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Education for Sustainable Development (ESD): Awareness of the Pakistani Prospective Teachers

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ABSTRACT

Purpose: The major purpose of current study was to explore the awareness regarding education for sustainable development (ESD) of the Pakistani prospective teachers. It is necessary to explore the understanding and awareness of prospective teachers for further implementation process of ESD in the Pakistan general education to achieve UNESCO's aim of Education for Sustainable Development (2005-2014). As future generation can shape society in a sustainable manner so it is necessary to investigate the comprehension of prospective teachers regarding ESD

Methodology: Population of the study was all prospective teachers. Total 115 prospective teachers of a public university were taken as a sample of this study in Lahore. It was cross sectional study and quantitative in nature. The data was collected through standardized instrument questionnaire which was consisted on 19 statements (International Institute for Sustainable Development, 2009).

Findings: Current study found that students have already much awareness about ESD before teaching the course of ESD thus there is not major difference of awareness about ESD among students before teaching and after teaching the ESD course.

Implications: It is recommended that as students already have awareness about ESD without teaching ESD as a course thus awareness might be given through multimedia, advertisements in T.V, radio, banners and other colorful sources from early education. So such subjects should be included in elementary education.

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Introduction

The theoretical framework for sustainable development progressed between 1972 and 1992 through a series of international conferences and initiatives. The first major world gathering to discuss sustainability internationally in 1972, named the UN Conference on the Human Environment was held in Stockholm. In addition, a report published by the World Commission on Environment and

Development (WCED) in 1987 was promoted the word sustainable development. Moreover, the United Nations (UN) General Assembly accepted that report and gave the term political salience. Next, leaders start out the principles of sustainable development at the UN Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, also referred to as the Rio Summit and the Earth Summit in 1992 (Murphy & Drexhage, 2010). In addition, Sustainable development is a challenging and complex concept to delineate. Definition of sustainable development is credited to the Brundtland Commission: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p 43 as cited in Murphy & Drexhage, 2010). In addition, this definition is stating about saving present resources for fulfilling the future needs of our coming generations by engaging all the countries. (Johnston, 2007; Leicht, Bormann & Haan, 2010). Moreover, secretary general of the United Nations Koffi Annan said that as concept of ESD is looking abstract and it is challenging task to turn it into reality in future. (UNESCO, 2005).

A study in Jordan stated about sustainable development and sustainability that it is discussing in educational field rapidly, especially in teacher education programs (Alkhawaldeh, 2017). In addition, teachers have not only the responsibility of teaching but they also have new roles and responsibilities regarding awareness about ESD in society (Kabaday, 2016; Niemi, 2015). Similarly, Mohammadi and Moradi (2017), highlighted that in order to implement the sustainable education, there is need for continuous professional development for teachers' education. Next, there are three pillars of sustainable development according to the Rio Earth Summit. Those pillars are environment, society, and economy. These three areas are knotted (McKeon, 2002). All three pillars are important in creating and sustaining stability and balance (Johnston, 2007). In addition, to live "sustainably" mean to discover those developing ways which will bring innovation and variation at all levels within society (Cleveland & Kubiszewski, 2007). Universities have played an important role in many regional, social, political, and economic issues, but mobilizing the intellectual and educational community to support the goals of environmentally sustainable development on a regional as well as on a global basis has acquired special significance in recent years (Lo & Park, 1997). In order to developing and implementing ESD principles it is essential for engineers to have a practical understanding about it into their everyday living. Furthermore, it also can become helpful to make engineering decisions for sustainable development (Wanous & Davis, 2007; Devis, 2006).

Lukman, Irfan and Kwami's (2013) study revealed that the lecturers agreed on the sustainability status of university Kebangsaan in Malaysia (UKM) academic programs, but differ significantly in their means in their departments. As higher educational institutions are right source to support transformation through new ideas, activities and researches. Thus, Aksari, Saadatian and Dola (2009) explored that majority of campus students have not full understanding about the meaning of ESD but they encourage and support to develop sustainable environment in campus (Yusof, Aziz and Sheikh, (2012) investigated awareness and thinking of students of engineering about ESD in a university of Malaysia. As a result, most of students were not produce a single definition on ESD. Although, most of them do know about recycling, climate change etc. because these activities are part of their daily life. Studies of Todorescu, Luminita, Greculescu and Lampa, (2013), thrown light on ESD that it can bring change in the mindset of community, and also improve the quality of life. Hence, in order to cope up with the future difficulties, ESD helps us to use innovative ways, approaches and practices that are useful for us. Educational process is powerful source to train even the feeblest students .

While Sirilanka, Nithlavarnan, Sinnathamby and Gunawardana, (2010) highlighted that science is the most relevant subject to impart knowledge, attitudes, skills and values regarding ESD to the students at secondary level. Their findings showed a majority of student teachers have poor understanding about the concept of Sustainable Development. In addition, Ryan, (2010) pointed out that students have slight awareness of current problems and issues of global system. On the other hand, in Newzealand, a most of the pupils thought positively about ESD (Kelly & Sharma, 2008). Similarly, Manni, Ottander, Sporre and

Parchmann, (2013) reported in Swedish exploratory study that students' perceptions of the learning experiences about ESD which in which relationships was found. Gupta, (2010) revealed significant difference in the teachers' perception, understanding, attitude, approach and style regarding ESD. Furthermore, these differences are occurring on the basis of the grade and the subject taught by teachers, years of teaching experience, gender, and the nature of the institute in which they teach. On the other hand, it was found that PBL model inspires and stimulate students to contextualize engineering complications and resolutions and further apply knowledge about sustainability in real life situations (Holgaard & Guerra, 2013).

In the study of Pavlova, (2010), argued that members were known about ESD and about all its aspects and features as well. In addition, participants had awareness regarding ESD and they also had positive perceptions of ESD for promoting sustainable environment (Darkwa, Felix, & Asuamah, 2012). In similar way, study thrown light on the development of a positive trend in terms of thinking and the behavior towards environment conservation when comparing the longitudinal surveys of 2007 and 2010 (Shamaa, Nel & Plessis, 2012). Petcoz and Reid (2006) pointed out the need to make pupils ready for their specialized roles in Australia. In order to fulfill this purpose, include all parts of ESD in curriculum of all classes. Creative pedagogy will be required to bring real change in thinking of people.

School textbooks for inculcating the concept of SD are main source of knowledge for prospective teachers. Next, this study revealed that perception of future teachers was very high about the concept of SD (Ambusaidi & Washahi, 2016; Erawan, 2015). Furthermore, Maidou, plakitsi, and Polatoglou, (2019); Soysal, (2016) revealed in their research findings that most newly trained teachers considered only environment is an aspect of ESD but they did not have knowledge about societal and financial matters which are also the parts of ESD. Next, most of the students never learn ESD during their whole period of education. Their study shed light on opinion of newly trained teachers about ESD, they all thought that it is essential issue so it should be included in curriculum in order to teach the students about ESD in Greece. Moreover, the influence of ESD perceptions on student's lifestyle was low because low correlation was found between ESD perceptions and attitudes towards the lifestyles of various grades students in Canada (Milama, Ali, & Rusman, 2018). Likewise, Burmeister, and Eilks, (2013) revealed positive attitudes of participants towards ESD in subject of chemistry. However, most of the participants had vague knowledge about ESD theoretically. But, few participants had very clear concepts about ESD theory in Germany.

In consistent with previous studies, Karpudewan, Ismail, and Mohamed, (2011) also concluded in their study that in order to inculcate the ESD theory and skills and environmental values among community then there is need to use educational means. Next, they observed environmental values and attitudes among teachers and students. In addition, a Nigerian study investigated the need and importance of Education for sustainable development goals. Furthermore, it was recommended to improve teacher education in or der to achieve goals of ESD (Nnokami & Sule, 2017). In the same way, it was recommended by Taj and Ahmad (2018) that ESD should introduced in Pakistani teacher training programs and courses and make it part of its curriculum, and implemented it. Because newly trained teachers aware about it then they would be able to inculcate ESD concept and skills among their students and society. In brief, Holfelder, (2019) shed light through his observation that only the education is the way to raise awareness among community and society about ESD. Because, education is also a source of training.

Agenda Set by Rio (Chapter 36)

Gough, Scott and Reid, (2002) described the framework for Action of the Jomtien Conference (1990).

- Make it possible for society to be aware about environmental and other aspects of ESD as soon as possible.
- Inculcate all aspects of ESD into the curriculum into all level of education .

- Establish the national advisory environmental education coordinating bodies.
- Provide assistance to schools for design work plans to enrich environmental activity
- Support teachers training included pre-service and in-service training
- Encourage to use the proven and innovative teaching methods because it is necessary for teaching methods

Results of their study highlighted that first of all the scholars who are conducting ESD researches start to observe the current environment and situation of the society. Because this observation would be helpful for them to develop societal future life models according to ESD. Furthermore, they would be able to calculate and measure the change of community awareness and action in order to develop more sustainable lifestyles. Afterwards, these changes (focusing on sustainable development) can be inculcated at all level of education such as (Pipere, Reunamo & Jones, 2010).

It is acknowledged after research by Aksari, Saadatian and Dola (2009) that in order to produce the institution and campus on the basis of successful sustainability then there is requirement to create public awareness and understanding of sustainable development and empowerment. Previous studies are on the perceptions of students and few are on teacher's perception but not found single study on prospective teacher's perception and aware regarding ESD. Implementation of sustainable development can be possible by developing the ideas and thinking of the prospective teachers in Pakistan. As teacher is change agent hence there is need to impart knowledge and give awareness to the prospective teachers before going into field for teaching. In conclusion, a Pakistani study stressed upon the need to include education for sustainable development as a subject in teacher education training programs by making it part of its curriculum (Kulsoom, Qureshi, & Khanum, 2019). Therefore, proper planning to make ESD a part of curriculum of teacher education program is need of current circumstances (Jumani & Abbasi, 2015)

Objectives of the Study

Objective of the study is follows:

- To investigate the current ESD awareness of prospective teachers of semester two and semester four at university level.

Research hypothesis

To attain the above mentioned objective the following research hypothesis are formulated as under:

- There is no significance difference between prospective teachers' awareness of semester two and semester four regarding ESD awareness

Significance of the Study

Prospective teachers are the leading actors in the process of developing ESD and they can play a vigorous role for educational change. The purpose of conducting this study is to know awareness of prospective teachers regarding ESD. It is necessary to explore the understanding and awareness of prospective teachers for further implementation process of ESD into the Pakistan general education to achieve UNESCO's aim of Education for Sustainable Development (2005-2014). As future generation can shape society in a sustainable manner so it is necessary to investigate the comprehension of prospective teachers regarding ESD. Awareness about sustainable development of prospective teachers is going on now days. So it is necessary to conduct researches about ESD in order to provide deep insight for those scholars and experts who are working in this field.

Methodology

The target population was prospective teachers of students of M.A Education of public university, Lahore. This is a descriptive and cross-sectional study.

Population and Sample

All the female prospective teachers of M.A Education of public university were population of the study. Sample size of this study was 115 students. 61 of semester 1 and semester 4 were 54 of M.A Education from public university.

Research Tool

A standardized Questionnaire was used as a tool to obtain prospective teacher's knowledge, attitudes and behaviors concerning the basics of sustainable development. Permission to use questionnaire was given by Kathy Clark who is publication coordinator of international institute for sustainable development (IISD). The framework lists the following "fifteen strategic perspectives, such as "socio-cultural perspectives," including human rights, peace and human security, gender equality, cultural diversity and intercultural understanding, health, HIV/AIDS, governance; "environmental perspectives," including natural resources(water, energy, agriculture, biodiversity), climate change, rural development, sustainable urbanization, disaster prevention and mitigation; and "economic perspectives" including poverty reduction, corporate responsibility and accountability and market economy. Tests of people's knowledge, attitudes and behaviours concerning sustainable development should reflect the topics included in this list.

Data Collection Procedure

Data was collected from the selected sample by the researcher herself. First of all, questionnaire was distributed among those prospective teachers of M.A education who did not study the ESD subject in second semester in 2014. Data was collected before teaching the ESD course in second semester. Same questionnaire was again distributed among those prospective teachers of fourth semester who studied the ESD course in second semester.

Data Analysis

The study was based on descriptive, quantitative, and cross-sectional survey design of prospective teachers of public sector university. The sample of the study was based on convenient sample method of 300 respondents. Primary data was analyzed by using percentages, frequencies, mean and t-test for comparing the awareness regarding ESD of two groups. Results were presented in tables and chart

H₀₁. There is no significant difference between semester 2 and semester 4 regarding awareness of ESD.

Table 1.1 Comparison of Semester two and Semester four by t-test

Awareness of ESD	N	Mean	SD	t-value	df	p-value
Semester 2	61	45.18	3.45			
				11.67	113	.000
Semester 4	54	33.83	6.64			

Above table reveals that t-value post-test of Semester two and Semester four is significant at the level of significance 0.05 regarding awareness of ESD. The mean scores 45.18 (SD=3.45) of Semester two is greater than mean scores 33.83 (SD=6.64) of Semester 4 regarding awareness of ESD. There for null hypothesis is rejected that There is no significant difference found between semester 1 and semester 4 regarding awareness of ESD.

Table 1.2 Mean, Standard Deviation and Percentage Regarding Awareness of ESD Among Students

Semester	N	M	SD	Per (%)
Semester 2	61	45.18	3.46	57

Semester 4	54	33.83	6.64	43
Total	115	39.85	7.69	100

Figure 1

From the figure 1, it become obvious that students of semester with mean score 45.18 (%=57, SD=3.46) is more aware about ESD as compared to students semester 4 with mean score 33.83(SD= 6.64, %=43).

Conclusion and Discussion

A hypothesis was formulated to determine if there is any significant difference in the mean response regarding ESD awareness of the prospective teachers of semester 1 and semester 4. Findings of our study revealed that students of 1st semester have more awareness of ESD as compared to semester 4. It can be interpret that without studying the course of ESD, prospective teachers have more awareness about ESD as compared to those who studied in 4 semesters. Similarly, Findings of Dola, Tian and Askari (2009) has shown that majority of campus community in Malaysia understand and support the need for creating sustainable campus although they have not fully embraced the meaning of sustainable development. In contrast, results of Kelly and Sharma's (2008) study suggested that students' knowledge of sustainable business practices improved significantly from their studies.

The finding of the study revealed that percentage of ESD awareness of prospective teacher's (1s semester) is high than students of semester 4. Similarly, a Nigerian study highlighted in their study about prospective biology teachers's understanding of sustainability concept. Furthermore, suitable harmony was also found among three aspects of sustainability (Hartadiyati, Wiyanto, Rusilowati & Priyono, 2019). Likewise, findings of Akça's, (2019) descriptive study in Turkey found positive and strong beliefs of prospective teachers about ESD. It was also observed in this study that prospective teachers who are studying at the faculty of education had stronger beliefs of ESD as compared to those enrolled in the Pedagogical Formation Certificate Program. Similarly, results of Abozaied's (2018) study showed that Egyptian prospective teachers have strong understanding of the concept of ESD due

to the workshop. In the same way, Listyarini (2019) found positive perception about ESD, awareness about environmental issues and implementation of principles among student's life in Indonesia. In addition, findings of research indicated that teachers awareness regarding climate change was increased upon completion of professional development course in Turkey (Dal, Ozturk, Alper, Sonmez, & Cokelez, 2015).

Recommendation

The institutions may conduct workshops/seminars for the awareness of teachers and students about ESD. The study has investigated the limited range ESD awareness. In this regard, more quantitative studies may be conducted to get detailed views of prospective teachers to find out significance to teach the subject of ESD in academic institutions.

References

- Aksari, Saadatian & Dola. (2009). Public awareness and understanding on sustainable development in creating sustainable campus. *Alam Cipta*, 4(1), 3-8.
- Ambusaidi, A., & Washahi, A. M. (2016). Prospective Teachers' Perceptions about the Concept of Sustainable Development and Related Issues in Oman. *Journal of Education for Sustainable Development*, 10(1), 3-19. <https://doi.org/10.1177/0973408215625528>
- Abozaied, S. H. (2018). *Perceptions on education for sustainable development*. Unpublished master's thesis. The Department of International & Comparative Education. The American University in Cairo, Graduate School of Education (GSE)
- Akça, F. (2019). Sustainable Development in Teacher Education in Terms of Being Solution Oriented and Self-Efficacy. *Sustainability*, 11, 68-78. doi:10.3390/su11236878
- Alkhalwaleh, A. (2017). School-based Teacher Training in Jordan: Towards On-school Sustainable Professional Development. *Journal of Teacher Education for Sustainability*, 19(2), 51-68
- Burmeister, M., & Eilks, I. (2013). An understanding of sustainability and education for sustainable development among German student teachers and trainee teachers of chemistry. *Science Education International*, 24(2), 167-194.
- Devis, U. G. (2006). Role of case studies for integration for sustainable development into the education of engineers. *World Transactions on Engineering and Technology Education*, 5(1), 159-162
- Darkwa, B., Felix, T. A., & Asuamah, Y. S. (2012). What is the perception of students? towards environmental sustainability. *Journal of Natural Science Research*, 2(10), 114-121.
- Dola, K., Tian, O., & Askari, A. H. (2009). Public awareness and understanding on Sustainable development in creating sustainable campus. *Alam Cipta* 4(1) 3-8, ISSN1823-7231
- Dal, B. B., Ozturk, O. N., Alper, U., Sonmez, D., & Cokelez, A. (2015). An Analysis of the Teachers' Climate Change Awareness. *Athens Journal of Education*, 2(2), 111-122. <https://doi.org/10.30958/aje.2-2-2>
- Erawan, P. (2015). Teacher training through school-based program in participatory learning Promotion. *Procedia - Social and Behavioral Sciences*, 177, 162-168.
- Gholami, J., & Qurbanzada, I. (2016). Key stakeholders Attitudes towards teacher education programs in TEFL: A case study of Farhangian University in Iran. *Journal of Teacher Education for Sustainability*, 18(2), 5-20.
- Gupta, A. (2010). *A study of existing perceptions/ understanding of education for sustainable development of indian teachers*. Prithvi Innovations. Retrieved from, www.ceeindia.org%2Fesf%2Fdownload%2Fpaper4.pdf
- Gough, S., Scott, W., & Reid, A. (2002). Education and sustainable development in the UK: An exploration of progress since Rio. *Geography*, 87(3), 247-255.

- Holgaard, E. J., & Guerra, O. A. (2013). Student's perspectives on education for sustainable development in a problem based learning environment. *Engineering Education for Sustainable Development*, 22-25.
- Hartadiyati, E., Wiyanto, Rusilowati, A., & Priyono, A. (2019). Representation of sustainability concept in prospective biology teacher learning. *Journal of Physics: Conference Series*, 1(3), 1-7. doi:10.1088/1742-6596/1321/3/032053
- Holfelder, K. A. (2019). Towards a sustainable future with education? *Sustainability Science*, 1(14), 943–952. Retrieved from, <https://doi.org/10.1007/s11625-019-00682-z>
- International Institute for Sustainable Development. (2009). *The decade of education for sustainable development (DESD) and sustainability education in first nations schools in Manitoba*. Retrieved from, www.iisd.org.
- Johnston, A. (2007). *Higher education for sustainable development*. Final report of international action research report. Retrieved from, www.oecd.org.
- Jumani, B. N., & Abbasi, F. (2015). Teacher Education for Sustainability in Pakistan. *Journal on Innovation and Sustainability*, 6(1), 13-19.
- Kelly, M., & Sharma, U. (2008). *Education for sustainable development in higher education: a case study of students' perception*. Department of accounting, university of Waikato. Retrieved from, www.journals.uio.no/2Findex.php/2Fnordina/2Farticle/2Fdownload
- Kabadayi, A. (2016). A suggested in-service training model based on Turkish preschool Teachers' conceptions for sustainable development. *Journal of Teacher Education for Sustainability*, 18(1), 5-15.
- Kulsoom, Q., Qureshi, N., & Khanum, A. (2019). Teacher Education for Sustainable Development in Pakistan: Content Analysis of Teacher Education Curriculum and Standards. *Journal of Research and Reflections in Education*, 13(1), 20-33. Retrieved from, <http://www.ue.edu.pk/jrre>
- Karpudewan, M., Ismail, H. Z., & Mohamed, N. (2011). Green Chemistry: Educating Prospective Science Teachers in Education for Sustainable Development at School of Educational Studies, USM. *Journal of Social Sciences*, 7(1), 42-50.
- Lo, C. F., & Park, J. (1997). Building a sustainable development educational and research agenda. *Asians Perspective*, 21(2), 57-75.
- Leicht, A., Bormann, I., & Haan, D. G. (2010). The midway point of the UN decade of education for sustainable development: current research and practice in ESD. *International Review of Education*, 56(2/3), 199-206.
- Lukman, N., Irfan, A., & Kwami. (2013). Assessing sustainability level of academics programs in Higher educational institutions; the lecturer perspective. *Journal of Architecture and Civil Engineering*, 1(2), 01-05.
- Listyarini, V, R. (2019). Promoting sustainability in undergraduate program: students' perception in green chemistry course. *International Journal of Indonesian Education and Teaching*, 3(1), 67-79. DOI: <https://doi.org/10.24071/ijiet.2019.030107>
- Manni, Ottander, Sporre and Parchmann. (2013). Perceived learning experiences regarding education for sustainable development: within Swedish outdoor education tradition. *Nordina*, 9(2), 187-205.
- McKeon, R. (2002). *Education for sustainable development toolkit*. Retrieved from, www.esdtoolkit.org.
- Murphy, D., & Drexhage, J. (2010). *Sustainable development from Brundtland to Rio 2012*. New York: United Nations Headquarter.
- Maidou, A., plakitsi, K., & Polatoglou, M. H. (2019). Knowledge, Perceptions and Attitudes on Education for Sustainable Development of Pre-Service Early Childhood Teachers in Greece. *World Journal of Education*, 9(5), 1-16doi:10.5430/wje.v9n5p1
- Milama, B., Ali, M., & Rusman, R. (2018). Perceptions, Attitudes and Lifestyles of Chemistry Teacher Candidates towards Education for Sustainable Development. *Advances in Social Science, Education and Humanities Research*, 2(53), 250-253. Retrieved from, (<http://creativecommons.org/licenses/by-nc/4.0/>)

- Mohammadi, M., & Moradi, K. (2017). Exploring change in EFL teachers' perceptions of professional development. *Journal of Teacher Education for Sustainability*, 19(1), 22-42
- Nithlavarnan, A., Sinnathamby, K., & Gunawardana, C.G. (2010). *Student teachers' perception for sustainable development (ESD) in science education*. Retrieved from, www.cmb.ac.lk%2Ffsgs%2Fimages%2Fstories%2FA.Nithlavarnan.pdf
- Nnokami, C. N., & Sule, H. (2017). Teachers Education and Sustainable Development Goals in Nigeria: Problems and Prospects. *International Journal of Scientific Research in Education*, 10(4), 401-412. Retrieved from <http://www.ijrsre.com>.
- Niemi, H. (2015). Teacher professional development in Finland: Towards a more holistic approach. *Psychology, Society, & Education*, 7(3), 279-294
- Pavlova, M. (2010). *Perception of sustainable development and education for sustainable development by African technology education academics*. Retrieved from, www.ep.liu.se%2Fecp%2F073%2F046%2Fecp12073046.pdf
- Petcoz, P., & Reid, A. (2006). University lecturers' understanding of sustainability. *Springer*, 51(1), 105-123.
- Pipere, A., Reunamo, J., & Jones, M. (2010). Perceptions of research in education for sustainable development: An international perspective. *Discourse and Communication for Sustainable Education*, 1(2), 6-94.
- Ryan, A. (2010). Student teachers; attitudes towards education for sustainable development. *Researching Primary Geography*, 1, 225-234.
- Shamaa, A. S., Nel, S. P., & Plessis, D. J. (2012). Perceptions of tertiary students towards environmental sustainability: some empirical evidences from a longitudinal study. *World Review of Business Research*, 2(3), 43-61.
- Soysal, N. (2016). *Pre-service classroom teachers' perceived competencies on education for sustainable development*. Unpublished doctoral thesis. The graduate school of social sciences of middle east technical university.
- Todorescu, L. L., Greculescu, A., & Lampa, L. (2013). Education for sustainable development-training the young generation for the future. *Procedia-Social Sciences and Behavioral Sciences* 78, 530-536.
- Taj, S., & Ahmad, S. (2018). *Perceptions of Pre-service School Teachers about Environmental Education*.
- UNESCO . (2005). *UN decade of education for sustainable development 2005-2014*. Retrieved from, www.unevoc.unesco.org
- Wanous, M., & Davis, G. (2007). Assessing education for sustainable Development (ESD) engineering. *World Transactional on Engineering and Technology Education*, 6(2), 223-226.
- World Commission on Environment and Development. (1987). *Our common future: report of the world commission on Environment and Development*. Retrieved from, www.sswm.info
- Yusof, M. K., Aziz, A. A., & Sheikh, S. N. (2012). Perception on sustainable development among new first year engineering undergraduates. *Procedia-Social Sciences and Behavioral Sciences* 56, 530-536