The Sindh University Journal of Education Vol. 43, Issue 2014, Pp. 82-95

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PREPAREDNESS OF PROSPECTIVE TEACHERS FOR PROMOTING EDUCATION FOR SUSTAINABLE DEVELOPMENT S

Abstract

This paper tries to discover the preparedness of prospective teacher for promoting education for sustainable development. The descriptive analytical design was used to accomplish the study. The study was conducted in late 2012. 150 questionnaires were administered and response rate was 75% among them of which 82% were female and 18% were male. The questionnaire was on four point rating scale and statement of each variable was classified into two statuses i.e. present scenario and in future suggested. 79% of the students felt that University of Education (UE) is embedding sustainable development (SD) in its curriculum in one way or the other, whereas 72% voted for "Citizenship Education" as a subject matter for SD taught in UE. 73% of the students thought that the curriculum made them aware about their critical role in local community as well as eco-friendly practices. Nearly all subject matters were favored by students from medium to a large extent to be the part of their curriculum in future. Students suggested with high moral and encouragement to improve the curriculum in perspective of sustainable development focusing greatly on Environmental management and Sustainable communities. Students seemed quite hopeful on the future stance of UE's curriculum regarding and addressing SD.

Keywords: *UE sustainability, curriculum, Education for sustainable development, students' satisfaction*

Introduction

Today is the epoch of quality and diversification. Everyone is conscious about the durability of the things he is using or facing. The intentions behind the purpose is that the things should have long term expiries than before, the things should hang on its

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subsistence and eminence for upcoming generations just as it is for us today. This concept gives birth to the concept of sustainability, as everyone urges for the sustainable and equitable future. It is always realized that our natural resources while these resources are interdependent on everything that is present on earth (Vester, 1991).

This concept had helped to arouse environmental consciousness with the concept of sustainable development (Uzelac & Pejcic, 2007). Pozarnik (2000) was of the opinion that sustainable development should be adorned with a proper education which will help to improve everything including standards of livings, productivity and levels of utilizations of the goods and opportunities keeping in view that this burden of work can be handled by our ecosystem.

For this reason one also has to take care for future opportunities i.e. sustainability education should be future oriented so that we would be ensured that our upcoming generations would also be able to fulfill their basic needs. The resolution and awareness for such ecological issues are surely the headache of education (Vodopivec, 2011).

Sustainable Development

Sustainable development is a vibrant concept that evolves with various aspects and construal. Summers and Childs (2007) stated Sustainable development to be a multifaceted, competitive and challenging expression. Besides of various arguments, conflicts and disagreements on this concept, the meanings of sustainable development can be easily understood with universally accepted definition of Brundtland, "*development which meets the needs of the present without compromising the ability of future generations to meet their own needs*" (WCED, 1987).

The crux of this term seemed to be purely economic but it is more than that, starting from the basic aim of a person to the material progress towards fulfilling the vast human, economic and environmental needs, wants and constraints (Connelly, 2002).

These progresses includes environmental safety, equity i.e. heterogeneous and homogeneous, quality of life and livings and equal participation from all groups of people in a society to help increasing economic growth. These are important and fundamental components of Brundtland report as well as International Declarations as reported by Jacobs (1995).

Education for Sustainable Development

Education can participate as an indispensible character to attend the challenge of progress and development in achieving sustainability. Globally it is viewed that trends in economic development are not yet sustainable while education and training are the key dynamic assets that can arouse public awareness towards better and more sustainable societies (UNESCO, 1997 & 2006).

United Nations Conference on Environment and Development was the first in which education for sustainable development was discussed under the Agenda 21; Chapter 36 (UNCED, 1992). ESD is more than a concept that devices tools for learning and motivation among people towards sustainability (UNESCO, 2005). It also addresses and suggests alternative methods to enhance different systems operating in Earth (Elliott, 2010). Consequently, Education for sustainable development aims to target local or global issues at all levels of formal education and curriculum in order to establish more appropriate manners and behaviors, ideas, beliefs and values with respect to sustainability.

Sustainable development in higher education

Sustainable development is higher education addresses matters like research, training and development, innovative curricula and teaching methods and latest instructional materials to fulfill continuous societal needs. It is extensively believed that education on the whole and higher education specifically is a central to awakening awareness for sustainability. According to UN Decade of Education for Sustainable Development (2005-2014), "*academic institutions and University faculties are thereby anticipated to*

contribute to the empowerment of people of all ages to assume responsibility for creating a sustainable future" (Axelsson, Sonesseon & Wickenberg, 2008).

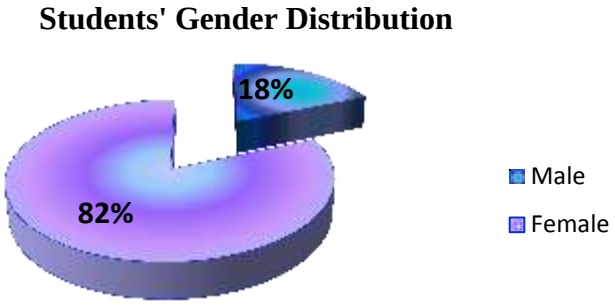
Today higher education had become more responsible as a tool and a global challenge to meet the core Agendas of sustainability among various academic institution (Sibbel, 2009) while Steiner and Posch (2006) discussed the role of higher education in sustainability that teaching this concept not only requires approaching institutions beyond the borders but also there should be inter-disciplinary and trans-disciplinary as well as self-regulated learning too; that advocates research, science and practice.

Kilinc and Aydin (2011) in their study revealed more aspects of sustainable development other than three hallmarks (environment, economy and society) i.e technology, politics, energy and education. This leads sustainable development to address and ponder upon issues like peace, human rights and poverty alleviation, preservation of environment and energy, cultural and bio-diversity, quality of food, water and sanitation, and sustainably better use of scarce and natural resources (Khalifa and Sandholz, 2012) .

Results and Discussions

Analysis of Biographical Information

The data was analyzed by using SPSS version 16. A total of 150 questionnaires were administered; hence the overall response rate was 75% that was considered satisfactory on ground realities. The first part of the instruments contained the biographical information. As reflected in chart, that 82% respondents were female and only 18% male.



Distribution of Participants by Program

The largest group of participants (42.5%) was enrolled in M.A Education. It also shows that (28.5%) of the sample belonged to Master of Educational Leadership and Management Studies (MELMS) program of studies while the rest participants (24.5%) were engaged in B.Ed.

Students' opinion regarding their Preparedness for Promoting Education for Sustainable Development

Proceeding table shows the opinion of students about content of sustainable development in their curriculum. Mean scores and Standard deviation are also given.

Analysis of Students' Perception regarding their preparedness for Education for sustainable development

The perception of Students regarding their preparedness for Education for sustainable development was measured using a questionnaire. The attitude of Students was measured on four point rating scale ranging from 4=to a large extent, 3= to medium extent, 2=to some extent, and 1= not at all.

For data analysis, the statements in each section were classified under two dimensions, i.e. present status of sustainable development in the curriculum followed by UE and prospects that is perceived by students in upcoming future.

Present situation

Table No: 1 ***Opinion of students about sustainable development in their curriculum***

Sr.#	Statement	Not at all	To some extent	To medium extent	To a large Extent	Mean	S.D
1.	Study of sustainable development formed a part of course.	24.5	**44.5**	27.0	8.0	2.11	.817
2.	Is U.E embedding any SD concepts or approaches into any of your organization (U.E) courses and programmes?	15	**44.5**	34.5	6.0	2.31	.799
3.	Does U.E use any currently available SD learning materials, Globalization	23.0	**43.0**	24.0	10.0	2.21	.911
4.	Sustainable development	19.0	**46.5**	26.5	8.0	2.23	.851
5.	Understanding sustainable development	15.0	**44.5**	28.5	12.0	2.38	.882
6.	Urban ecology	12.5	**44.0**	34.5	9.0	2.40	.821
7.	Social justice	16.0	**41.0**	37.0	6.0	2.33	.815
8.	Sustainable production and consumption	19.0	**39.5**	32.5	9.5	2.32	.890
9.	Environmental philosophy	18.5	**43.5**	29.0	9.0	2.28	.870
10.	Environmental policy	21.0	**40.0**	35.0	4.0	2.22	.822

Mean response values of all students' opinions about sustainable development in their curriculum indicate that they feel that sustainable development is a part of their curriculum from some to medium extent. Majority of 73.95% of the students think that sustainable development is included in UEs curriculum from some to medium extent, while urban ecology (78.5%) and social justice (78%) covers the highest mean scores.

When asked about the estent to which it should be embedded in its curriculum (79%), students' responses were measured highest in this regard. The overall mean score is favoring UEs relationship with S.D in a way or other to an extent but still the scenario is not satisfying on major considerations.

Table No: 2 ***Opinion of students about sustainable development in their curriculum***

Sr.#	Statement	Not at all	To some extent	To medium extent	To a large Extent	Mean	S.D
1	Does U.E use any currently available SD learning materials, Environmental management	23.5	35.5	**36.0**	5.0	2.23	.865
2	Population development	29.0	**39.0**	26.0	5.5	2.08	.878
3	Women and development	16.5	**36.0**	36.0	11.5	2.42	.899
4	Citizenship education	16.0	**40.5**	32.0	11.5	2.39	.890
5	Land ethics	30.0	**37.5**	25.5	7.0	2.10	.911
6	Sustainable agriculture	30.0	**39.5**	25.5	5.0	2.06	.869
7	Health education	23.0	**45.5**	27.0	5.5	2.15	.837
8	Consumer education	21.5	34.5	**36.0**	8.0	2.31	.898
9	Sustainable communities	24.5	**36.0**	29.0	10.5	2.26	.946
10	Indigenous knowledge	34.5	**35.0**	23.5	7.0	2.03	.929

When students were asked about the learning material used by UE related to sustainable development, responses varied around subject matter.

Majority of participants favored Environmental management (71.5%), Women development (72%), Citizenship Education (72.5%), Health Education (71.5%) and Consumer Education (70%) ranging from some to medium extent. Other subject matters like Population Development, Sustainable Agriculture and Sustainable Communities covered mean score of 65% on a scale of some to medium extent, while Land Ethics (63%) and Indigenous Knowledge (58.5%) depicted the lowest mean scores.

Table No: 3 ***Opinion of students about sustainable development in their curriculum***

Sr. #	Statement	Not at all	To some extent	To medium extent	To a large Extent	Mean	S.D
1.	Does U.E use any currently available SD learning materials, Peace education	26.5	36.5	27.5	9.5	2.20	.940
2.	Accepting challenges of Poverty	19.5	35.0	31.0	19.5	2.40	.962
3.	Accepting challenges of Discrimination	22.0	37.5	30.0	10.5	2.29	.927
4.	Accepting challenges of Inflation	18.5	44.5	27.0	10.0	2.28	.882
5.	Developing critical thinking about your role in local community	12.5	35.0	38.5	14.0	2.54	.884
6.	Concept of efficient use of Energy	21.0	33.5	32.5	13.0	2.38	.959
7.	Concept of effective use of Energy	20.5	39.0	29.5	11.0	2.31	.921
8.	Eco-friendly practice	16.0	41.0	32.0	11.0	2.38	.883

The above table shows that majority of the students responded on above mentioned subject matters from some to medium extent. Responses were higher on scale for Accepting challenges of inflation (71.5%), Developing critical thinking about your role in local community (73.5) and Eco-friendly practices (73%).

The subject matter related to Peace Education (64%), Accepting challenges of Poverty (66%), Accepting challenges of Discrimination (67.5%), Concept of Efficient use of energy (66%), Concept of Effective use of Energy (68.5%) were perceived by majority from some to medium extent.

The mean score on all variables shows that students experienced typical concepts of S.D. in their curriculum while neglecting the topics that are related to in-depth sustainable development knowledge.

Opinion of Students about Future Situation of Sustainable development in their Curriculum

Proceeding table shows the opinion of students about sustainable development in their curriculum. Mean scores and Standard deviation is also given.

Future situation

Table No: 4 ***Opinion of students about their curriculum in University of Education***

Sr.#	Statement	Not at all	To some extent	To medium extent	To a large Extent	Mean	S.D
1.	Study of sustainable development formed a part of course.	1.5	20.0	33.5	45.0	3.22	.815
2.	Is U.E embedding any SD concepts or approaches into any of your organization (U.E) courses and programmes?	0.5	21.5	36.0	42.0	3.19	.787
3.	Does U.E use any currently available SD learning materials, Globalization	2.0	13.5	27.5	57.0	3.40	.795
4.	Sustainable development	0.0	8.0	45.5	46.5	3.39	.631
5.	Understanding sustainable development	1.0	11.0	47.0	41.0	3.28	.696
6.	Urban ecology	1.0	18.5	38.5	42.0	3.22	.776
7.	Social justice	4.0	8.0	45.5	42.5	3.27	.773
8.	Sustainable production and consumption	4.5	17.0	39.5	39.0	3.13	.852
9.	Environmental philosophy	2.0	12.5	36.0	49.5	3.33	.771
10.	Environmental policy	1.0	9.5	46.5	43.5	3.32	.686

Responses in the above table indicate that students' recommendations about sustainable development were encouraging; they support the significance and importance of SD in different subject matters. Overall responses were ranging from medium to large extent.

Students respond from medium to a large extent (78.5%) favoring that study of Sustainable Development formed a part of their curriculum. When inquired about embedding SD concepts or approaches in courses and programs, they constitute to the majority of 78%.

Nearly all subject matters were favored by students from medium to a large extent to be the part of their curriculum in future, indicating Sustainable Development (92%) and Environmental Policy (90%) with highest mean scores while Understanding SD and Social Justice constitute the second highest (88%).

Globalization (84%) and Environmental Philosophy (85.5) were considered by a handsome numbers of respondents, while Urban Ecology (80.5%) and Sustainable Production and Consumption (78.5%) covered the lowest mean scores.

Table No: 5 ***Opinion of students about their curriculum in University of Education***

Sr. #	Statement	Not at all	To some extent	To medium extent	To a large Extent	Mean	S.D
1.	Does U.E use any currently available SD learning materials, Environmental management	1.0	8.5	39.5	51.0	3.41	.688
2.	Population development	0.5	12.0	34.5	52.5	3.40	.716
3.	Women and development	0.0	11.5	43.5	45.0	3.34	.675
4.	Citizenship education	2.5	18.0	31.0	48.5	3.26	.839
5.	Land ethics	0.5	21.0	45.0	33.0	3.11	.742
6.	Sustainable agriculture	0.5	14.0	32.5	52.5	3.37	.746
7.	Health education	0.5	14.0	39.0	46.5	3.31	.727
8.	Consumer education	0.5	10.6	33.2	55.8	3.44	.700
9.	Sustainable communities	2.5	6.0	46.5	45.0	3.34	.705
10.	Indigenous knowledge	0.5	13.5	38.0	48.0	3.34	.725

Mean scores on all variable shows that students suggested with high moral and encouragement to improve the curriculum in perspective of sustainable development. The result of the table is indicated ranging from medium to a large extent.

Above result shows that Environmental management (90%) and Sustainable Communities (91.5%) is viewed dominantly by students, while Women and Development (88.5%) and Consumer Education (89%) comprises of second highest mean scores.

Population development and Indigenous Knowledge is viewed by majority of the students as 87% and 86% respectively from medium to a large extent, while Sustainable Agriculture and Health Education covered 85% and 85.5% on the very range.

Students gave the lowest priority to the Citizenship Education (79.5%) and Land Ethics (78%) as compared to other learning materials that to be provided in future.

Table No: 6 ***Opinion of students about their curriculum in University of Education***

Sr.#	Statement	Not at all	To some extent	To medium extent	To a large Extent	Mean	S.D
1.	Does U.E use any currently available SD learning materials, Peace education	1.0	12.0	45.5	41.5	3.28	.708
2.	Accepting challenges of Poverty	0.5	12.0	34.0	53.5	3.41	.717
3.	Accepting challenges of Discrimination	0.0	11.1	40.2	48.7	3.38	.677
4.	Accepting challenges of Inflation	0.5	18.5	35.5	45.5	3.26	.772
5.	Developing critical thinking about your role in local community	0.0	8.5	53.5	38.0	3.30	.616
6.	Concept of efficient use of Energy	0.5	12.5	37.5	49.5	3.36	.716
7.	Concept of effective use of Energy	2.0	11.5	34.0	52.5	3.37	.766
8.	Eco-friendly practice	1.0	16.5	40.0	42.5	3.24	.758

Mean scores on all variable shows that students suggested with high moral and encouragement to improve the curriculum in perspective of sustainable development.

Majority of the students (91.5%) are of the opinion that UE has an SD learning material that will foster in developing critical thinking about their roles in local community in future, while favoring Peace Education as the second most (89.5%) on a scale from medium to a large extent.

Students perceived from medium to a large extent that UEs learning materials related to SD will enable them to accept challenges of poverty (87.5%) and discrimination (88.9%) in future, while helping somewhat in understanding the concept of efficient (87%) and effective (86.5%) use of energy. They also respond to accept challenges of inflation (81%) and Eco-friendly (82.5%) practices but relatively with lower mean scores compared to others.

Inferential Statistics

1. Female students of UE had higher mean scores (M= 60.25, SD= 12.3) than those of male students (M= 54.35, SD= 10.70), t= 2.68, p = .05, indicating a high satisfaction regarding SD in their curriculum among female students than male students.

2. An analysis of variance showed that the difference among the opinions of students regarding SD in various academic programmes were significant (F= 14.28, p= .05).

3. An analysis of variance showed that the students' satisfaction about sustainability in ongoing curriculum of different programs was significant, F (6, 193) = 8.822, p = .000. This finding was supported by Post hoc analyses using the LSD post hoc criterion for significance that indicated the difference to be reported at the .000 level between M.A Education and B.S Hons and .001 between M.A Education and B.Ed while 0.05 between M.A Education, MSc Chemistry and MS IT.

4. An analysis of variance showed that the students' satisfaction about sustainability in future curriculum of different programs was significant, F (6, 193) = 4.357, p = .000. This finding was supported by Post hoc analyses using the LSD post hoc criterion for significance that indicated the difference to be reported at the .005 level between MELMS and M.A Education whereas .007 level between B.Ed and M.A Education while .03 level between MSc Chemistry and B.Ed.

Conclusions and Implications

The occurrence of Education for Sustainable Development in Pakistan has an account not more than a decade. The benefits of ESD are still to be conquered in Pakistan. This study anticipated to determine the satisfaction of students of University of Education towards sustainability of UE's curriculum currently followed and its future conditions. The result showed that 70% of the total respondents in the sample think that currently there is somewhat sustainability in UE's curriculum whereas the percentage went higher to 80% when they were asked about future condition. The students were of the opinion that university is currently pondering upon the subject matter that advocates more on Citizenship education and developing critical thinking about their role in local community while they are hopeful that in future beside these subject matters like Peace Education and Sustainable Communities will be concerned more. Majority of the students are quite hopeful that UE will have SD learning material embedded in almost all of its academic programmes in future.

Presently M.A Education and MELMS has a proper area of study that is purely SD based while it is hoped that MSc Chemistry would have some courses that will address environmental part of SD in future. This study can urge researcher to discover about more about the impacts and extent of sustainability in University of Education as well as in other higher education institutes picking other deliverables that are related with the quality of education.

Reference

Axelsson, H., Sonesson, K., & Wickenberg, P. (2008). Why and how do universities work for sustainability in higher education (HE)? *International Journal of Sustainability in Higher Education, 9* (4), 469-478.

Connelly, S. (2002). *Public involvement in Local Agenda 21: the impact of local authority policy processes.* University of Sheffield, Sheffield.

Elliott, S. (2010). Essential, not optional: Education for sustainability in early childhood centers. Exchange: *The Early Childhood Leaders' Magazine 192*, 34-37.

Jacobs, M. (1995). *Reflections on the Discourse and Politics of Sustainable Development*. (mimeo), Lancaster: Centre for the Study of Environmental Change, University of Lancaster.

Khalifa, M. A. & Sandholz, S. (2012) Breaking barriers and building bridges through networks: An innovative educational approach for sustainability. *International Journal of Environmental & Science Education* Vol. 3, No. 3.

Kilinc, A,. & Aydin, A. (2011). Turkish Student Science Teachers' Conceptions of Sustainable Development: A phenomenography. *International Journal of Science Education, DOI:10.1080/09500693.2011.574822*.

Požarnik, M. B. (2000a). Environmental education for a sustainable future. *Environmental Education in Schools, 2*(1), 4-9.

Požarnik, M. B. (2000b). *Psychology of learning and teaching*. Ljubljana: Državna založba Slovenije.

Sibbel, A. (2009). Pathways towards sustainability through higher education. *International Journal of Sustainability in Higher Education, 10*(1), 68-82.

Steiner, G., & Posch, A. (2006). Higher education for sustainability by means of trans-disciplinary case studies: an innovative approach for solving complex, real-world problems. *Journal of Cleaner Production, 14*(9-11), 877-890.

Summers, M., & Childs, A. (2007). Student science teachers' conceptions of sustainable development: An empirical study of three postgraduate training cohorts. *Research in Science and Technology Education, 25*(3), 307-327.

UNESCO. (1992). *Agenda 21–Report of the United Nations Conference on Environment and Development. Chapter 36. Promoting education, public awareness and training*. Rio de Janeiro, UNESCO.

UNESCO. (1997). *Educating for a sustainable future: A Trans-disciplinary vision for concerted action.* Retrieved June 5, 2013 from http://unesdoc.unesco.org/images/0011/001106/110686eo.pdf

UNESCO. (2005). *United Nations decade of education for sustainable development (2005-2014).* Retrieved June 5, 2013 from http://portal.unesco.org/education/admin/ev.php

UNESCO. (2006). *Education for Sustainable Development Toolkit*: Education for Sustainable Development in Action, Learning & Training Tools N°1. Section for Education for Sustainable Development(ED/UNP/ESD), UNESCO.

Uzelac, V., & Pejčić, A. (2007). Responsability and competence of teachers in promoting education for sustainable future. In Babić (Ed.), *Competences and teachers competence.* Osijek: Josip Juraj Strossmayer University of Osijek, Faculty of Education. Osijek, Croatia and Kherson State University Kherson, Ukraine.

Vester, F. (1991). *Crisis of overpopulated areas: Development of environmental thinking*. Ljubljana: DZS.

Vodopivec, J. L. (2011). Some Aspects of Sustainable Development in Kindergartens in Slovenia. *US China Education Review*. 967-976, ISSN 1548-6613.

WCED. (1987). *Our Common Future, Report of the World Commission on Environment and Development,* Oxford.