

# TOOL DEVELOPMENT- EDUCATION FOR SUSTAINABLE DEVELOPMENT AWARENESS TEST FOR TEACHERS (ESDAT)

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## Abstract

*Tools are nothing but the instruments that help the researcher to gather data. The investigator has constructed questionnaire on the Awareness of School Teachers towards Education for Sustainable Development. The test of awareness is meant to be administered on secondary school teachers. This paper highlights the concepts of sustainable development and education for sustainable development. There is need to acquire up-to-date information about what has been thought and done in the particular area for which the constructor intends to construct the tool. The review of related literature was carried to know the current knowledge of the topic education for sustainable development. The author briefly describes the construction and standardization of the tool. The Education for Sustainable Development Awareness Test for Teachers was constructed to give practical shape to any research conducted in the area of education for sustainable development.*

*Keywords: Tool development, Education for sustainable development, awareness test.*

*Tools are nothing but the instruments that help the researcher to gather data. Naturally the type of information the researcher gathers depends upon the kind of tools which have been used for the purpose. The selection of a tool depends upon objectives and design of the study and the type of respondents, investigator intends to cover. The investigator has constructed questionnaire on the Awareness of School Teachers towards Education for Sustainable Development. The test of awareness is meant to be administered on secondary school teachers.*

**Education For Sustainable Development Awareness Test For Teachers (ESDAT):** The Education for Sustainable Development Awareness Test was constructed by the investigator. Before starting with the steps of tool development let us peep a little into the concept of Sustainable Development and Education for Sustainable Development:

## **Sustainable Development**

The concept of sustainable development emerged as a response to a growing concern about human society's impact on the natural environment. The concept of sustainable development was defined in 1987 by the Brundtland Commission (formally the World Commission on Environment and Development) as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland, 1987). This definition

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acknowledges that while development may be necessary to meet human needs and improve the quality of life, it must happen without depleting the capacity of the natural environment to meet present and future needs.

The concept of sustainable development includes major issues of economic prosperity, social equity, global development and environmental concerns to ensure quality of life without damaging the planet for the future. These are briefly explained hereunder:

**Economic Prosperity** of any community is directly dependent upon business, trade and employment. It includes the issues of: tackling the ever-changing world of environment, and health and safety legislation; development of local schools pools, through the generation of personal development and training programmes and intermediate labour markets; development and substance of local social enterprises including rural social enterprises; development of new markets for local produce and services, including support of developing markets in tourism and green tourism, environmental services, local and organic food production; well educated work force; through wise use of resources; relationship between growth of economy and environment; sustainable food production; issues of poverty; economic growth within the country; global economic issues (e.g. third world debt); increase in employment etc.

**Social Equity** includes issues such as racial/gender/religion inequality; tackling discrimination; socially responsible investments (money management); understanding of social institutions, governments, schools, families, communities, religious organizations- and of their role in change and in development.

**Global Development** includes issues that deal with making connection between local and worldwide development issues such as divisions between rich and poor; issue of poverty in developing world; fund raising; energy or resource saving measures (switching off lights, recycling); tree plantation; development of links with local community e.g. visiting the elderly; think about global responsibility; better redistribution of wealth; advances in technology; life giving education; leadership skills for future; hygiene education and nutrition; water and sanitation; provision of quality and developments projects to alleviate poverty; improvement in quality of life.

**Environmental Issues** include cause and effect of pollution; sustainable use of natural resources; reduction, re-use and recycling of waste; conservation of wildlife habitats, protection of local and global environment; preservation of environment for future generation etc.

In nutshell, all these core issues are interrelated, and are a matter of concern for any society or a nation. No doubt, a number of indicators have a universal meaning, some of these have regional context. Hence the concept of sustainability in education, being global has a regional context as well.

Our schools need to prepare students to design and implement long-term visions and solutions to our current crises of un-sustainability. They can do that by giving youth the knowledge, skills, beliefs and the “habits of mind and heart” that

will enable them to fashion a sustainable world. It is imperative that schools are to be prepared to adopt this mission. Also we need to prepare teachers to understand sustainability, and see its relevance and importance to what they teach. It is need of hour to connect students to real-world efforts to bring about sustainability through curriculum and teaching-learning process and make efforts to educate the future generation for sustainability.

### **Education for Sustainable development**

The World Summit on sustainable development (WSSD) recommended to the United Nations General Assembly that it "...Consider adopting a decade of education for sustainable development starting in 2005" (UNESCO). In December 2002, resolution 57/254 on the United Nations Decade of Education for Sustainable Development (2005-2014) beginning on January 1<sup>st</sup>, 2005 was adopted by consensus. This has led to urgent need all over the world to reorient educational programmes to include the changes required in promoting sustainable development along with improving the quality of education, and redefining its goals to recognize the importance of sustainable development being one of the world's highest priorities (UNESCO; 2002, 2003). Education for sustainable development is not mere information sharing, but aims at educating people to fabricate a sustainable future. Education for sustainable development involves learning how to make decisions that consider the long-term future of the economy, ecology and equity of all communities (UNESCO).

The aims of education for sustainable development are:

- educating the public, decision-makers and consumers about the hazards of continuing on the present environmentally dangerous path of development.
- educating them about the alternatives that they can use, so as to assure a sustainable future for themselves and their children.
- identifying and promoting sustainable development activities, green technologies and goods, and educating the public about their uses.

Education for sustainable development is not a new programme, but a call for a process to re-orient existing educational policies, programmes and practices so that education plays its crucial role in building the capacities of all members of society to work together to build a sustainable future. There are a number of key themes in ESD and while the dominant focus is on environmental concerns, it also addresses themes such as poverty alleviation, citizenship, peace, ethics, responsibility in local and global contexts, democracy and governance, justice, human rights, gender equality, corporate responsibility, natural resource management and biological diversity. It is generally accepted that certain characteristics are important for the successful implementation of ESD, reflecting the equal importance of both the learning process and the outcomes of the education process.

Some surveys have been conducted to find out the placement of the concept of sustainable development in educational programmes or for education for sustainable development (defra, 1999; Haigh, 2003). A toolkit for education for sustainable development has been developed by McKeown (2002) giving a comprehensive

coverage of education for sustainable development in educational programmes at different stages of education and with regard to public participation in education for sustainable development. The focus of sustainability in higher education has also been analyzed with the help of different kinds of assessment tools for their use in education for sustainable development. Similarly a number of research issues in sustainability in education, especially higher education have been discussed by Fien (2002) providing some guidelines for the conduct of research in this vital area. Another survey on education for sustainable development in United Nations Economic Commission for Europe (UNECE) region has been conducted by Paul, Elias and Yotov (2004) to find out place of education for sustainable development policy in educational programmes in three countries i.e. Russia, Bulgaria and U.K and also to provide a region-wide coverage of various issues and priorities in education for sustainable development programmes.

Education for Sustainable Development connotes education for learning how to make decisions that consider the long-term future of the economy, ecology and equity of all communities (UNESCO), mainly dealing with content areas of conservation of natural resources, climate change, the transformation of rural societies, sustainable urbanization, disaster prevention and mitigation, economic issues, poverty reduction, the issue of greater corporate responsibility and accountability; socio-cultural issues such as fulfillment of human rights, a guarantee of peace and human security, gender equality, good health, good governance of the systems that are in-charge of the development process, a greater reinforcement of inter-cultural and international understanding and preservation of cultural and linguistic difference and diversity (Shaeffer, 2006), to be explored in terms of awareness of teachers towards education for sustainable development.

### **Review of Related Literature**

The review of the literature is carried to know the current knowledge of the topic. Survey of related literature means to locate, to read and to evaluate the past as well as current literature of research concerned with planned investigation.

University Leaders for a Sustainable Future (ULSF) (2001) developed a questionnaire as a part of the Sustainability in Higher Education Indicator project. The Sustainability Assessment Questionnaire (SAQ) was designed to assist universities and colleges in assessing the extent to which their college or university is sustainable in its teaching, research, operations and outreach. The impressions of an institution's accomplishments was taken on seven critical dimensions of higher education namely: 1. Curriculum; 2. Research and Scholarship; 3. Operations ; 4. Faculty and Staff Development and Rewards; 5. Outreach and Service; 6. Student Opportunities; 7. Institutional Mission, Structure and Planning. 24 questions were included in the questionnaire for conducting the survey on sustainability. The detailed information was collected on the questionnaire from the colleges and the universities on the issues of sustainability.

The paper by Gupta (2005) aims to highlight a number of aspects of Education for a Sustainable Future (ESF) in the Indian context. It attempts to examine teachers' understanding of and attitudes towards the concept of ESF and the

reasons behind them. Since we did not find any existing standardized instruments suited to the requirements of the study, it was decided to develop our own survey instrument, i.e. a questionnaire (a mix of quantitative and qualitative questions/statements) to examine the Indian teachers' perceptions/understanding of ESD. Since there was no standardized questionnaire to record such responses, it was decided to frame a comprehensive questionnaire for teachers, as a first step. 300 questionnaires were distributed to teachers of the selected schools and institutes.

Mai and Ewald (2007) in a thesis designed to explore the current attitudes and awareness towards sustainability among students at Lund University (LU), whether they are willing to accommodate any change in their programme, and how they would prefer to learn about sustainable development (SD). A questionnaire was constructed in this study. It was divided into three parts in order to: (i) assess the current attitudes towards sustainability among students, (ii) let them express whether they are willing to have ESD into their programme; and (iii) how they prefer to include ESD into their programme. As stated before, the questionnaire was divided into three parts; (i) Assessment of students' attitudes towards sustainability. In the first part of the questionnaire, seven attitudinal statements were posed. All of the questions in the questionnaire are closed-ended questions.

A study was designed by Erdogan & Tuncer (2009) *Need Assessment Questionnaire (NAQ)*; NAQ was developed to investigate undergraduate students' needs, expectations and pre-knowledge about the course of EAFS. It consisted of three parts, eight sub-parts and total 53 items. 17 of the items were open-ended whereas 36 of them were closed ended on a Likert type scale. These parts addressed to (1) background information, (2) course implementation with regard to instructor, student, instructional methods and techniques, instructional materials, and evaluation techniques, and (3) students' attitude toward the course. *Open-ended Questionnaire for Formative Evaluation (OQFE)*; OQFE was developed to get students' opinions regarding course implementation. It included only seven open-ended questions. *Summative Evaluation Questionnaire (SEQ)*; SEQ was designed to determine whether students' expectations and need were satisfied or not.

Global Energy Network Institute (GENI) (2010) prepared six questions towards Peace and Sustainable Development. It was stated that the proposal is to interconnect the electrical energy networks between nations and continents, with an emphasis on tapping the abundant renewable energy resources of our planet. We need more comprehensive thinking and long-range global planning. So the questionnaire was prepared with the purpose to investigate the GENI Initiative towards sustainable development as it offers hope for all humanity with a vision of a world in which all people has access to ecologically sustainable energy.

UNESCO chair and African Union (2010) constructed a questionnaire named Accelerating Youth Empowerment for Sustainable Development Questionnaire containing 42 questions to be asked from university students for the project to address sustainability through curriculum at university level. The questionnaire was of 15 minutes duration. Main goal this project is to support the development of ESD in the Higher Education sector in developing countries (Egypt,

Jordan and Lebanon) with the help of developed countries (France, Ireland, Italy, Sweden).

Fishwick (2011) constructed a questionnaire on Global Education-Sustainability and Justice in Church Schools. This questionnaire was prepared just to help us as an Education Team get a broad picture of the breadth and type of engagement with education around issues of sustainable development and global justice, which church schools in our dioceses are involved in. It will be used to help us respond better to schools' needs. Total of 10 items were included in the questionnaire along with an open-ended question at the end of the questionnaire.

Nevin & Ginnetty (2014) conducted a survey with the help of a questionnaire to provide an overview of good practice in Education and Training for Sustainable Development in Ireland, to provide samples of good practice programmes and projects, to draw conclusions on the policy frameworks and other mechanisms required to further develop Education for Sustainable Development in Ireland. Provide stakeholders with an email survey using a questionnaire to ascertain the level of activity in ESD in their work area. The questionnaire was adapted from UNECE guidelines on Good Practice initiatives. Total 10 items were included in the questionnaire

### **Rationale of The Study**

There is need to acquire up-to-date information about what has been thought and done in the particular area for which the constructor intends to construct the tool. The review of related literature was carried to know the current knowledge of the topic education for sustainable development. Education for sustainable development is a complex concept with its origin in the natural and social sciences that has been developed through international dialogue in response to the challenges facing the world today. All the issues encompassing education for sustainable development are being dealt with in education. No doubt, it is praiseworthy; still there remains a gap in 'policy intent' and its application. The need of the hour is to sensitize and motivate the educational authorities, especially teachers to teach their subjects in linkage with the situations. The survey of related studies was done to analyze the tools already been developed and reported in dissertations, thesis, journals, abstracts, encyclopaedias, yearbooks, handbooks or in any other published form. But the constructor found no tool to test the awareness level of school teachers towards education for sustainable development. So, the constructor decided to develop a tool entitled: Education for Sustainable Development Awareness Test for Teachers.

### **Steps of Test Construction**

The brief description of construction and standardization of the tool is given below:

- **Planning of the Test:** At this stage the broad and specific objectives of the test were specified by the test constructor. After careful planning the test was constructed. The objectives of the test were specified as under:
  - The model of education, as it is existing at present, is mechanistic, reductionistic, individualistic, and fragmented that does not correspond to the needs emerging out of the future requirement as reflected in

sustainable development, and needs a systemic and interdisciplinary change in its approach that includes complexity to deal with various issues of society, ecology and economy in a global perspective. Environment education and its contribution constitute the broad frame of sustainability in order to understand it as a process. Therefore, sustainability in education can be considered as an axis of development that specifies the actions that should be undertaken in search of a better quality of life.

- We need to prepare teachers to understand sustainability, and see its relevance and importance to what they teach. It is need of hour to connect students to real-world efforts to bring about sustainability through curriculum and teaching-learning process and make efforts to educate the future generation for sustainability.
- **Writing Items of the Test:** The next step is the preparation of test items. An Item is defined as a single question or task that is not often broken down into any smaller units. Item writing starts with the planning done earlier. Item writing is a creative art. There are no set rules to guide and guarantee writing of good items. A lot depends upon the item writer's intuition, imagination, experience, practice and ingenuity. It was decided to construct the objective items. The content matter for the awareness test was culled out from different documents dealing with concept of sustainable development, education for sustainable development, environmental education.(Maryam Larijani 2010; K.N. Mwaura 2007; Phan Truc 2007; Anuradha Gupta 2004; Goran Wall 2007; Council of the European Union 2010; Jiennifer A. Elliot 2006; UNESCO as indicators of education for sustainable development 2009, McKeown 2002, Fien 2002).
- **Preliminary Draft of the Test:** The preliminary draft of Education for Sustainable Development Awareness Test (See Appendix I) for Teachers was prepared with the help of number of research studies dealing with the concept of Sustainable Development, Education for Sustainable Development and other allied issues. A list of 49 items was included in the preliminary draft of the test. Since all the issues identified in the awareness test pertain to one or other facet of sustainable development and its linkage with education, no technique of item analysis was applied for further short listing of items/statements as is done in most of psychological tests measuring different facets of human behaviour. The experts' opinion was taken for short listing of items. On the basis of opinion of university, college and school teachers a list of 26 statements/items dealing with different aspects of Education for Sustainable Development i.e. Economic Prosperity, Social Equity, Global Development and Environment were identified. The items were framed to be responded in different ways: Yes/No/Not Sure, Agree/Disagree/Not Sure, Tick the appropriate boxes. Another open ended question was put in the end of few questions to seek any other information from school teachers with regard to their awareness about Education for Sustainable Development. The 26 items of final draft of Education for

Sustainable development Awareness Test for Teachers (ESDAT) were arranged and those dealing with same contents were placed together.

- **Preliminary Administration of the Test:** When the items have been written down and modified in the light of the suggestions and criticisms given by experts, the test is said to be ready for its experimental try-out. The preliminary try-out of the test has been done on government school teachers of Chandigarh. The data was gathered from 60 school teachers teaching different school subjects. Both male and female teachers have been taken for the preliminary try-out of the test. The school teachers were very cooperative throughout. Many of them were aware about the concept and the core issues of sustainable development and education for sustainable development. The instructions were given to the teachers at the beginning of test. The teachers were encouraged to give their opinions in open ended questions also. The purpose of preliminary try-out is to determine a reasonable time limit of the test and also the validity of each individual item. The items of the test were modified after taking the expert's opinion and also on the basis of the responses of school teachers, the changes were made in preliminary try-out of the test. The final draft of the Education for Sustainable development Awareness Test for Teachers (ESDAT) (See Appendix II) was prepared and 26 items were included after making necessary changes.
- **Reliability of the Final Test:** When on the basis of the preliminary try-out the test is finally composed of the selected items, the final test is again administered on a fresh sample in order to check the reliability of the test. Reliability is the self-correlation of the test and it indicates the consistency of the scores in the test. It is one of the important characteristics of any test. A test is said to be consistent over a given period of time when all the examinees retain their same relative ranks of two separate testings with the same test. Reliability refers to the consistency of scores obtained by the same individuals when re-examined with test on different occasions, or with different sets of equivalent items, or under other variable examining conditions. Reliability is never perfect. The final draft of Education for Sustainable Development Awareness Test (ESDAT) was administered on the same sample of government school teachers teaching different school subjects. This time 50 teachers were available who have given the preliminary try-out of the test. Test-retest reliability method was used to find check the reliability of test items. In test-retest reliability the single form of test is administered twice on the sample with a reasonable time gap. In this way, two administrations of the same test yield the two independent sets of responses. Since the ESDAT for teachers was based on qualitative research. The purpose of the test was to explore the required information on the issues of sustainable development and education for sustainable development. The scoring of the test was not done but the items of the two sets were matched. Therefore the agreement between the two responses of the same individual on the two different try-outs was matched to check the reliability of the test and it came out to be 80 %. It indicates to what extent the examinees retain their relative position as measured in terms of the test item matching over a



given period of time. The test is said to be reliable. The ESDAT was administered on same sample after a gap of fifteen days, to find out the reliability.

- **Validity of the Final Test:** The next step is the validity of the final test. Validity refers to what the test measures and how well it measures and the range of accuracy of applications. If a test measures a trait that it intends to measure well, we say that the test is valid one. Validity is not the self-correlation of the test; rather it is correlation with some outside independent criteria, which are regarded by experts as the best measure of the trait or ability being measured by the test. The content validity of the ESD awareness test was established at two stages. Firstly the selection of 26 important issues included in Education for Sustainable Development were selected with the help of resource material available and viewpoints of university and college teachers with respect to their importance in today's world. They may not be aware of concept of Education for Sustainable Development as such but the issues selected refer to certain positions to be taken which are relevant in the social life, and have got consequences for future. Secondly this draft of ESD awareness test was shown to college, school and university teachers, to seek their expert views on the adequacy of content matter included in the statements as per norms and concepts of Education for Sustainable development. The adequacy of all the 26 items was checked with the source material on Education for Sustainable Development for any further inclusion in the list. On the basis of opinion and viewpoints of experts it was ensured that this test is valid enough to find out level of awareness of school teachers regarding education for sustainable development.

Education for Sustainable Development concerns wide range of interrelated issues which were approached through the 26 different items of the ESDAT test for teachers. All the issues encompassing Education for Sustainable Development are being dealt with in education. The need of the hour is to sensitize and motivate teachers to teach their subjects in linkage with the situations. In order to find out the awareness of school teachers with respect to Education for Sustainable development, it was thought to construct Education for Sustainable development Awareness Test for Teachers. The above written steps were followed by the test constructor for the construction and standardization of the test. The Education for Sustainable Development Awareness Test for Teachers was constructed to give practical shape to any research conducted in the area of education for sustainable development.

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