Education for sustainable development: A survey of knowledge and attitude of Tehran elementary schools students with respect to ESD to key concepts

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ABSTRACT

This article reports on a 2011-2012 survey of 4th grade elementary students in Tehran. The authors surveyed 558 students from 10 elementary schools (5 boys, 5 girls) of 5 different districts from 4 parts of Tehran (west, east, north, south), The purpose of the study was to estimate the level of sustainability Knowledge and attitudes with respect to ESD Key concepts (energy and recycling, diversity, interdependence, non-violence, sustainable diet, participation in environment protection and stewardship) in social and environmental aspects. The instrument was a questionnaire and a test. Results showed, although students scored rather low on knowledge questions, they displayed higher scores on attitude. There was no significance relationship between gender and school's district with their Knowledge and attitude. Students' knowledge and attitude in environmental aspects of ESD is higher than social ones. Thus this article closes with policy suggestions for redirecting curriculum planning in Iran's elementary education with more attention towards social aspects of ESD, like: social diversity, social interdependence, non-violence, civic culture and social participation.

Key words: Education for sustainable development, sustainability, environmental education; education for sustainability.

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INTRODUCTION

The concept of sustainable development was first presented in United Nations General Assembly in 1982, with the well-known WCED (World Commission on Environment and Development) publication "Our Common Future" (1987), and in response to a growing awareness of the need to balance economic and social progress with concern for the environment and the exploitation of natural resources. The Commission defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [16].

Various approaches have been advocated and practiced to address sustainable development. Among these, education has been recognized as one of the key measures for achieving sustainability [19, 20, 16]. The first steps toward education for sustainable development, took place during the seventies at many international conferences on environmental education (EE), including the Man and Environment Conference held in Stockholm in 1972 and the UNESCO-UNEP Conference on environmental education held in Tbilisi in 1977 [21]. Stockholm Conference (1972) took place with presence of 113 heads of states, and created United Nations Environment Program [21].

After many international efforts during the 80's, global concern for educational sustainability expressed at the UNCED Earth Summit in Rio de Janeiro in 1992. The conference gave high priority to the role of education in pursuing the kind of development that would respect and nurture the natural environment. In particular, Chapter 36

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of Agenda 21 emphasized that education is critical for promoting sustainable development and improving the capacity of people to address environment and development issues [21].

The World Summit on Sustainable Development in Johannesburg (2002) broadened the vision of sustainable development and re-affirmed the educational objectives of the Millennium Development Goals(MDG) (UN, 2000) and Education for all [19, 20].

In recognition of the importance of education for sustainable development (ESD), the United Nations General Assembly declared 2005-2014 the UN Decade of Education for Sustainable Development (DESD) [22].

They designated UNESCO as a lead agency for promoting DESD.UNESCO has sought to integrate the principles, values, and practices of Sustainable Development into all aspects of education and learning in order to address the social, economic, cultural and environmental problems we face in the 21st century, UNESCO also was asked to ensure additive linkages between international initiatives like Education for all, the United Nations Literacy Decade and the Millennium Development Goals [20].

Conceptions of Education for Sustainable Development
ESD was first described by Chapter 36 of Agenda 21(1992). This chapter identified four major thrusts to begin the work of ESD: (1) improve basic education, (2) reorient existing education to address sustainable development, (3) develop public understanding, awareness, and (4) training.

ESD is more than a knowledge base related to environment, economy, and society. It also addresses learning skills, perspectives, and values that guide and motivate people to seek sustainable livelihoods, participate in a democratic society, and live in a sustainable manner. It also involves studying local and, when appropriate, global issues. Therefore, these five (i.e., knowledge, skills, perspectives, values, and issues) must all be addressed in a formal curriculum that has been reoriented to address sustainability [10].

Recent research argues that it requires:
• A focus on the future and ability to create a sustainable future - more than just focusing on trying to problem-solve our way out of our current situation
• Less emphasis on science and technology solutions and more on participatory and citizen action
• Less emphasis on seeing people as the problem and more on seeing people as agents of change
• Less emphasis on awareness-raising approaches and more emphasis on critical reflection and systemic thinking
• A focus on individuals influencing structural change - not just on individual environmental actions
• More focus on changing mental models that influence decisions and actions rather than solely changing individual attitudes [16].

In 1998, the report to the Qualifications and Curriculum Authority (QCA) was produced in curriculum guidance for schools, identifying seven key concepts relating to ESD, which provide opportunities for pupils to learn and develop their understanding of ESD and apply it to their lives both within the school and the wider community.

These were:
• **Citizenship and stewardship** the importance of taking individual responsibility and action to ensure the world is a better place
• **Sustainable change** understanding that resources are finite and that this has implications for people's lifestyles, and for commerce and industry
• **Needs and rights of future generations** our own basic needs and the implications for the needs of future generations of actions taken today
• **Interdependence** people, the environment and the economy are inextricably linked at all levels from local to global
• **Diversity** respecting and valuing both human diversity - cultural, social and economic - and biodiversity
• **Uncertainty and precaution** there are a range of possible approaches to sustainability and situations are constantly changing, indicating a need for flexibility and lifelong learning
• **Quality of life, equity and justice** global equity and justice are essential elements of sustainability and basic needs must be met universally [14].

Since the Brundtland Commission first defined sustainable development, dozens, if not hundreds, of scholars and practitioners have articulated and promoted their own alternative definition; each definitional attempt is an important part of an ongoing dialogue. In fact, sustainable development draws much of its resonance, power, and creativity

from its very ambiguity. The concrete challenges of sustainable development are at least as heterogeneous and complex as the diversity of human societies and natural ecosystems around the world. As a concept, its malleability allows it to remain an open, dynamic, and evolving idea that can be adapted to fit these very different situations and contexts across space and time [9].

There is a large body of theory and practice for ESD around the world. In this article, ESD has been divided to six key concepts. Each concept has both social and environmental dimensions as below: energy and recycling: environmental resources and social precaution in consuming; diversity: biodiversity and social diversity; interdependence: toward environment and society; non-violence: toward environment and society; sustainable diet: natural healthy eating, concerning local patterns [11] and social participation in environment protection and stewardship.

MATERIALS AND METHODS

Here, survey method with simple descriptive approach took place. The simple descriptive approach is a one short survey for the purpose of describing the characteristics of a sample at one point in time [10]. In this part students knowledge and attitudes toward key concepts of ESD as defined in this article, was assessed.

Sample
Sampling from the population of this research (4th grade students of Tehran's elementary schools during 2011-2012) took place by using cluster sampling. This method is useful when a full listing of individuals in the population is not available, but a listing of clusters is (Mertens, 2005, 316). 10 elementary schools (5 girls' school, 5 other boys') from 5 district from5 part of Tehran city (west, east, north, and south and center) were chosen randomly, then two 4th grade classes were selected randomly from each school. 558 4th grade students contained our sample in this survey.

Data Collection the Instrument: questionnaire and test
For assessing students' attitude, the main data gathering tool selected, was the questionnaire, since it is easy to administer, and inexpensive. It can obtain attitudinal information which can be easily tabulated and handled [23]. The questionnaire, containing 17 multiple choice questions and an open-ended question that students should write anything important that came to their mind related to questions but was not mentioned, and complete the sentence: I wish in our school. For assessing students' knowledge a test was designed with 10 multiple choice questions. This Instrument sought the students' perception of the meaning of the terms related to main concepts of ESD. All questions were structured in relation to the concepts driven from research's literature review. The Instrument's reliability was assessed by Cronbach's Alpha .It was %67 for the whole Knowledge and %75 for the whole attitude.

Data Analysis
Descriptive statistics were used to obtain simple information such as mean and deviation, for comparing social and environmental knowledge and attitude about ESD's key concepts. The open-ended question was codified and analyzed separately. It should be mentioned here that attitude was measured in ordinal scale. To be understandable for elementary students, it had only three degrees, but the Knowledge test, was designed in interval scale.

RESULTS

Students' attitude towards ESD key concepts in environmental aspects as seen in table.1 was higher (Mean = 2.76 from 3, Std = 0.27) in comparison with students' attitude towards it's social aspects (Mean = 2.61 from3, Std = 0.32). Students' knowledge in ESD's environmental aspects was higher (Mean = 0.49 from 1, Std = 0.19), Than social knowledge (Mean = 0.37from 1, Std = 0.23). In comparing students' whole knowledge, with their whole attitude, students' knowledge showed lower scores. As can be seen in table.1, Knowledge scores in both aspects (social and environmental) are below average. From 176 students that answered the open- ended question, 41 students wrote about planting trees and expanding green space,40 students about collecting garbage and cleaning the environment from trashes,32 wrote students asked for cleaning the school yard and it's water closets ,20 students had wished better human relations with their teachers and classmates.

Table1. Students' Knowledge and attitude towards ESD Key concepts

	N	Min	Max	M	Std. Dev
Environmental attitude	558	1.40	3.00	2.7566	.27482
Social attitude	558	1.50	3.00	2.6097	.32449
Environmental knowledge	558	0.00	1.00	.4872	.19493
Social knowledge	558	0.00	1.00	.3686	.22982
Valid N (list wise)	558				

DISCUSSION AND CONCLUSION

In analyzing students' higher scores in attitude comparing knowledge, it can be said:

First of all, in this research, students' attitude and knowledge are being measured by different scales. Students' attitude was measured in ordinal scale. To be understandable and easy to reply for elementary students, the questionnaire was designed with 3 degrees: agree, not sure, disagree. The score of mean was counted from 3, but the knowledge test was designed in interval scale and the mean was counted from 1.

Second, it is admitted that the results from attitude scales, show higher scores because they are expression of verbal behavior [23].They do not always reflect a person's real attitude and the validity of the information is contingent on the honesty of the respondent [10].

Finally although the above probabilities exist, it is also possible that students' attitude is higher than their knowledge level. 176 answers to the open ended question admitted this fact. After all, Hausbeck, Milbrath and Enright (1992), came to this conclusion on 3200 students on their survey report. They showed that New York State's students are well aware of and concerned about environmental problems, but have weak substantive knowledge about how environment works, or how environmental problems affect society.

In discussing the reason why students' scores in environmental aspects of ESD is higher than its social ones, one should explain reason of lower Knowledge and attitudes towards social concepts of ESD like: social diversity, social interdependence, non-violence, civic culture and social participation. In this case we should refer to many related variables in educational system that can influence students' social knowledge and attitudes.

One of the related variables, Is teachers' Instruction methods. As Baniasadi showed, there is a relationship between teachers' participative classroom management(including: performing cooperative learning methods, practice participative classroom managerial functions, abilities and skills as a teacher) and students' civil society behavior (including: civil society knowledge, attitudes and tendencies, and behavior), although the relationship was not strong, but out of nine relationships, it was still meaningful.(max :r = 0.36, min :r = 0.16) [1, 2]. During the last decade, a large body of research and practice took place in schools around the world in the erea of teachers' In-service and pre- service Education in related fields. For example: Breiting, & Wickenberg in Sweden and Denmark (2009), Chatzifotiou in England (2006)Shallcross and others in South Africa (2006), Supriatna In Indonesia (2005) and Zachariou & Kadji-Beltran (2009) in Cyprus .

The other affecting element can be textbooks' content in curriculum planning. Many content analysis researches in text books showed in Iranian textbooks, that there is more attention towards environmental aspects than social ones like peace and human rights [4, 7, 13].

For promoting students' knowledge and attitude in this area, redesigning our educational system from elementary level in its entire curriculum planning elements is a necessity. All these components: objectives, teaching and instruction methods, text books' content and evaluation, should be redirected towards sustainability with emphasis on its social and environmental aspects equally. As Dunlap& Marshall said:" Environmental problems are fundamentally social problems: They result from human social behavior, they are viewed as problematic because of their impact on humans (as well as other species) and their solution requires societal effort [5].

REFERENCES

[1] Baniasadi N, MA thesis, Tehran University, (Tehran, Iran, **2000).**
[2] Baniasadi N, *J Psych Edu*, **2005,** 34, 2, 145-147.
[3] Breiting S, Wickenberg P, *Envir Edu Res*, **2009,** 16, 1, 9-37.
[4] Chatzifotiou A, *Curric J*, **2006,** 17, 4, 367-381.

[5] Dunlap, Riley E, Marshall BK, *Environmental Sociology*, Oklahoma State University, **2006.**

[6] Gholtash A, Salehi M, Farrokhinezhad P, *Quart J Edu Psych*, **2010,** 1, 3, 120-124.

[7] Hakimzadeh R, Kiamanesh AR, Attaran M, *Curric Stud Quart*, **2007,** 5, 27-54.

[8] Hausbeck KW, Milbrath LW, Enright SM, *J Envir Edu*, **1992**, 24, 1, 27-34.

[9] Kates RW et al, *Sci Policy Sustain Develop*, **2005,** 47, 3, 8-21.

[10] Mertens DM, Research and Evaluation in Education and Psychology, California: Sage Publication, Inc, **2005**.

[11] Pil-Ryul L, Asia-pacific Centre of Education for International Understanding, **2005,** 14.

[12] Pratchett S, All Our Futures Conference, University College Plymouth, **2008**.

[13] Shallcross T et al, *Envir Edu Res,* **2006,** 33, 3, 283 - 301.

[14] Summers M, Kruger C, *Curric J,* **2003,** 14, 2, 157-180.

[15] Supriatna A, *Progress and challenges*, Jakarta: Indonesia University of Education, **2005**.

[16] World Commission on Environment and Development, www.aries.mq.edu.au/portal, **2013**

[17] United Nations Department of Public information, New York: United Nations, **1997**.

[18] UNESCO, Teaching and Learning, www.unesco.org/education/tlsf/**2006**

[19] UNESCO, the UN decade of Education for sustainable Development, Paris: UNESCO, **2007**.

[20] UNESCO, Seoul: Korean National Commission for UNESCO (KNCU), **2009**.

[21] UNESCO-UNEP, Tbisiliu (USSR), UNESCO, Paris, **1978**.

[22] Yoshizumi M, Columbia University, Teachers College, **2005**.

[23] Zachariou A, Kadji-Beltran C, *Environmental Education Research*, **2009**, 15, 315-342.