PERCEPTION OF TEACHER EDUCATORS AND PUPIL TEACHERS TOWARDS SUSTAINABILITY

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Abstract

Sustainability, as a term, evolved from the concept of sustainable development. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. Sustainable development is high on the agenda in more and more countries in the world during this current era due to significant environment, social and economic problems and opportunities. It is widely believed that higher education is the route to implanting sustainable lifestyles into society and teachers are directly linked to society in many ways. The National Knowledge Commission (NKC) has observed that teachers are the single most important element of the school system and their training is a major area of concern. Therefore, it is important to know that how do teacher educators and future teachers perceive sustainability? What they think toward sustainability and its need in teacher education curriculum. This information provides a sense of pupil teacher needs, wants and expectations for courses that incorporate sustainability topics. In the study, an online questionnaire was also used to gather information. On the basis of result obtained, it is recommended to incorporate sustainability issues/education for sustainable development in various teacher education programs.

Keywords: *Curriculum; Sustainable development; Sustainability; Teacher education; University.*

Sustain mean maintain. The word sustainability is derived from the Latin word meaning 'to hold'. It could be defined as an ability or capacity of something to be maintained or to sustain itself. If an activity is said to be sustainable, it should be able to continue forever. Sustainability is based on a simple principle i.e. everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. It's about taking what we need to live now, without endangering the potential for people in the future to meet

their needs. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. It is important to making sure that we have and will continue to have, the water, materials, and resources to protect human health and our environment.

Sustainability, as a term, evolved from the concept of sustainable development and the two are now considered interchangeable (Kelly, 2009). Sustainable Development is the development that meets the needs of the present without compromising the ability of the future generations to meet their own needs (World Commission on Environment and Development, 1987). It is balancing the fulfilment of human needs with the protection of the natural environment so that these needs can be met not only in the present, but in the indefinite future. As the term evolved, it included not only environmental aspects, but also economic and societal facets (Schmuck & Schultz, 2002; Newport *et. al.,* 2003). Environmentally sustainable solutions will not be practical if they do not have economic strength and consider human needs on many levels. The organizing principle for sustainability is sustainable development, which includes the four interconnected domains: ecology, economics, politics and culture (Paul *et. al.,* 2015). Different features of Sustainable Development (SD) are economical, social, political, cultural and environmental. Economical aspect emphasizes on the production of goods and services on a continuing basis. Social features include gender equity, participation and accountability, adequate livelihood and economic security. Political portion calls attention to freedom to participate in national and local politics, participation in decisions regarding the management and development of one's home and neighbourhood, with respect for civil and political rights and in the implementation of environmental legislation. Environmental part gives emphasis to maintain a stable resource base, avoiding overexploitation of renewable resource systems and depleting non-renewable resources, whereas, the cultural aspect gives importance to achieve a more satisfactory intellectual, emotional, moral and spiritual existence.

The topic of environmental sustainability is the major social issue of the present century (Wilson, 2001). The World Summit on Social Development (2005) identified sustainable development goals, such as economic development, social development and environmental protection. This view has been expressed as an illustration using three overlapping ellipses indicating that the three pillars of sustainability are not mutually exclusive but are mutually reinforcing. Some sustainability experts and practitioners have illustrated four pillars of sustainability, or a quadruple bottom line. One such pillar is future generations, which

emphasizes the long-term thinking associated with sustainability (SURF Framework for a Sustainable Economy (2013).

The simple definition that sustainability is something that improves the quality of human life while living within the carrying capacity of supporting eco-systems (IUCN/UNEP/WWF, 1991), conveys the idea of sustainability having quantifiable limits. But sustainability is also a call to action, a task in progress or journey and therefore a political process (Milne *et. al.,* 2006). Earth Charter (2000) articulates that a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. This suggested a more complex figure of sustainability, which included the importance of the domain of politics. More than that, sustainability implies responsible and proactive decision-making and innovation that minimizes negative impact and maintains balance between ecological resilience, economic prosperity, political justice and cultural vibrancy to ensure a desirable planet for all species now and in the future (Liam *et. al.,* 2013). It has also been described as a dialogue of values that challenge the sociology of development (Ratner, 2004), therefore, it is also related to the living styles.

Sustainable living is fundamentally the application of sustainability to lifestyle choice and decisions. Living sustainably is about living within the means of our natural systems and ensuring that our lifestyle doesn't harm other people in society and culture. One conception of sustainable living expresses what it means in terms, as meeting present ecological, societal, and economical needs without compromising these factors for future generations. Another broader conception describes sustainable living in terms of four interconnected social domains: economics, ecology, politics and culture. The term sustainability encompasses a variety of concepts and therefore many disparities and misconceptions exist. However, Kelly (2009) and Aber (2009) noted that in relation to higher education, sustainability is a useful term for a university when it is loosely defined. It allows users to develop a specific meaning within the diverse cultural, social and ecological systems of the local context.

*"Young people around the world are well aware of environmental challenges, but the connection between such challenges and their lifestyles is not clear to them. There is a great need to translate these challenges into actions and opportunities at the local and individual level, as well as to create a holistic and pragmatic vision of what a sustainable society is."*Fabienne Pierre, UNEP.

It is widely believed that higher education is the route to implanting sustainable lifestyles into society. Universities educate many leaders who control the world. The educational system is the first place to start making meaningful changes and influence future leaders. For this

reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies and tools to create an environmentally sustainable future (Blackburn *et. al.* 1990). Universities hold a lot of authority both over their students and on the communities around them, so they have an obligation to use this power to affect positive change. Higher education prepares most of the professionals who develop, lead, manage, teach, work in and influence society's institutions, including the most basic foundation of primary education (Cortese, 2003). Universities serve as leaders for the rest of the world academically and otherwise and thus, can offer vision and serve as models of integrity and wisdom (Uhl and Anderson, 2001). Velazquez *et. al.* (2005) and Lozano (2006) noted that a major barrier to successful promotion of sustainability in higher education has been the lack of awareness, interest and participation among students. So, the students should also be engaged in policy making and their implementation.

Agenda 21 calls for integrated decision-making based on integrated information to enable individuals, organizations, institutions, businesses and governments to incorporate environmental considerations and goals in social, economic and even security decisions (Calder and Clugston 2003). Education underlies and has the potential to reinforce every other priority for a sustainable world (Calder and Clugston, 2003). Universities have the influence to enact real change in the world. Therefore, universities hold a golden opportunity to create a new generation of socially and ecologically responsible citizens (Uhl and Anderson, 2001). SD is hard to define and implement and is also difficult to teach. For SD, education should be reorganized according to knowledge, skills and values required for sustainability. Even more challenging is the task of totally reorienting an entire education system to achieve sustainability. Students must learn from the many perspectives of sustainability to obtain the necessary skills and knowledge to live sustainable lifestyles. Limited work has focused specifically on the role the student body plays in the success of sustainability initiatives. Even fewer researchers have considered student perceptions and definitions of sustainability in a general sense or in a university context as a way to improve sustainability programs within higher education. Velazquez *et. al.,* (2005) reported that students do not fully understand their role in the future health of the planet leading to a lack of personal responsibility.

Sustainable development is high on the agenda in more and more countries in the world during this current era due to significant environment, social and economic problems and opportunities. A review of works published about sustainability in higher education yields that universities are the best catalysts for change, an interdisciplinary and holistic approach is

necessary to teach sustainability and fostering a sustainable culture is an imperative aspect of developing students with sustainable lifestyles. Many experts agree universities must teach sustainability through the curriculum. Dahle and Neumayer (2001) suggested more research is needed to determine best practices for incorporating sustainability into higher education. Further, development requires that sustainable values should be reflected in each of the core areas of university life: research, teaching, outreach and operations which include student, professor, staff and administrative participation (Calder and Clugston, 2003).

Teachers are directly linked to society. Their influence is maximum on the values, attitude and living style of students, the fabric of the society. The National Knowledge Commission (NKC) has observed that teachers are the single most important element of the school system and the country is already facing a severe shortage of qualified and motivated school teachers at different levels. It is urgent to restore the dignity of school teaching as a profession and provide more incentives for qualified and committed teachers (NCFTE-2010). The training of teachers is a major area of concern at present as both pre-service and in-service training of school teachers are extremely inadequate and poorly managed in most states. Viewing the importance of concept of sustainability for pupil teachers and teacher educators, the present research was conducted. In this work, the researcher question, how do teacher educators and pupil teachers perceive sustainability? What they think toward sustainability and its need in teacher education curriculum. Answering these questions can and should be a starting point for making decisions on implementation of sustainability within teacher education. This information will provide a sense of pupil teacher needs, wants and expectations for courses that incorporate sustainability topics. Limited input from students can lead to ineffective policies, initiatives, and educational opportunities as student involvement is essential for success (Lozano, 2006), therefore, data was collected from pupil teachers to assess their need and views.

Methodology

Data was collected from teacher educators (TE) and pupil teachers (PT). A questionnaire (Behm, 2011) was used online also to collect data for teacher educators from four states namely Haryana, Himachal, Uttarakhand and Uttar Pradesh. Pupil teachers were taken from Uttarakhand only. The qualitative data was collected as respondents have to write keywords for sustainability. The questionnaire consists of items related to level of familiarity, awareness, knowledge, interest, need and perceived importance of sustainability concepts into teacher education, training need and human-nature relationship through the Inclusion

with Nature Scale (INS) (Schultz, 2002) (Fig.-1) thereafter, followed an open ended question that directed respondents to brainstorm keywords, ideas, and actions that came to mind when considering sustainability. Data collection procedures were developed according to the guidelines of Dillman *et. al.* (2009) and Alreck and Settle (2003) in order to maximize response rate and reduce non-response bias. Additionally, the online survey interface did not allow completing the questionnaire more than once. The questionnaire was sent to the teacher educators through mail and were requested to reply online. Total 120 mails were sent to teacher educators and 74 of them replied. The questionnaire was also distributed to 100 pupil teachers. Responses were recorded on a five point scale ranging from one (not at all) to five (extremely) and an option of don't know. The respondents have to number one to five or put nine for don't know. Data from the open ended question regarding the keywords for sustainability was scored on the basis of different aspects of sustainability as environmental, societal (Newport *et. al.,* 2003), economical, considering the three component approach to sustainability as developed by Oskamp (2002) and political, cultural and future generation (Liam *et. al.,* 2013; Paul *et. al.,* 2015). One score is awarded for any one of the above components of sustainability. So, maximum six can be awarded for all the six components.

Result:

Table –1: Views of TE and PT towards Sustainability

S.N.	Analysis	Teacher Educators (N-74)			Pupil Teachers (N-86)		
		Mean	SD	Skew	Mean	SD	Skew
1.	Familiarity with the word sustainability	3.55	1.37	-0.57	3.77	1.38	-0.91
2.	Awareness with sustainability issues	3.05	0.86	-0.17	3.25	0.94	-0.10
3.	Knowledge about issues of sustainability	2.99	0.63	0.01	2.98	1.09	-0.19
4.	Interest towards issues of sustainability	4.08	0.70	-0.11	4.43	0.88	-0.87
5.	Important to be aware of sustainability issues (need)	4.71	0.46	-0.96	4.38	1.06	-8.8
6.	Consider sustainability in day to day choices	3.83	0.80	0.47	3.17	0.89	-0.95
7.	Incorporation of sustainability into teacher education	4.4	0.55	0.61	4.22	0.97	-0.40
8.	Interested in taking training for sustainability	4.16	1.04	-0.11	4.25	0.97	-0.13
9.	Sustainability should be a university issue	4.36	1.05	0.21	4.2	1.11	0.12
10.	Pupil teachers should be trained for sustainability	4.48	0.93	2.62	4.55	0.94	1.36

| 11. | Interest in Environmental Issues | 4.30 | 1.09 | 0.08 | 4.45 | 1.03 | 2.34 |

Table-1 depicts the views of teacher educators and pupil teachers towards sustainability. Teacher educators have shown very high (4.71 out of 5) need to be aware of sustainability issues. They have very high (4.48) level of views that Pupil teachers should be trained for sustainability and sustainability should be incorporated into teacher education programs (4.4). They have very high level (4.36) of opinion that sustainability should be a university issue and have very high interest in environmental issues (4.30). They reported very high interest (4.16) in taking training for sustainability and have very high interest (4.08) towards the issues of sustainability.

They consider high level (3.83) sustainability in day to day choices. The level of familiarity and awareness towards sustainability of teacher educators was high (3.55). They show high awareness with sustainability issues (3.05). Respondents rated their knowledge level of sustainability as average (2.99).

Pupil teachers have shown very high (4.55) level of need for training for sustainability. They have very high level of interests (4.45 and 4.43) in environmental and sustainability issues respectively. Similarly, they responded very high need for important to be aware of sustainability issues (4.38). They have very high (4.25) level of views that pupil teachers should be trained for sustainability and sustainability should be incorporated into teacher education (4.22) as well as sustainability should be a university issue (4.2).

They reported high level of familiarity with the word sustainability (3.77), awareness with sustainability issues (3.25) and consider sustainability in day to day choices (3.17). Respondents rated their knowledge level of sustainability as average (2.98). The data is more or less normally distributed except for response of teacher educators for training of pupil teachers for sustainability and pupil teachers' reply for their interest in environmental issues, where the data are found positively skewed.

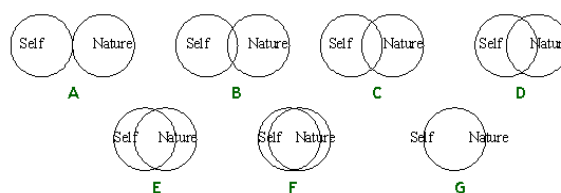### Fig.1: Showing the Types of Human-Nature Relationship

Table-2: Views of TE and PT towards Human-Nature Relationship

	A	B	C	D	E	F	G	Not responded
Teacher educators	0	0	0	19	26	9	18	2
Pupil teachers	2	0	0	0	44	16	10	14

Table -2 presents the response of teacher educators and pupil teachers towards human-nature relationship. It was observed that maximum 26 teacher educators responded E of the fig.1 followed by G i.e. complete overlap of nature and human by 20 teacher educators. Half overlap of nature and human, D is responded by 19 teacher educators and 9 of them replied F while none reported for A, B and C. Two of them not responded in this statement.

Maximum no. of pupil teachers 44 responded E, followed by 16 and 10 pupil teachers who replied F and G respectively. Two of them answered A, and 14 pupil teachers not replied this item.

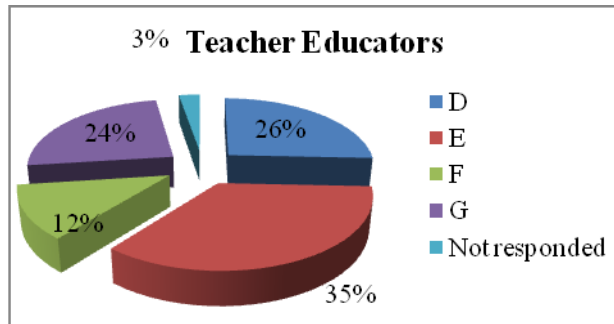**Fig.2: Views of TE towards Human-Nature Relationship**

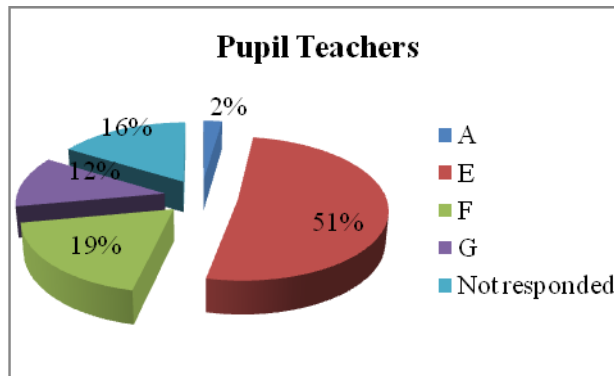**Fig.-3: Views of PT towards Human-Nature Relationship**

Table-3: Perception TE and PT towards Sustainability

	Keywords for Sustainability						
	0	1	2	3	4	5	6
TE	14	44	0	9	7	0	0
PT	48	21	17	0	0	0	0

Table -3 reflects the perception of teacher educators and pupil teachers towards sustainability. Maximum 44 teacher educators replied only one correct keyword for sustainability followed

by 14 who responded not a single correct keyword, 9 and 7 of them replied 3 and 4 correct keywords respectively while none of the teacher educator responded all the five correct keywords.

In case of pupil teachers, maximum 48 of them not responded a single correct keyword, 21 replied only one correct keyword, and 17 of them answered two correct keywords while none of them replied more than two correct keywords.

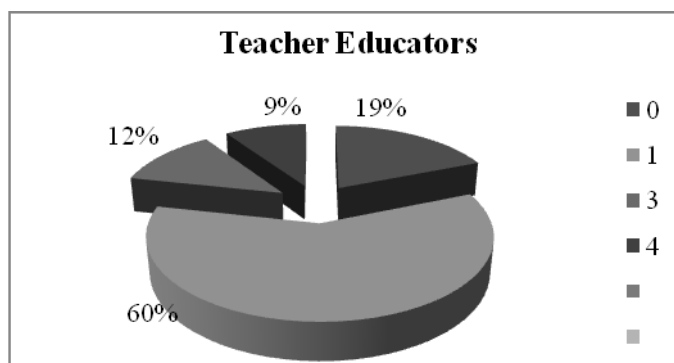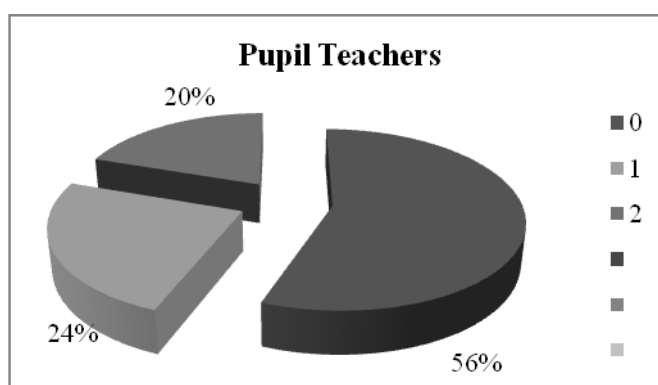**Fig.-4: Response of TE for Correct Keywords for Sustainability**

Fig.-5: Response of PT for Correct Keywords for Sustainability

Discussion

Sustainability has been defined in many different ways in literature. It was found that teacher educators and pupil teachers are very much familiar with the word sustainability, but less awareness towards it as compared to familiarity was recorded. It is notable that even much low level of knowledge was accepted compared to familiarity and awareness towards sustainability. However, very high level of interest and need to be aware of sustainability issues are reported. Therefore, less consideration (which should be expected more) of sustainability in day to day choices is visualized. According to National Curriculum Framework 2005...

"Making children sensitive to the environment and the need for its protection is another important curricular concern. The emergence of new technological choices and living styles

witnessed during the last century has led to environmental degradation and vast imbalances between the advantaged and the disadvantaged. It has become imperative now more than ever before to nurture and preserve the environment. Education can provide the necessary perspective on how human life can be reconciled with the crisis of the environment so that survival, growth and development remain possible. The National Policy on Education, 1986 emphasised the need to create awareness of environmental concerns by integrating it in the educational process at all stages of education and for all sections of society. Living in harmony within with-in oneself and with one's natural and social environment is a basic human need."

In the preface of NCFTE, 2010, it is stated that

This National Curriculum Framework for Teacher Education (NCFTE, 2009) elaborates the context, concerns and vision underscoring that teacher education and school education have a symbiotic relationship and developments in both these sectors mutually reinforce the concerns necessary for qualitative improvements of the entire spectrum of education including teacher education as well. The new concerns of school curriculum and the expected transactional modalities have been emphasized in designing this Framework for all stages of school education. Issues related to inclusive education, perspectives for equitable and sustainable development, gender perspectives, role of community knowledge in education and ICT in schooling as well as e-learning become the centre-stage in the Framework (Mohd. Akhtar Siddiqui, 2009). Since, the teacher educators and pupil teachers have very high interest in environmental issues, they shown very high opinion that sustainability should be a university issue. Universities must take necessary steps for implementation of the direction of Hon'ble Supreme Court and look into the course for environmental studies (UGC, 2014).

More, TE and PT strongly recommended incorporating sustainability into teacher education and training pupil teachers for sustainability. Even, they are highly interested in taking training for sustainability. Based on the NCF 2005, it is assured in National Curriculum Framework for Teacher Education, 2010 that

"Keeping in view the vision of teacher education, the following set of concluding statements relating to a teacher's role, and the philosophy, purpose and practice of teacher education can be made. Teachers need to re-conceptualize citizenship education in terms of human rights and approaches of critical pedagogy; emphasize environment and its protection, living in harmony within oneself and with natural and social environment. Apart from conceptual and pedagogical aspects, existing programmes need to develop certain attitudes, dispositions, habits and interests in a teacher. The present evaluation protocol has no place for evaluating

these aspects. In order to develop future citizens who promote equitable and sustainable development for all sections of society and respect for all, it is necessary that they be educated through perspectives of gender equity, the perspectives that develop values for peace, respect the rights of all, and respect and value work. In the present ecological crisis, promoted by extremely commercialised and competitive lifestyles, teachers and children need to be educated to change their consumption patterns and the way they look at natural resources. The new teacher education curriculum framework will need to integrate these perspectives in its formulation."Further, to acquire and implement competencies for sustainable development, the existence of various and manifold contexts is important (Barth *et. al.* 2007). An interdisciplinary approach to sustainability is necessary, integrating it into all classes and fields. This will allow teachers to better understand and compare how different issues are affected from different angles. A holistic focus is needed to capitalize on curriculum changes and operational investments tilled towards a sustainable future (Hignite, 2006).Maximum no. of teacher educators and pupil teachers responded E for human nature relationship i.e. more than half overlapping of both circles. Whereas, Schultz (2000) determined that there is a direct relationship between how connected someone feels with nature and their level of environmental concern. This feeling of connection to nature is directly related to their environmental attitudes. These findings suggest the potential possibility where teachers could be educated beyond the societal and environmental factors to broaden their understanding of sustainability. Some TE and PT not responded in this item may shows that they have no clear understanding of this relationship. If it is assumed that respondents were generally more interested in sustainability than non-respondents, awareness, interest and knowledge levels may be even lower. However, few have reported complete overlap of the two circles reflects their high level of concern towards nature.

In considering the six elements of sustainability, environment, society, economy, culture, political and future generation some TE and PT recognized environmental and societal components, but very few recognized a combination of these elements. More than half of teacher educators responded only one correct keyword for sustainably and pupil teachers fail to reply correctly. The low percentage of correct answer depicts that that sustainability should be included in teacher education at every level. However, it is interesting and notable that some of them have mentioned the local context as keywords for sustainability. It provides a new direction to think for sustainability.

Conclusion: The study reflects that teacher educators and pupil teachers have similar kind of perception towards sustainability. They reported very high levels of interests towards issues

of sustainability and environmental issues. They were have very high level of the opinion that there is need to be aware of sustainability issues and highly recommended that sustainability should be a university issue. They reported very high that pupil teachers should be trained for sustainability. They have shown very high interest in taking training for sustainability. They responded that they are highly familiar with the word sustainability, have sensitivity towards sustainability and they consider (comparatively less) sustainability in day to day choices but having average knowledge related to the concept of sustainability which is further supported by their reply in writing keywords for sustainability. It must be taken into account that respondents interest in taking sustainability training and incorporation of it into teacher education as are rated very high. Recently, the National Council for Teacher Education has reformed norms and regulation for various programmes of teacher education (NCTE, Dec., 14). It has also provided guidelines to develop curriculum for different courses. In the guidelines, it is noticed that sustainability content is lacking. The study emphasizes to include sustainability concepts in various programs of teacher education. Especially, the type of education required for sustainable development which is needed to make the society healthy, wealthy and prosperous. The research recommends considering sustainability/education for sustainable development in the curriculum of various teacher education programs.

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