

## Vision of Curriculum and teaching from Ecological Sustainability

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**Abstract.** Anthropocentrism of modern society leads to great damage to the environment. Mankind is faced with serious ecological crisis. In order to protect the environment, mankind must abandon political and religious differences and take the road to sustainable development. Modern education as delivering environmental information should contribute to protecting the environment. However, modern education based on utilitarian values can not cultivate global citizen possessing eco-consciousness. Reforming modern education model and advocating ecological education model is a reasonable choice in education reform.

**Keywords:** ecology, ecological sustainability, curriculum and teaching, vision

### 1 ECOLOGICAL CRISIS AND ECOLOGICAL SUSTAINABILITY

The word “ecology” is originated from Greek, which originally means “a dwelling place” or “a habitat” and now refers to the environment mankind lives in. At present, great damage is caused to global environment when mankind conquers the nature and satisfies self-demand. It is mainly shown as below: serious environmental pollution, reduction of rainforest and wetland, preventing disappearance of ozonosphere which makes mankind free from ultraviolet invasion and prevent global warming. Facing continual environment deterioration, the earth’s ecological capacity in recovery, updating and rebalancing is badly insufficient. In this case, mankind will be faced with environmental disaster in the uncertain future. Facing global continual environment deterioration, far-sighted personages vigorously advocate environmental protection, advise policy makers of various

countries to redefine the concept of “progress”, criticize the hypocrisy and cruelty of market system with free competition and request the consideration of ecological sustainability in the process of making policies. The so-called ecological sustainability is to live in harmony between man and nature. In the process of development, mankind cannot abuse or squander natural resources and discharge plenty of waste, which leads to global environmental deterioration and near extinction of animals and plants. The idea of “syncretism between heaven and man” in ancient China reflects ecological sustainability. According to *The Book of Changes*, “The great man is he who is in harmony, in his attributes, with heaven and earth; in his brightness, with the sun and moon; in his orderly procedure, with the four seasons; and in his relation to what is fortunate and what is calamitous, in harmony with the spirit-like operations (of Providence). He may precede Heaven, and Heaven will not act in opposition to him; he may follow Heaven, but

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will act (only) as Heaven at the time would do. If Heaven will not act in opposition to him, how much less will men! How much less will the spirit-like operation (of Providence)!”<sup>[1]</sup>. Lao Zi also held that mankind was originated from nature and unified in nature, must survive under the condition of natural bestowal and can develop by following the nature law. The laws among heaven, earth and man are interlinked. That is, “Man models himself after Earth. Earth models itself after Heaven. Heaven models itself after Tao. Tao models itself after Nature.”<sup>[2]</sup>. When the relationship between human society and nature is researched, it is proposed in modern western ecological philosophy that morality should be extended to animals, and the antiquated idea of “morality gap” between man and animal should be abandoned. French ideologist Schweitzer thought about the relationship between man and nature from the cultural perspective to form the ethics respecting life. He proposed the establishment of ethics showing reverence for life to get rid of cultural crisis. American ideologists Thoreau, Evans, Moore and Leopold et al emphasized that the earth was an organic life wholeness which forms the ecological ethics for natural wholeness. The ecological view in “Self-organizing Evolution of Nature”<sup>[4]</sup> by Erich Jantsch, a famous system philosopher in Austria, extremely widened people’s vision and aroused people to protect the global environment. He held that the nature was organic, dynamic and growing and had the capacity of self-organizing evolution. Self-organization means that thing (system) is not externally forced but a dynamic process with ordered structure is spontaneously formed through the interaction among its internal constituent parts. Superficially speaking, the evolution process of modern western ecological philosophical thoughts is a direct response to the global ecological crisis. Deeply speaking, it is a revolution about way of thinking. It is a kind of introspection, criticism and transcendence for hypostatic and privative way of thinking by Newton and Ducal as well as world view and value of “anthropocentrism”.

## **2 ECOLOGICAL CRISIS OF MODERN CURRICULUM AND TEACHING**

The increasing ecological crisis will inevitably lead to

human’s quick destruction. How does mankind face currently serious ecological crisis? National governments must get across political, economic and religious disagreement to form a united alliance and formulate common environment protection strategy to promote ecologically sustainable development. As an important field to deliver environment information and cultivate global awareness, education should make contributions to environmental protection and ecologically sustainable development. Regrettably, modern curriculum and teaching field is based on utilitarianism value and dual opposition thinking and advocates the education model like large batch production in factory. This model is not beneficial to students’ ecological awareness cultivation and healthy personality development. The poet Eliot applied prosaic tone to have profound disclosure: An individual requires more education not for wisdom but for further maintenance; a country requires more education to excel other countries; a hierarchy requires more education to excel other hierarchies or not to be excelled other hierarchies. On the one hand, education is related to technical effect. On the other hand, it is related to nationhood improvement...If education means more money, greater dominant authority, higher social status or at least a stable and decent job, then there will be few people receiving education<sup>[4]</sup>. Sloan, education professor of Columbia University, held that when the crisis human faces is not only natural environment destruction but also includes overuse of racialism and ultranationalism, endless spreading of science and technology in human’s life, cultural diversity and significant global destruction. He warned that the world “is rapidly collapsing under the identical trend of modern way of thinking and its subsidiaries. In these subsidiaries, education system...forces children to enter infertile, greedy and vulgar adult cultural world in advance”<sup>[5]</sup>. The compulsory and control characteristics of modern education can be powerfully illustrated by using the Mississippi as a metaphor: Before white people came, Indians held great respect towards the Mississippi as a mother river. It was written in *Negro’s Proclamation on Rivers* by Hughes: “I know rivers well: I know that the rivers are as old as the world. It is even older than the blood flowing in human’s vessels. My soul is as long as the rivers.”<sup>[6]</sup>. After the while people came, engineers

applied modern technology to build a lot of flood prevention levees and overflowing flood ditches which surround the river and control its natural progress and flow. Thus, the flowing rivers have been controlled for several thousand years. The Mississippi is not a constituent part of natural living beings and biological laws any more but becomes a channel for human to pursue economic benefits and commercial development. The huge flood disaster in Middle West in 1993 was just a warning given by the nature to mankind. Even the most advanced technology including large-scale sluices and flood prevention levees cannot completely control the rivers. It shows how human's intervention with the rivers destroys the natural progress and threatens the whole global ecological system. It indicates by using the Mississippi as the metaphor for teachers and students that: if all the sites for student education activities are limited, controlled and polluted by those who want to conquer soul and spirit, it will be terrible for student development. Ironically, responsibility system and standardized examination implemented in the field of modern curriculum and teaching lead to the generation of curriculum schemes involving breaking away from environment, history, culture and personal interest. When learning these curriculum schemes, students cannot understand the knowledge. The consequences caused merely only mechanical memory are to determine the solution to complex problems, authoritative and rigid structure analysis. All of these control means have destroyed students' flowing capacities. Like the controlled river water, it has hindered the development of their creativity, discovering capacity and feedback capacity in perspective of self-reflection. Like natural water flow, students' learning should be rooted in the significant situation and special environment. It can be allowed to have free flow, exploration and creation. Then it can cultivate a person who possesses creativity, imagination and spirituality. There are classical

characteristics about modern education concept including currently popular Tyler's Rationale, curriculum plan based on behaviorism, competitive external evaluation and dualism model. Teachers and students, significance and situation, subjective body and objective knowledge, body and soul, learning and environment are separated each other by transferring neutral value information. This is just the source for mankind to confront the ecological crisis. In fact, postmodern science is against separation between material and consciousness and among fact, significance and value, for such separation has destroys human spirit, and it is an important reason to result in human's current dilemma. As David · Kennedy said, "In modern west, children have become a victim which is considered to be separated from society and is researched and controlled by people to serve the preset social objective<sup>[7]</sup>. Modern education control leads to increasingly rebellious spirit or nonchalance from adolescents against teachers and school leaders. It can be interpreted as a query from the young. What is spent at school is only learning, serving a certain purpose or finalizing the definition about some people's fate. Deeply speaking, the adolescents are not clear about the real reason for the relevant authority to specify 9-12 years to study at school. To turn about increasingly serious ecological crisis and education crisis, school education's overstressing on obeying, control, order, level, competition, personal success and cultural environment must be changed, for this kind of cultural environment is the source to lead to children's dissimulation, isolation and being refused and advocates a postmodern education development concept based on ecological sustainability. The famous scholar Marley<sup>[8]</sup> used the following table to compare the education paradigm comparison during industrial and ecological periods, which is of great enlightenment for educators to recognize the concept of ecologically sustainable education, as Table 1.

**Table 1.** Education Paradigm Comparison during Industrial and Ecological Periods

<b>Education paradigm during industrial period</b>	<b>Education paradigm during ecological period</b>
Bureaucracy	Community
Control	Relation
Independence	Interdependence
Competition	Cooperation
Isolation, dissimulation	Attribution

Student is a tool.	Student is an objective.
Great scale, impersonalization	Small scale, personalization
Base on instructor's teaching	Service learning, team learning

### 3 CURRICULUM AND TEACHING VISION OF ECOLOGICAL SUSTAINABILITY

In modern education, education and teaching is carried out in a compulsory and control manner, which is increasingly mechanical, rigid and short of love. To reform the education based on knowledge theory is imperative, for this kind of education has enlarged the roles of knowledge, capacity, science and technology in social development and strengthened the importance of learning knowledge in school life, but it neglects the important value for students to experience life. This leads to an alienating state between education and people, and the students' diversity, difference and imagination will be strangled. This kind of education completely went against the concept of ecological sustainability as well as the education spirit and objective. To construct ecologically sustainable curriculum and teaching concept is a great reform initiative for mankind to protect the earth ecology and benefit the descendants.

#### 3.1 Curriculum and teaching objective

Teaching is absolutely a "treasure chest" to obtain knowledge and possess curriculum knowledge such as concepts, facts and data. If it is believed that children can step off a right way in the stereotyped world only after they obtain those stuffs, it will be wishful thinking. David · Smith believed, "Those students who 'master' the contemporary norms most sufficiently are just the most short-sighted without insight in ideal, sentiment and social conscience" [9]. The objective of curriculum and teaching under the vision of ecological sustainability is to cultivate an integrated person. An integrated person is a life entity with a unity

between body and mind, intellectuality and morality, rationality and irrationality. He can get rid of egoism control, link with the world with an open attitude and live in harmony with the world. The holism educator Ron · Miller thought that an integrated person included several essential elements [10]: intelligence, emotion, physique, communication, aesthetics and spirituality. Anyone is a complex system in which ability, potential and creative vitality are interrelated. To label students with reductionism (learning disability, hyperactivity and subversive) or classify them by scores and levels and discriminate them means neglecting the students' complexity. A student's learning problem might firstly lie in intelligence, but actually it relates a problem network: student's self-value, position in class, school and community, family expectation and a way of dissimilating individual's life and defining learning as an excessively narrow cultural strength. Holism calls for thorough self-criticism from public education institutions based on reductionism and technocracy, for anyone is not merely a "case of illness", "test score", "citizen" or "worker" but an integral and complex person. Children are not a "resource" utilized by the state and industry and must not be treated with cruel and utilitarian reductionism.

#### 3.2 Curriculum and teaching content

Modern curriculum and teaching are originated from standards, government's order, great work collection or preset curriculum plans. This is wide apart from student's growth, learning, exploration of human life and living reality. Ecologically sustainable curriculum is not a preset plan brought by the teacher in classroom but experience from interaction among teacher, students and world. Alternatively, curriculum is

generated from dialogue between teacher and students. The education experience created by teacher and students is the real curriculum. Ecologically sustainable curriculum particularly stresses on interconnectedness among knowledge, learning experience, international community, natural world and life and tries to eliminate the privative phenomenon in curriculum. The links among things in curriculum preparation are the ones between linear thinking and intuitive cognition, body and mind, knowledge area, individual and community, human and earth, ego and nature. As for ecological literacy, emotion quality and social responsibility cultivation proposed nowadays, ecologically sustainable curriculum goes against transforming them into “units” or “subject plans” as themes to instruct students, but advises teachers to bring ecological literacy, emotion quality and social responsibility to students by communicating with students. Ron · Miller clearly pointed out that, “If the teachers offering curriculum do not care about these things and request a school, a local education authority or a state government to increase our ideal objectives, it will not lead to significant and convertible learning for students”<sup>[11]</sup>. To illustrate the conversion quality of curriculum, holism educators cite “dance” as metaphor for curriculum, for dance is full of changes and passion. It shows that the curriculum must be open to all inherent possibilities of student development. We cannot change the world into what we imagine. This is the only way for curriculum to march towards mankind creation and liberation. Ecologically sustainable curriculum must combine the following problems into teaching <sup>[12]</sup>. Citizen activists and strict waste processing rules have exposed the danger caused by radioactive garbage, toxic substances and hazardous goods to human health and multiplication. In public and private territory, big groups are carrying out excessive deforestation in tropical rainforest and

virgin forest in northern hemisphere at an amazing speed. The information about endangered species goes into the public consciousness, and excessive deforestation has been prohibited in some regions. The hazardous goods like pesticide and herbicide in food and water supply, and the adaptability of other alternative agricultural system has appeared. Direct and nonviolent behavior has become an acceptable and significant political protest means. Other feasible and non-patriarchal system forms in noology and other means in mainstream religious sects treat people as a keeper or an equivalent of the nature rather than a dominant player. These form and sects have been widely accepted. Ecological education and selection of other feasible lifestyles have significantly reduced energy consumption. To recycle the resources becomes popular in many schools and community. Resources should be supplemented, environment should be restored, and biodiversity should be supported by all industrial and commercial groups and particularly transnational groups. Reproductive health and family planning should be proper for all women. More and more people realize that the purpose can also be achieved by using simple method and avoiding unnecessary complex method. People are working hard to maintain and improve their sensitivity and understanding to food although food is sufficient for eaters. Understand all kinds of differences of ethics and culture, care about the status of the third and fourth worlds, try to avoid excessive differences among material living differences and avoid excessive waste in life beyond indispensable living standards. More and more people understand and select significant work, and they do not work only for life. People attempt to meet the main needs instead of desire and thus reduce the wealth. People struggle in conflict decisively and bravely, but their words and behaviors still remain nonviolent. More and more people begin to adopt vegetarianism and strict vegetarianism

lifestyle. They are absolute or incomplete vegetarians.

### 3.3 Curriculum and teaching methods

Modern curriculum and teaching only stress on such teaching environments as desk, blackboard, textbook and semester. Teachers do not know well about local community, geography, history, economy and occupation and utilize them as a kind of education resource. They do not stress on the value of multiple experiences and avoid it on purpose. The purpose is to cancel human communication, reflect and think about all possibilities. Ecologically sustainable curriculum and teaching stress on interaction of classroom environment and experience and advocate reflective dialogue, autobiographical logs, non-rivalry debate, cooperative study and zetic problems in classroom teaching. All of these are the key points of classroom experience. Teachers play a role as instructors and conductors, organize students to have learning experience for self-reflection and will not play a dominant and controlling role in the whole process. "A dancing circle" can be used as a metaphor for this kind of curriculum and teaching. The circle shape is soft and returned, and finally it returns to the original starting point. The circle keeps moving, so it is dynamic. It moves spirally inwards by using its internal energy and keeps reflecting. The circle moves spirally outwards and becomes a stuff which is called by chaotic and new science as partial model. These partial models keep moving annularly to finally a harmonious vortex. Therefore, it can be said that it is a heater for imagination no matter the annular movement is inward or outward. As for students' learning, we must get rid of the concept of "progress" in modern concept. This kind of progress means removing unknown, ascertained and controlled states. Thus, learning progress can be represented only by knowledge accumulation. It is better if the accumulation speed is quicker. However, this kind of learning cannot trigger the

motivation and give us a better survival mode. The reason is that such learning is outward or otherwise inward. It only cares about how fast a learner can run but does not care about how far he can run. Ecologically sustainable learning advocates a kind of "cultivation" mode to get rid of learning dissimilation state, for cultivation learning means that instrumental learning is changed into spiritual learning view. Learning becomes a life source full of interest. Peter · Senge said, "Learning also includes spiritual right-about or operation. However, learning has lost its core significance in the present usage. In daily expression, learning has meat absorbing knowledge or obtaining information. This has a great distance with the real learning. The real learning refers to the core meaning about human being. Through learning, we can do what we fail to do, recognize the world again and the relationship between us and it, and expand the energy to create the future. "

[13] The cultivation learning suggests balancing quickly successful learning and tedious and mechanical learning by slow learning, empathized learning and spiritual learning. On the one hand, the cultivation learning should be a kind of slow learning. That is, learning needs to be in harmony with natural pace. This can help experience the nature better and the world mystery, for the natural progress is slow and gradual. Only slow learning can make "precaution" and "deep cognition" appear. In teaching, teachers need to respect the natural progress in classroom instead of quickly changing from one topic to another, from one country to another and from one activity to another. On the other hand, cultivation learning calls for thoroughly utilizing such cognitive styles as emotion, body sensibility, intuition, empathy, care, sympathy, love and spiritual experience to recognize and experience the life. Park · Palmer held that such cognitive styles as "empathy, intuition, sympathy and belief" can "make us feel the subtle information in the

universe. Its silence delivers our relevant information about limit, responsibility and potential. When we, as a whole self, learn about these relationships, we begin to enter a community in which we know each other. In this community, we will be changed as we change others.”<sup>[14]</sup>. Regardless of empathized learning or spiritual learning, it is a kind of “precaution” practice in the final analysis. It stresses the relationship between us and wider universe as well as feeling cultivation for human’s devotion to life process. To realize cultivation learning can make children get rid of their sense of alienation with the world and self to achieve a state of everything at once and harmony of body and mind and experience the self’s endless and short feeling or Maslow’s “peak experience”.

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## REFERENCES

1. Zihong Xu, *Complete Interpretation of Classic of Change*( Guizhou People's Publishing House, Guizhou1991)
2. Dafu Feng, *Translation and Annotation of Laozi*, ( Shanghai Classics Publishing House, Shanghai,1991)
3. Qi Zhan,*Cosmology of Self-organization*, (China Social Sciences Publishing House, Beijing,1992)
4. T · Eliot, compiled by Enzhong Wang,*Poetics Collection of Eliot*,(Int'l Culture Publishing House, 1989)
5. Sloan,Douglas,Foreworld, *In Ron Miller (ed.), The Renewal of Meaning in Education, 1*, (Brandon, VT: Hollistic Education Press,1993)
6. Hughes, Langston, The Negro speaks of rivers, In R. Ellmann & R.O,Clair (Eds.), *The Norton anthology of modern poetry* . New York: W.W. Norton,pp.634,(1973)
7. David · Geiffrey · Smith, translated by Yangsheng Guo, *Globalization & Postmodernism*,(Science and Education Press, Beijing,2001)
8. James Malley, Mitchell Beck, Delia Adorno. Building an Ecology for Non-Violence in Schools, *International Journal of Reality Therapy*, 1(2001)
9. David · Geiffrey · Smith,translated by Yangsheng Guo, *Globalization & Postmodernism*,(Science and Education Press, Beijing,2001)
10. Miller, R., *Caring for New Life: Essays on Holistic Education*. Brandon: Foundations for Educational Renewal, pp.23-24, (2000).
11. Miller, R., *Make Connections to the World: Some Thoughts on Holistic Curriculum, Encounter: Education for Meaning and Social Justice*,p p.33,14, 4 (2001)
12. Patrik · Slattery, *Curriculum Development in the Postmodern Era*; translated by Wenbin Xu et al, Guilin: Guangxi Normal University Press, 2007, 233.
13. Peter · Senge, *The Fifth Discipline: The Art & Practice of the Learning Organization*; translated by Jinlong Guo, Shanghai Sanlian Bookstore, 1998, 14.
14. Taylor, E. R., *Ecology, Spirituality, and Education: Curriculum for relational knowing*,(Peter Lang Publishing, New York,2002)