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Awareness of Sustainable Development Among Pre-service Teacher Educators in India

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ABSTRACT This paper aims to investigate the status of awareness of sustainable development among pre-service teacher educators in India, taking into consideration factors such as gender, institution type, teaching experience, and regional disparity. The study was conducted in India adopting Descriptive Survey Design where 600 pre-service teacher educators from 14 institutions offering postgraduate education programs were selected as the sample. The findings revealed that pre-service teacher educators had moderate awareness of sustainable development, with no significant differences based on gender, institution type, or teaching experience. However, significant differences were observed among different regions in India. The study recommends the need of incorporating multidisciplinary, context-specific, and pluralistic education for sustainable development in the teacher education curriculum, with special emphasis on addressing regional disparities. This study contributes to the understanding of the awareness of sustainable development among pre-service teacher educators in India and provides insights for developing sustainable competencies among teachers for achieving sustainable development goals.

INTRODUCTION

Sustainable development is the major focus of discussion at the global level today. The genesis of such discussion goes back to 1972 when the United Nations Conference on the Human Environment was convened at Stockholm. The first world conference on the environment highlighted a series of principles for sound management of the environment known as the Stockholm Declaration. The emergence of the holistic concept of sustainable development is rooted in the Brundtland Commission report (1987) that characterises sustainable development on three dimensions, that is, environmental, economic and social development with a futuristic orientation. The Rio Summit (1992) exemplified the concept of sustainable development with fulfilment of the right to development along with equitable meeting of developmental needs of the present and future generations. This led to discussion on new global sustainable development goals covering environmental, economic and social perspectives of life on earth. The 2030 Agenda for sustainable development focused on achieving sustainable development in its three components in a balanced and integrated manner.

Over five decades there have been comprehensive efforts to achieve the sustainable development goals by encouraging participation of the number of nations of the United Nations at different spheres, that is, local, regional, national and global organisations. Education has to play a significant role in improving the quality of life in the context of a sustainable environment, sound economy and inclusive social system. The sustainable development goals emphasised on quality life with sustainability. While several policy documents emphasised on the need for quality education in inclusive form at global level the national level documents on educational development, especially in the developing world gave higher weightage to inclusion of education in the agenda of sustainable development. Of course, there have been constraints in meeting the goals of sustainable development in developing countries, especially building peaceful and inclusive societies. Education has been valued as an index of sustainable development goals that is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. At equal length education has been considered as a powerful means of attaining sustainable development goals in the context of protection of human rights, eradication of poverty, achieving food security, gender equality, environment protection and technology integration for quality life. There have been tremendous efforts to focus on environmental issues concerning devel-

opment. Several educational programmes have been conceptualised at school level and higher education stages to sustain the environment. It has also been noticed that the holistic concept of sustainable development covering wider issues of development have been missing in the curriculum of the school system. The multidisciplinary perspective of sustainable development needs to occupy the prime focus of curriculum with a view to achieve the goal of quality life through sustainable competencies. The National Education Policy (2020) talks about school curriculum to include "human rights, gender equality, non-violence, global citizenship, contribution of culture in sustainable development and sustainable lifestyle, inclusion and equity". The curricular principles focus on multidisciplinary and holistic education. Equity and inclusion are to be considered as the basis of all educational decisions. Some such ideas reflected in the policy document reveal the spirit of sustainable development. However, as a central point of education for sustainable development, the students must be equipped with a futuristic knowledge base, sustainable competencies along with a pluralistic orientation of the value system. This requires teachers as well as teacher educators' special orientation on the concept of sustainable development as well as education for sustainable development. In this direction, there is a need to develop materials for education for sustainable development on the basis of existing knowledge, awareness and attitude of teachers and teacher educators. Especially awareness can play a major role in shaping the behaviour of teachers and teacher educators' action orientation inside and outside the school environment. Awareness of sustainable development among teachers and teacher educators form a sound base for developing sustainable competencies among them. Since teacher educators play a significant role in professional development of teachers, teacher educators need to be oriented towards knowledge and competencies concerning sustainable development. In this context there is a need to explore awareness of pre-service teacher educators about sustainable development. India is considered as a subcontinent with diversity in knowledge base, culture, language and ecology. Education for sustainable development needs to be multidisciplinary, pluralistic and context specific in nature. The Indian teacher education system, especially the teacher educators, need to address different issues concerning the nature of sustainable development and the role of education in it. In this regard, it is worthwhile to explore awareness of would-be teacher educators of India towards sustainable development taking into consideration various factors like gender, institution type, teaching experience and regional disparity in the country. The present study is the first venture to study awareness of sustainable development among pre-service teacher educators in India.

Review of Studies on Awareness of Students and Teachers Towards Sustainable Development

Empirical studies on education for sustainable development cover conceptual understanding, awareness, perception and attitude of stakeholders of the education system on sustainable development and the role of education in it. Such studies can be traced at the international level with a wider representation of population from amongst students of the schools and higher education institutions, working teachers, administrators and pre-service teachers. The major focus remains on exploring the understanding and awareness of sustainable development among students, in-service and pre-service teachers. Moreover, their attitudes towards education for sustainable development have been highlighted as major objectives of a number of investigations. The bird eye view on awareness studies on sustainable development reveals varied patterns of responses of students and teachers. This was reported by Sola and Michael (2016) and Njokua (2016) that in Nigeria, the secondary school students' awareness of sustainable development issues was of low level. However, the results were positively high with regard to the awareness level of higher education students about climate change and sustainable development. Keles et al. (2017) revealed that the elementary school students had an understanding of the environmental dimension of sustainable development. In a study in the Netherlands, Helen (2018) focused on those students who had a certain degree of understanding of sustainable development in general and sustainable

development goals in particular. There was a need to focus on social and economic dimensions of sustainable development. The students with an environmental education background had better environmental attitudes (Kumar et al. 2007). However, a large majority of students had a little awareness of the environmental issues (Pande 2007). As a whole the studies on the area of sustainable development at school stage have been confined to the area of environmental education, since this has been considered as one of the key elements of sustainable development. In many cases researches on environmental education at school stage have been interpreted with the main perspective of sustainable development. There are a large number of studies on environmental education, particularly focusing on environmental awareness of students and teachers, which fall into the exploratory category of research on sustainable development studies.

Besides research on students' population, teachers including pre-service teacher trainees have been incorporated as the main focus of research in the area of sustainable development in education. The research papers in India and abroad cover a large number of studies on awareness of pre-service teachers and working teachers on the main theme of sustainable development as well as awareness of education for sustainable development. They also covered teacher education programmes for preparing teachers to develop sustainable development competencies.

For instance, Borges (2019) found very favourable knowledge and attitude of teachers of elementary schools regarding sustainable development. In the Indian context, Ravikiran (2008) found a significant difference in awareness of education for sustainable development between men and women teachers of elementary schools. Jasper (2008) explored in his study that all the teachers demonstrated their passion for education for sustainable development through formal schooling. On the contrary, it has been noticed that there is a lack of trained professionals who are knowledgeable about education for sustainable development in Canada. Moreover, teacher certificate guidelines do not focus on sustainability. They were not familiar with the integration of education for sustainable development concepts in the teaching lessons. In a study on teachers' beliefs on education for sustainable development, Ates and Gul (2018) found that pre-service school teachers were aware of the importance of education for sustainable development. On exploring the relationship between the level of awareness and education for sustainable development competencies of teachers, Cebrian and Junyent (2015) revealed no connection between them among student teachers. The review of studies on awareness of sustainable development among students and teachers reveal multiple facets of perception. With a view to strengthen the base of teacher education research should focus on teacher educators' knowledge, awareness and attitude towards education for sustainable development. So far, no such study is witnessed about teacher educators' awareness of education for sustainable development. Therefore, the present study was considered as a first attempt to explore awareness of teacher educators at an all India level on sustainable development.

Objectives of the Study

The study was conducted with the objective to explore the status of pre-service teacher educators' awareness of sustainable development in the context of background variables such as, gender, institution type, teaching experience and region.

Hypotheses of the Study

The hypotheses of the study were stated in null form.

1. There is no significant difference between mean awareness of sustainable development of men and women pre-service teacher educators.
2. There is no significant difference between mean awareness of sustainable development of university department student teacher educators and colleges of education student teacher educators.
3. There is no significant difference between mean awareness of sustainable development of pre-service teacher educators with teaching experience and no teaching experience.
4. There is no significant difference between mean awareness of sustainable development of pre-service teacher educators belonging to different regions of India.

METHODOLOGY

The Descriptive Survey Design has been followed. The study was conducted at an all India level covering the population of all the pre-service teacher educators, that is postgraduate education students enrolled in university teaching departments and teacher education colleges rated by NAAC with a minimum B+ rank. The cluster random sampling technique was used for data collection. In all, 14 institutions offering postgraduate education programmes were chosen randomly from the list of NCTE/ NAAC approved teacher education institutions representing the east (3), north (4), west (3) and south (4) zones of the country. The students enrolled in the postgraduate programme of these institutions comprised the sample respondents of the study. In all 600 pre-service teacher educators from north (200), east (180), west (120) and south (100) consisted of the sample of the study.

Tool Construction and Validation

Teacher Educators Sustainable Development Awareness Scale*:* The researcher constructed and validated the sustainable development awareness scale by following systematic steps of tool construction:

1. *Definition of sustainable development:* Sustainable development incorporates development in social, economic and environment components for meeting the needs of the present without compromising the ability of future generations to meet their own needs.
2. *Definition of awareness:* Awareness is defined as perception, consciousness, sensitivity and acquaintance with any event or concept.
3. *Operational definition of awareness of sustainable development***:** Awareness of sustainable development is defined as perception or consciousness of different components of sustainable development, such as environmental, social and economic as measured by the sustainable awareness scale developed by the researcher.
4. *Development of items:*The items covered three dimensions of sustainable development, which are social, economic and environmental. The key features of social, economic and environmental components were reflected in each item of the test.
   Positive and negative ideas concerning each component were put in the form of items. In all, 30 items were written as the initial draft of the scale. Each item had three alternative responses on a Likert type equal appearing scale, that is, Agree, Uncertain and Disagree. The positive items were to be scored as 3 against agree, 2 for uncertain and 1 for disagree. The negative items were to be scored in reverse order that is 1 against agree, 2 for uncertain, and 3 for disagree.
5. *Content validity of the scale:*The content validity of the scale was assessed by the expert faculty members with interdisciplinary backgrounds. The experts belonged to University of Allahabad, Ravenshaw University, Cuttack, GGS Central University, Bilaspur, RIE Bhubaneswar and NCERT New Delhi. After content validation by the experts, 25 items were retained in this scale for identifying the psychometric properties of the test. The tool was administered to 50 sample respondents of pre-service teacher educators enrolled in the third semester of the M.Ed. programme of University of Allahabad, session 2022-2023.
6. *Reliability of the scale:*On the basis of first round data collection the item total correlation values were calculated by using Pearson's product movement correlation. The items with a range of correlation values of 0.25 to 0.66 were retained for the final draft of the scale. The ã value of above 0.25 was considered to be appropriate for any exploratory study **(**Cristobal et al. 2007).

Five items with less than item total value of 0.25 were eliminated. Finally, the scale was composed of 20 items. The average of inter item correlation values of these items ranged from 0.15 to 0.22. The internal consistency of the test was assessed by the Cronbach Alpha coefficient. Alpha Cronbach value for all the 20 items included in the final scale was found to be 0.67 indicating a high reliability accepted index of above 0.60 (Nunnally and Bernstein 1994).

The sustainable development awareness scale with 20 final items was administered twice on the 50 sample respondents within a gap of 12 days. The test-retest reliability coefficient was found as 0.70. This value indicated a high consistency value of the scale.

The tool has three sections:

1. Information about the scale, with instruction
2. General background information
3. Scale items

Data Collection and Analysis

The sustainable development awareness scale was administered to the sample respondents as present in the university departments/teacher education institutions by the researchers personally. Data scoring was done by assigning three marks to a satisfactory response, two marks to an uncertain response and one mark to an unsatisfactory response on the awareness scale. Total scores were calculated on the whole test respondent wise. Descriptive statistics and parametric statistics like mean, Standard Deviation, t-test and ANOVA were used for analysis of data.

RESULTS

Analysis and interpretation of data have been presented objective wise in the following. Descriptive analysis of data collected from the total sample indicated the mean awareness score of 36.45 in the context of the midpoint of 40 of the scale. This value indicates low level awareness of sustainable development among pre-service teacher educators.

From Table 1 it can be noticed that the obtained CR value is 0.945, which is not significant with df 599 at .05 level. Therefore, the null hypothesis of no difference between mean awareness scores of men and women pre-service teacher educators is not rejected. Gender does not have a significant effect on the awareness of sustainable development.

Table 2 reveals that the obtained CR value 0.195 is not significant at .05 level with df 599. The null hypothesis of no significant difference between mean awareness of sustainable development among experienced and no teaching experienced would be teacher educators is not rejected. Teaching experience did not have an effect on awareness of sustainable development of pre-service teacher educators.

Table 3 reveals the obtained CR value of 0.498 is not significant at .05 level with df 599. Hence, the hypothesis of no significant difference between mean awareness of sustainable development among university and college level teacher educator students. This indicates no effect of teacher education institution type on awareness of sustainable development among pre-service teacher educators.

Table 1: Significance of difference between mean awareness scores on sustainable development of men and women pre-service student teacher educators

Gender	*Mean*	*SD*	*N*	*CR*	*Significance level*
Men	36.16	5.84	234	0.945	Not significant
Women	36.64	6.36	366df 599		

Table 2: Significant difference between mean awareness on sustainable development of student teacher educators with teaching experience and without teaching experience

Teaching experience	*Mean*	*SD*	*N*	*CR*	*Significance level*
With teaching experience	36.35	7.11	119	0.195	Not significant
Without teaching experience	36.48	5.91	481df 599		

Table 3: Significant difference between mean awareness score on sustainable development of student teacher educators in university departments and colleges of education

Institution	*Mean*	*SD*	*N*	*CR*	*Significance level*
University	36.53	5.90	445	0.498	Not significant
College	36.23	6.89	155df 599		

Table 4a and 4b reveal the summary of ANOVA on the significant effect of regional background on student teacher educators awareness of sustainable development, since the F_{ratio} was found significant at .01 level with df 3:596. The null hypothesis of no significant effect of regional background on awareness of sustainable development was rejected at .01 level. The post hoc test of significance of differences between different pairs of means reveal that (Table 5) there were significant differences between mean awareness scores of East and West region students in favour of East region at .01 level, East and South region students in favour of East region at .01 level, North and West region in favour of North region at .01 level, and North and South region in favour of North region at .01 level of significance. There was no significant difference between mean awareness scores of the North and East region and West and South regions, respectively. The findings indicate higher levels of mean awareness scores of East and North region student teacher educators in comparison to those of West and South zone pre-service teacher educators.

Table 4: Summary of ANOVA on effect of regional background on awareness of sustainable development among student teacher educators

Table 4a: Region-specific mean and Variance

Region	*N*	*Mean*	*Variance*
East	180	38.52	35.759
North	200	37.09	37.690
West	120	34.08	37.220
South	100	34.31	25.489

Table 4b: Summary of ANOVA

Source of variation	*df*	*Ms*	F_{ratio}	*Significance level*
Between groups	3	661.646	18.91 df= 599	Significant at .01 level
Within groups	596	34.989		

Table 5: Post ANOVA 't' test of difference between means of awareness of sustainable development on region basis

Mean differences

Sets	*East*	*North*	*West*	*South*
Means	38.52	37.09	34.08	34.31
38.52	-	1.43N.S.	4.44*	4.21*
37.09		-	3.01*	2.78*
34.08			-	0.23N.S.
34.31				-

Note:
1.(*) significant at .01 level and N.S. is not significant.
2.The critical mean difference value at .01 level with regard to significant pairs of means: East-North: 2.26; East-West: 2.70; East-South: 1.79; North- West: 2.57; North-South: 1.75; West-South: 1.47

DISCUSSION

The studies conducted in India and abroad have highlighted the need for region-specific programs and trained professionals who are knowledgeable about education for sustainable development. The low-level awareness of pre-service teacher educators on sustainable development is the outcome of poor exposures to sustainable development goals. Studies conducted abroad (Sola and Michael 2016; Njoku 2016) on low level knowledge of school students/support the status in India (Pande 2007). Moreover, the studies conducted on the population of pre-service teachers revealed poor understanding of student teachers on sustainable development even though the student teachers were aware of environmental concerns, they did not have clarity on holistic sustainable development (Keles et al. 2017). At the teacher educators education stage one comes across similar findings related to the findings of present study. Even though the teacher educators appreciated awareness of sustainable development, they did not give priority to it as a part of teacher development programme (Bentham et al. 2015) and lack of trained professionals who are knowledgeable about awareness of sustainable development. The Indian scenario on pre-service teacher educators' moderate level awareness of sustainable development is not very much different from the status at the international level. This study revealed no impact of gender, institution type, and teaching experience on awareness of sustainable development. Similar findings about little impact of gender on awareness of sustainable development was found by Ravikiran (2008) and Sola and Michael (2016). Of course, some

other studies have reported that the effect of gender, teaching experience and socio-economic status had a significant effect on teachers' attitude towards awareness of sustainable development (Dash et al. 2008). The present study revealed the significant effect of regional background on pre-service teachers' awareness of sustainable development. A similar finding was noticed in the case of a Malaysian study (Mahat et al. 2018). Regional impact on sustainable development awareness is attributed to variations on the focus of teacher education and school activities concerning awareness of sustainable development, especially related to the environment. Detailed exploration is needed in the Indian context concerning region programmes on sustainable development.

CONCLUSION

The scenario of low-level awareness on sustainable development can be attributed to limited focus of teacher education programmes concerning sustainable development. The concept of sustainable development has not been clearly articulated in the teacher education curriculum. As a result, would-be teacher educators with the background of higher education and B.Ed. programme have not been much aware of sustainable development. In conclusion, the current state of awareness and integration of sustainable development concepts and competencies in the Indian education system, particularly in the curriculum at all levels, is a matter of concern.

RECOMMENDATIONS

Based on the results of the study it is recommended for revamping teacher education curriculum in Indian universities with a futuristic vision and sustainability. Educational experiences concerning the education for sustainable development need to be valued as an integral part of professional development programmes at pre-service and in-service stage for teachers and teacher educators. Therefore, policymakers and educators need to take necessary steps to integrate sustainable development concepts and competencies in the education system to promote awareness and build a sustainable future.

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