteristics of houses, the majority of faculty in colleges and departments of education continue to frame the content of their courses and research in terms of the social justice priorities and

interpretative frameworks that were constituted before there was an awareness of the growing ecological crises.

The tradition of departmental autonomy has led education faculty to refrain from encouraging colleagues in other departments to begin introducing ecologically informed curriculum reforms, particularly in the teacher education programs. However, there is evidence that a few environmental educators are beginning to recognize that the destruction of the cultural commons has a direct relationship to the environmental damage they are working to reverse, and are joining what can be called the eco-justice network. The environmental educators and educational studies faculty that make up this network are spread across the country and number less than a 100 members. An even smaller number have participated in workshops that addressed how the language in various areas of teacher preparation, and used by classroom teachers --including public school curricula--carries forward the misconceptions of earlier times when there was no awareness of environmental limits. These workshops helped to clarify how the deep taken for granted cultural assumptions that still underlie the current digital phase of the industrial revolution that is now being globalized are also the taken for granted assumptions that underlie what is being learned in most education classes. These assumptions, in turn, are being passed on to public school students.

These workshops demonstrate why reforms in teacher education and other areas of educational study that are based on a different paradigm cannot be initiated in any broad and lasting way by individual faculty members. Participants in the workshops, which were far too short to provide the in-depth knowledge required to understand the connections between language, various forms of cultural colonization, and the forces that are transforming the world's diversity of cultural commons into new markets, returned to their departments to find that few of their colleagues understood their new insights and approaches to curriculum reforms. In some instances, they were met with hostility as they were seen as no longer reinforcing the values and ideas that their colleagues associated with progressive educational reforms. In effect, the eco-justice/cultural commons orientation of the workshops and publications brought into focus the difficulty of engaging in discussions with colleagues who still take for granted the same cultural assumptions that underlie the modern individualistic, progress-oriented mindset.

The difficulty of an individual faculty member to bring about a major shift in the thinking of colleagues has its roots in the unique culture of academia. Perhaps the two most powerful impediments to making this paradigm shift are the traditions of academic freedom and the specialized language and values associated with different fields of study—such as school administration, educational psychology, curriculum, teacher education, educational studies, and so forth. The specialized language and interpretative frameworks that have their roots in a past when environmental limits were not understood make it difficult for faculty to communicate with others who are accustomed to thinking within specific traditions of inquiry. The need to adhere to what is deemed politically correct in the larger society and across the fields of study in education generally have limited the introduction of new ways of thinking. In spite of the important role that academic freedom has played in the past, this tradition remains one of the chief obstacles to engaging colleagues in a serious and prolonged discussion of the educational reforms that must be undertaken. Academic freedom should not be used as an excuse for dismissing the need to address the ecological challenges we face. There are other major impediments to recognizing that what is being learned in teacher preparation programs, and in the supporting areas of research and teaching, must undergo fundamental changes. These include the demands made by state and federal governments—and the constant quest for innovations that further strengthen the modern paradigm that is ecologically uniformed. Time to think deeply and to engage in sustained discussions of which traditions of thinking within colleges of education need to be carried forward, reformed, or abandoned entirely is severely limited by heavy teaching loads, committee meetings, pressure to publish, advising students, and keeping current with their special field of interest.

Understanding the Leadership Role of Deans and Department Chairpersons in Initiating and Sustaining Ecologically Informed Reforms in Teacher Education

Reform of education courses generally, and especially teacher education programs, will require deans and department chairpersons to provide both conceptual leadership as well as the ability to hold faculty accountable for working through the difficulties in making the paradigm shift that is now required. The major difficulty that

both administrators and faculty face is that they were, with few exceptions, educated to think within the conceptual paradigm that was based on assumptions that did not take account of environmental limits. To paraphrase Albert Einstein, we cannot rely upon the same mind set that created the problem to fix it. Understanding the shift in thinking that must take place in colleges and departments of education requires thinking against the grain of so many of the conceptual orthodoxies held by both education faculty and faculty in the sciences, social sciences, and humanities. The need for making a paradigm shift is, in effect, a university wide problem. The following is a brief sketch of the differences between the two paradigms.

Key ideas and assumptions that underlie the paradigm that most academics were socialized to accept as leading to a socially just and progressive future.

- The individual is the basic social unit, and progress is defined in part by empowering individuals to think for themselves and to create their own values.
- Change, especially when based on scientifically informed technologies and new ideas, is inherently progressive. One of the goals of the educational process is to contribute to more change.
- This is a human-centered world, and one of the purposes of rational thought is to control and exploit the natural environment in ways that improve the human condition.
- Language is a conduit in a sender/receiver process of communication, thus making it possible to share objective knowledge.
- Individuals are capable of exercising rational thought in ways that are uninfluenced by the assumptions of the culture into which they were born.
- Traditions , except for holidays and religious ceremonies, are generally impediments to progress and to the realization of the individual's fullest potential.
- Computers are a culturally neutral technology that enables students to access the world of information necessary for the construction of their own ideas and values.
- Multicultural awareness should be one of the primary goals in teacher education and other areas of educational studies—and there is no conflict between

- understanding and appreciating cultural differences and promoting the key values and assumptions that underlie the modernizing mainstream culture of the West.
- The social justice agenda inherent in teacher education programs, and in other areas of study, prepares students to experience equality of opportunity in the areas of work, politics, and consumerism.

Key ideas and assumptions of that will lead to more ecologically sustainable cultures, and that will help reframe approaches to teacher education, curriculum, learning theory, administration, environmental education, and educational studies.

- The individual is nested in culture, and culture is nested in natural systems—thus the individual must be understood as part of the interacting ecologies of interdependent relationships. In effect, the idea (and ideal) of the autonomous individual is a western cultural myth.
- Language is metaphorical in nature and carries forward the patterns of thinking (the analogies settled upon in the distant past) that were constituted before there was an awareness of environmental limits and the diversity of cultural ways of knowing. As the root metaphors underlying Western culture influenced the selection of many of the analogies we still rely upon, such as thinking of change as progressive in nature and a human-centered world, today's educational process continues to reinforce students for adopting the level of intelligence (or unintelligence) of past thinkers.
- Intelligence, from an ecological perspective, is relational, participatory in ways influenced by the information exchanges within the natural environment, influenced at a taken-for-granted level by the layered nature of metaphorical thinking, embodied, and expressive of the culture's basic narratives.
- Tradition is a metaphor that carries forward the misconceptions of Enlightenment thinkers. Actually, traditions represent all the ways of thinking, practices, and values of the culture that have survived over four generations. Traditions are sources of empowerment, special privileges and forms of exploitation, and are constantly changing—sometimes before there is an awareness of the importance

- of what is lost, and sometimes too slowly. People who hold the idea that traditions do not change should be referred to as “traditionalists”.
- The cultural commons, which exist in all of the world’s communities, include the intergenerational knowledge, skills, and patterns of mutual support that enable people to live less consumer dependent lives—and thus to have a smaller adverse impact on the natural environment. If students learn to think of traditions as a source of backwardness and of themselves as growing more autonomous, they will continue to ignore how their embodied/culturally mediated experiences of participating in the local cultural commons differ from their experiences in the industrial/consumer oriented culture.
 - Social justice issues need to be understood within the context of what reduces the exploitation of the resources of other cultures, of what enables people to participate in the cultural commons that strengthen mutual support while reducing their dependence upon a money economy, and of learning to develop personal talents and skills through mentoring relationships.
 - Teacher education programs need to prepare classroom teachers to recognize that words have a history and that they often carry forward the misconceptions and biases of the culture that is overshooting the sustaining capacity of natural systems, to play the role of a mediator who helps students recognize the differences in their cultural commons and consumer-based experiences—and to help them acquire the language necessary for communicative competence in resisting the further enclosure (monetizing and privatizing) of the cultural and environmental commons.

In effect both faculty and administrators will be challenged to rethink the conceptual frameworks they acquired as part of their own graduate studies and subsequent socialization within their specialized areas of inquiry and teaching. This challenge is not an expression of my own biases and subjective judgments. Rather, it is being dictated by the different ecosystems that are being degraded to the point where they can no longer sustain the North American consumer lifestyle—much less the consumer

dependent lifestyle that the hundreds of millions of people in such countries as India and China are now pursuing.

If there ever was a time for leadership it is now! But the question that needs to be addressed is: How can the dean and department chairpersons provide this leadership when they themselves may not have a solid understanding of the ecologically and culturally problematic nature of many of the deep cultural assumptions that are so widely taken for granted by their colleagues across the country? They can begin by convening a meeting of the entire faculty for the purpose of hearing a scientist explain the changes occurring in the world's oceans, when humankind is likely to reach the tipping point where the rate of global warming cannot be slowed by human effort, the consequences that accompany the melting of glaciers and the release of methane now frozen in the permafrost that is now beginning to melt, the loss of species, habitats, and topsoil, the shifts in weather patterns that are contributing to droughts and the desertification of previously fertile lands. This talk should send the message that if there is going to be a sustainable future for their children, and for their children's children, fundamental changes must be introduced in the education of teachers—and in content of curriculum materials.

The next step is to schedule a series of faculty discussions for the purpose of considering how the basic assumptions that underlie the individualistic/progressive agenda contribute to overshooting the sustaining capacity of natural systems and to undermining the cultural commons. These discussions also should consider not only the implications of the ecologically informed assumptions for introducing reforms in teacher education programs but lead to basic changes in pedagogy and curricular decision making.

Although some faculty will embrace this approach and will want to move forward by revising their courses accordingly there will be forms of resistance that need to be recognized. For example, many faculty will be unwilling to engage in in-depth discussions, and will dismiss the issues as irrelevant. Others may think that the pedagogical and curricular implications of the assumptions that underlie an ecological way of thinking can be fully understood by participation in only a couple of sessions. After a few discussion sessions, they will return to their traditional patterns of thinking.

One of the characteristics exhibited by even highly intelligent faculty is the tendency to reduce the complexity of issues and ideas to simplistic representations that quickly can be dismissed. Another problem that often arises when new ideas are introduced is that too often faculty will limit their interest to learning the new vocabulary and then show no interest in understanding its fuller implications.

If faculty in colleges of education were already well informed about actual changes taking place in the world's ecosystems their responses would be of less concern.. And if they were more accustomed to thinking within an ecologically and culturally informed paradigm they would be less likely to engage in superficial discussions. The following introduction to the complexity of issues relating to an ecologically and culturally informed understanding of language, intelligence, and the cultural commons, to cite just three examples from the preceding list, is meant to highlight the danger of superficial and reductionist thinking that will ensure that no substantive educational reforms will result.

For example, if education faculty begin to rethink the assumption that language is a conduit in a sender/receiver process of communication they will find themselves addressing some of the most critically important misconceptions shared by many classroom teachers and professors. For example, learning that language is not a conduit, but is based on metaphors whose meanings were framed by earlier processes of analogic thinking that were, in turn, framed by the prevailing taken for granted root metaphors of the culture, has broad and vitally important implications for both teachers and the people who produce curriculum materials. The implications are even more profound for students who are being told that computer mediated learning (which reinforces the conduit view of language) facilitates the construction of their own knowledge. The myth that language is a conduit hides how language carries forward the insights and, more often, the misconceptions of earlier thinkers. When teachers fail to clarify that words have a history, and that their current meaning was framed by earlier processes of analogic thinking that reflect both a culturally specific tradition of thinking and the political struggles of an earlier time, students are likely to assume that words provide a factual account of events and thus are the source of objective knowledge.

To put it more succinctly, not only does language carry forward the patterns of thinking that both teachers and students may take for granted, it can also be understood as one of the more powerful expressions of linguistic colonization of the present generation by past generations. Relying upon the analogies settled upon at an earlier time may also reduce the students' ability to make an intelligent response to current relationships, such as thinking of women in the same limited way that was taken for granted over the centuries. The discussion of language presented here only touches the surface of what teachers need to understand as they mediate between the past, present, and future.

Other conceptual orthodoxies that do not take account of environmental limits, and that need to be revised if pedagogical and curricular decisions are to be part of the solution rather than a continuation of the problem, include how to understand intelligence in a way that not only takes account of the influence of language, but also its participatory and relational nature. Most thinking about intelligence, which is increasingly being based on a mechanistic model, is still predicated on the assumptions of the French philosopher, Rene Descartes, and other western philosophers who did not understand the deep symbolic foundations of their own culture and the radically different symbolic systems of other cultures. The idea that intelligence is an attribute of an autonomous individual (autonomous in the sense of being uninfluenced by the cultural assumptions carried forward in the language she/he learns to think and communicate in) assumes that the thinker is an objective observer of an external world. It also assumes that ideas originate along with other mental/emotional processes in the brain. An ecological interpretation of intelligence takes account of a variety of relationships that influence the student's intelligence. These include the ongoing relationships with other people and the environment, the words and interpretative frameworks from the past that carry forward the misconceptions that illuminate and hide what the individual will be aware of, and a host of embodied and psychological influences. These influences on intelligence vary from culture to culture—and in no way correspond with the orthodox view that intelligence is exercised by an autonomous individual who is the source of ideas, and so forth. The pedagogical implications of this more relational way of understanding intelligence, are in turn, complex and not fully grasped in a short discussion session.

Similarly, understanding the nature of the local cultural commons and the forces that are transforming it into new market opportunities that are ecologically destructive is also unattainable if educators think it can be addressed in a couple of sessions. Faculty participate daily in different aspects of their local cultural commons. Unfortunately the failure of their own professors to make explicit the many forms of mutual support, as well as the intergenerational knowledge that enables people to be less dependent upon consumerism, has contributed to their lack of awareness of the need to include in the curriculum an in-depth understanding of why revitalizing the cultural commons, as well as conserving the cultural commons of other cultures, are essential to a sustainable future. Again, understanding the complexity of the cultural commons, including those aspects that are sources of injustice, can be viewed as a career long endeavor—especially if students are to be introduced to the history of the forces that are privatizing and monetizing what remains of the cultural and environmental commons. How should teachers help students become aware of the differences between their experiences in the cultural commons and their experiences as a consumer of what is ready made and that requires participation in a money economy? What do students need to understand about the nature of traditions in order to recognize the importance of some forms of intergenerational knowledge and skill? How does the teacher help them to develop the linguistic basis of communicative competence that will enable them to resist the enclosure of such areas of the cultural commons as the traditions of civil liberties and the narratives of past social justice achievements? What are the different silences in the curriculum that represent the process of enclosure that are not being recognized?

These are just a few of the questions that demonstrate the need for faculty to make a long-term commitment to rethinking whether the cultural assumptions they are reinforcing in their courses will lead to the cultural changes that will help slow the rate of environmental degradation. This commitment, if it is to succeed must be a collaborative effort of the entire department and between departments. If not, students will be taking courses that are based on the same assumptions that gave rise to the industrial/consumer oriented culture that is overshooting environmental limits, and in other courses they will be encouraged to begin thinking of an ecologically informed approach to pedagogy and curriculum—including the place of computers in the learning process. The tensions that

will arise within departments as it becomes more evident that the ecological crises are impacting people's lives both here and in other parts of the world will require leadership from deans and department chairpersons. The following list suggests the way leadership can be expressed without becoming dictatorial and an interference with the faculty member's academic freedom. Leadership can actually facilitate faculty collaboration, especially when the faculty have a clearer understanding that the deepening ecological crises not only threatens their own future but also that of already marginalized groups. As there is little possibility that faculty will begin to introduce ecologically informed changes in their courses and programs if they do not take the ecological crises seriously, it is necessary to emphasize again that the first step in exercising leadership is to have a scientist present the consensus overview of the degraded condition of different ecosystems, as well as the evidence of how these changes are impacting people's lives. Taking this step will also communicate to the faculty the priorities supported by the various levels of administration within the college and university, and that these also are the priorities being promoted on a national basis by American Association of Sustainability in Higher Education and the Higher Education Associations' Sustainability Consortium,

Legitimate and Necessary Expressions of Leadership:

- **Announce that a major priority of the college of education is to collaborate with other divisions of the university in introducing curriculum reforms that contribute to an ecologically sustainable future (see the website of the American Association for Sustainability in Higher Education bulletin@aaashe.org).**
- **Convening the entire faculty for the purpose of listening to the scientific evidence of natural systems that are no longer regenerating themselves at a level necessary for sustaining life, or are undergoing changes, such as global warming, that are already affecting the quality of life of billions of people.**

- **Convene the entire education faculty for a discussion of the cultural roots of the ecological crises. This session should provide an overview of how current thinking and practices being reinforced in the various programs in the college are based on assumptions that do not take account of environmental limits or how to live more community-centered and thus less consumer dependent lives.**
- **Use discretionary funds in the budget for the purpose of collaborating with other colleges of education in sharing the most effective ecologically informed approaches to teacher education and to ways of thinking within other departments of the college.**
- **Ask that department chairpersons provide regular reports on the progress faculty are making in engaging in discussions of the reforms that contribute to more ecologically and culturally informed courses and publications.**
- **Remind faculty that in conducting searches for new faculty attention should be given to the candidate's background education—specifically whether she/he shows evidence of being able to question currently held assumptions and to engage in dialogue about the reforms that need to be undertaken.**
- **If faculty in a department fail to consider the culturally and ecologically related challenges in recommending the hiring of a candidate, then as a last resort the dean should encourage that a further search be conducted.**
- **Encourage faculty who possess a better understanding of culturally and ecologically informed educational reforms to establish collaborative relationships with faculty in other parts of the university who are addressing similar concerns. The education of most faculty in the sciences, social sciences, and humanities was based on the same deep cultural assumptions that are ecologically problematic and may welcome discussions of**

pedagogical and curriculum reforms that address the limitations in their own education .

Summary

While many indigenous cultures have understood for hundreds of years the need to adapt cultural practices to what is sustainable over the long term, it has only been in the last thirty or so years that the exploitation of the environment has become the concern of the American public. Aldo Leopold and Rachel Carson were among the first to sound the alarm. Leopold explained the nature of a land ethic but was unaware of the land ethic of the indigenous cultures that still inhabited the region where he had his life-changing insight. Rachel Carson's concern with the life destroying effects of the chemicals being introduced into the environment in the name of scientific progress was yet another wake-up call of major importance. The various Earth Day celebrations and international environmental conferences that followed focused mainly on issues of excessive consumption, various forms of environmental degradation, and environmental justice issues. Only recently has attention been given to the taken for granted cultural assumptions—including how they are linguistically passed on—that gave conceptual direction and moral legitimacy to the industrial/consumer oriented culture that is a major contributor to global warming and to the decline in the viability of other natural systems. This needs to be taken into account when understanding why few deans and department chairpersons possess an in-depth knowledge of the conceptual/linguistic issues that need to be addressed in any effort to initiate reforms that are not based on the old (ironically “progressive”) mind-set that is now beginning to be recognized as part of the problem.

Deans and department chairpersons, like the rest of us, should view themselves as participants in the beginning stages of discovering a post-industrial pathway that will avert what Jared Diamond documents in his book, *Collapse: How Societies Choose to Fail or Succeed* (2005). Other cultures have found their own pathways. Unfortunately, the intergenerational knowledge that has sustained them for thousands of years is now being threatened by economic and ideological globalization. We can learn from their cultural commons without copying them, and learning from them will help to remind us that making ecological sustainability a priority of educational reform needs to be a collaborative effort. The only thing that can be universalized is the danger of ecological

collapse now faced by all cultures—and it needs to be recognized that responsible scientists are increasingly using the word “collapse”. What deans and department chairpersons can do, even if their own educational backgrounds do not provide for an understanding of the cultural/linguistic issues that also are being ignored by faculty in other departments of the university, is to keep reminding the faculty that both the ecological crises that scientists are documenting and the cultural traditions that are major contributors to overshooting environmental limits, must be in the foreground of reforming teacher education and in the supporting fields of studies in colleges of education.

Appendix A The following is intended to provide a better understanding of the cultural commons and the different forms of enclosure. In order to discuss educational reforms that address how to revitalize the local cultural commons in an era of global warming and economic globalization, it is first necessary to have a clear understanding of the characteristics of the cultural commons and the different forms of enclosure. The following provides an introductory overview.

Key Characteristics of the Cultural Commons

- The cultural commons represent the largely non-monetized and non-commodified knowledge, skills, activities and relationships that exist in every community.
- They are part of the intergenerational legacy within communities that enable people to engage in activities and relationships that are largely outside of the mainstream consumer, money dependent culture.
- The cultural commons are intergenerationally passed on through face-to-face relationships that may include mentoring.
- The nature of the cultural commons vary from culture to culture, with ethnic groups often sharing aspects of the cultural commons with the dominant culture as well as maintaining their own cultural commons.
- The cultural commons of some cultures may be the source of unjust social practices, while in other cultures the cultural commons carry forward the traditions essential to civil liberties and democratic practices.

- The cultural commons are the basis of local economies and systems of mutual support that contrast sharply with the market system that is driven by the need to create a demand for the constant stream of new products.
- Participation in different aspects of the local cultural commons enables people to discover personal interests, develop skills, and to engage with others in ways that strengthen the sense of community belonging and responsibility.
- The cultural commons, in relying upon non-industrial approaches to production and consumption, have a smaller adverse impact on natural systems.
- The activities and skills that are expressions of the cultural commons connect the generations in ways that are profoundly different from relationships that characterize relationships in a consumer-oriented culture. Moral reciprocity, receptivity to intergenerational learning and mentoring, and an awareness of what needs to be conserved as essential to community identity and self-sufficiency are more easily learned.
- Embodied experiences in the cultural commons are more likely to strengthen the propensity to cooperate rather than to compete, and to lead to identifying oneself more in terms of mutually supportive relationships and personal talents rather than as an autonomous individual who relies upon consumerism as the marker of success.
- The cultural commons strengthen the patterns of mutual support and face-to-face relationships with a broader segment of the community, and thus strengthen the practice of local democracy.
- The cultural commons are under constant threat from ideological, techno-scientific developments, and efforts of the market system to incorporate different aspects of the cultural commons into the market system—thus transforming what remains of community self-sufficiency into dependence upon the market and a money economy.

Examples of Intergenerational Knowledge, Skills, Practices, and Activities Identified as the Cultural Commons: (this list will vary from community to community, and between ethnic groups within the community)

- **Food:** Growing, preparing, and ways of sharing food. Includes knowledge of growing conditions, recipes for preparing food, traditions of sharing food that strengthen family and ethnic solidarity.
- **Healing Practices:** Intergenerational knowledge of medicinal characteristics of plants, traditions of providing different forms of support for members of the community that have physical and emotional problems

- **Creative Arts:** Various forms of dance, theatre, poetry, writing, painting, sculpture, photography that involve community participation, development of interests and talents, and are only minimally dependent upon the market system of production and consumption.
- **Narratives and ceremonies:** The narratives that are expressions of community memory ranging from sports, achievements in the area of social justice, exemplary individuals who have made major contributions and those who had a destructive influence. Ceremonies that celebrate important events, religious traditions, and so forth. Important to passing on the moral values of the group and strengthening ethnic, working class, religious and other forms of group identity.
- **Craft Knowledge and Skills:** Activities that combine aesthetic judgment and skill in working with wood, metal, clay, jewelry, glass. Produces both useful objects as well as provides for individual expression that has a transformative effect on the quality of everyday life that raises it above the banal, what is routine and taken-for-granted.
- **Games and Outdoor Activities:** Intergenerational knowledge, skills, and moral guidelines carried forward in various games ranging from playing chess, cards, to football, track, tennis, and other games. Also, includes hiking, birding, camping, and so forth. Many of these activities increasingly are becoming commercialized and thus are being transformed in community destructive ways.
- **Animal Husbandry and Care:** Intergenerational knowledge about the care, breeding, and uses of different animals—from sheep dogs, horses, to household pets. Encompasses a wide range of knowledge about sources of feed, habits and traits of the animal, to how to treat physical and other forms of disabilities.
- **Political Traditions:** Democratic practices, traditions that protect civil liberties achieved in the past, modes of political discourse, moral codes that govern political outcomes not dependent upon use of force and violence, protection of minority groups and points of view.
- **Language:** Vocabulary that illuminates and hides in terms of the culture's priorities and prejudices, may be a storehouse of knowledge of local ecosystems, frames different forms of social relationships, reproduces the misconceptions of earlier thinkers, may carry forward the wisdom of earlier times, essential to communicative competence, may be used by totalitarian forces to control consciousness and behavior, has a different cultural influence depending upon whether it communicated face-to-face or mediated through print and electronic modes of communication.

Forms of Enclosure:

- **General definition:** Enclosure involves transforming the cultural and environmental commons from what is largely shared in common, and subject to local decision making, into what is privately owned, part of the industrial/market economy, and where decision making is located outside the community.
- **Ideologies:** The tradition of market liberalism, with its emphasis on expanding markets and profits, private ownership, and on ignoring cultural differences, continues to be a major source of enclosure. Religious fundamentalism may also lead to different forms of enclosure such as civil liberties, narratives of achievements in the areas of social justice and environmental protection.
- **Technologies:** The mediating characteristics of different technologies contribute to various forms of enclosure—from the way computers enclosure (marginalize) the possibility of mentoring and face-to-face communication, the enclosure of privacy by surveillance technologies, the enclosure of craft knowledge by automated machines, to the bio-technologies that now make it possible for private ownership of gene lines.
- **Universities that Define What Constitutes High-Status knowledge:** By identifying what constitutes high status knowledge (which is based on many of the same deep cultural assumptions that underlie the industrial/consumer oriented culture that is contributing to the ecological crises) universities and colleges have relegated the various forms of knowledge that are the basis of the cultural commons to low status—with the result that few graduates are aware of the complexity and ecological significance of the cultural commons of their communities.
- **Silences Perpetuated by Modern Forms of Development:** The emphasis on change, individualism, consumerism, personal happiness and interests (as well as the personal insecurities that accompany the modern industrial system of production and consumption) has resulted in social divisions where the younger generation is unaware of how participation in the local cultural commons may lead to discovering personal interests, the development of skills and talents, and a sense of community. Indeed, it would be more accurate to say that most of the younger generation is predisposed to reject the cultural commons as irrelevant. The older generations who have discovered personal fulfillment and ways of creative expression from participating in different activities within the local cultural commons too often remain isolated from the younger generation. What is being enclosed are the intergenerational continuities, which leaves the younger generation more dependent upon what the market can provide. A major source of enclosure is the silence about the diversity of cultural commons that is perpetuated in public schools and universities.

- **Economic Globalization:** Western traditions that are being universalized-- such as approaches to education, various uses of computers, science, English and other dominant languages, market system of production and consumptions, military domination, etc.--are contributing to the enclosure of many of the world's languages and thus of the world's cultural commons. The result is that more people are becoming dependent upon consumerism and thus adding to the forces deepening the ecological crises