

## **Practices of Sustainable Development at Elementary Schools Level: What Research Says?**

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### **ABSTRACT**

This research paper is the outcome of a study conducted to find out academic and non-academic activities performed in schools to promote Education for Sustainable Development (ESD) based on environmental, social and economic sustainability. It tried to find out various initiatives undertaken by teachers to promote ESD. Descriptive survey design was adopted in this study. Forty (N=40) randomly selected teachers from 12 elementary schools comprised the sample of the study. A self-developed open-ended questionnaire was administered to teachers for collection of data. Data were analyzed qualitatively through thick description. Percentages were calculated based on the responses against each specific theme. Results revealed that majority of teachers performed academic activities which were based on teaching subject contents related to environment, social and economic sustainability. Regarding non-academic areas majority of teachers conducted activities such as cleaning of self and nearby environment; organizing competitions among students; providing vocational training and preparing useful materials from waste. Various initiatives such as inspiring and creating awareness among students; innovative pedagogical practices and activities on economic awareness were taken by the teachers in order to promote ESD.

**Keywords:** Education for Sustainable Development (ESD), School Practices, Academic Activities, Non-academic Activities.

### **INTRODUCTION**

Environment, economy and society are the three major pillars of sustainability on which the progress, quality and equilibrium of the society exist. These areas are not only the local concern but also the concern of the globe. In an effort to make sustainability as a practice among the people, its integration in education system was found to be very relevant (Paul and Mehera, 2016; Winkins, 2011; Howe, 2009; Anyolo, 2018). This integration may include reorientation or transformation of curriculum including content, pedagogical strategies, textbooks, teaching learning materials (TLMs), assessment techniques, school practices and school culture, and practices of sustainability (UNESCO, 2012). The purpose of Education for Sustainable Development (ESD) is to transform the future generation by equipping them with the knowledge, skills, values and attitude for living a life in a sustainable society through the medium of education (UNESCO, 2014). This pedagogical philosophy somehow resembles the concept of critical pedagogy which talks about preparing citizen sensitive for their own development and for the society as well (NCF, 2005). Integration of sustainable practice and sustainable thinking in school curriculum is a vital step towards addressing sustainable issues. The NEP 2020 also reflects upon multi-disciplinary education to prepare self-sufficient future citizens having all the qualities to deal the world effectively and having a sense of social sensitivity and responsibility.

### **REVIEW OF PREVIOUS STUDIES AND JUSTIFICATION FOR THE PRESENT STUDY**

Previous research studies revealed that levels of awareness regarding ESD was not up to the mark (Mwaura, 2007) in fact the understanding level of stakeholders about ESD found as partial, as it was mostly about environmental aspect (Cebrian & Junyent, 2015; Anyolo, 2015). Awareness level was not found satisfactory, but there was a positive perception reflected towards the need of integrating ESD in school curriculum (Smith II, 2009; Moy, 2008; Anyolo, 2018; Perez & Bua, 2019) which helped in developing sustainable knowledge, skill, attitude and values (Alexander, 2014; Laurie, Nonoyama-Tarumi, Mckeown & Hopkins, 2016). Along with that curricular integration of ESD, which creates scope for curricular transformation, professional growth of teachers and making education a qualitative one (Laurie et al., 2016). ESD was also perceived as a solution measure to address various issues and challenges related to sustainability and a way towards creating a sustainable society (Winkins, 2011; Pauw, Gericke, Olsson and Berglund, 2015).

School based efforts included, ESD based curricular reformation (Laurie et al., 2016), ESD infused teaching learning methods (Schrage, 2015; Alexander, 2014; Jasper, 2008, Balakrishnan, 2019; Leonard, 2012), ESD based teaching learning materials (Schrage, 2015; Alexander, 2014) and assessment strategies focusing on ESD (Schrage, 2015). Padmanabhan (2011), Jasper (2008), Schrage (2015) and Anyolo (2018) reported introduction of ESD based contents in different school subjects as another effective ESD integrating initiative. Pedagogical interventions were proved effective such as environmental focused intervention (Alexander, 2014),

strategies based on ESD infused scientific literacy (Leonard, 2012), integrated ESD programs (Padmanabhan, 2011), specialized pedagogic designs (Veerappa, 2011), ESD integrated Biology pedagogy (Chisingui and Costa, 2020), cognitive, affective and psychomotor activity based pedagogical activities (Kioupi and Voulvoulis, 2019), integration of music (Cheng, 2015) and context based sustainable pedagogy (Anyolo, 2018; Schrage, 2015). Not only pedagogical strategies but many other activities were found to be significant in developing sustainable knowledge, skill and practices on ESD (Jasper, 2008; Schrage, 2015), developing sensitivity, habits of cleanliness, developing social skills and social values for social sustainability, ESD based values, ESD based craft work and essay writing (Schrage, 2015). In addition, community awareness, plantation, gardening, conservational activities, speech and debate, celebration of important national and international days, waste management, kitchen garden and vermicomposting for developing economic sustainability (Alexander, 2014) and social skills (Schrage, 2015; Alexander, 2014; Padmanabhan, 2011) were found to be important for ensuring sustainability. In this regard, teacher can also act as role model for sustainable practice and a source of motivation (Jasper, 2008).

From the analysis of previous research studies, it was evident that awareness regarding ESD was not satisfactory but the perception towards ESD integrated curriculum was positive. Regarding curricular integration for ESD, majority of studies focused on content-based integration and pedagogical initiatives, which were mostly regarding environmental sustainability. It gave less importance to social and economic sustainability. Hence, it prompted for further research on the aspect of social and economic sustainability. Pedagogical initiatives taken here were mostly confined to research level, which also gave a scope for research on school based pedagogical initiatives being undertaken by teachers. Further, the detailed subject-based integration of ESD in different sustainability including environment, social and economic was not clarified in the above studies. Hence, this ESD integration process needs to be done in every aspects of school curriculum. That is why both curricular subjects and curricular activities (researchers mean as academic and non-academic activities) were important. The non-academic activities were found to have less priority in the previous studies which needed further inquiry. Most importantly, the role and efforts taken by teachers for ESD integration was not reflected in the previous researches. The present study, hence, tried to find out various activities performed in schools in order to promote ESD based knowledge, attitude and skills through academic and non-academic activities and efforts taken by the teachers. The specific research questions of the study are mentioned below.

1. What are the academic and non-academic activities performed in schools to promote education for sustainable development at elementary level?
2. What are the initiatives taken by elementary school teachers to promote education for sustainable development?

### **Objectives of the Study**

1. To study the perception of teachers pertaining to academic activities on sustainable development performed in schools in promoting environmental, social and economic sustainability.
2. To study the perception of teachers pertaining to non-academic activities on sustainable development performed in schools in promoting environmental, social and economic sustainability.
3. To study the initiatives taken by the teachers to promote education for sustainable development among students pertaining to environmental, social and economic sustainability.

### **METHODOLOGY**

The Descriptive Survey Design was adopted in carrying out the study, because of the nature of the data required. Forty (N=40) teachers were selected randomly from 12 elementary schools of Sadar Block and Puri Municipality of Puri District, Odisha. A self-developed questionnaire for teachers carrying open ended questions on academic and non-academic practices of sustainable development and teacher's effort for promoting ESD was used to collect the data. The questionnaire covered all three major aspects of ESD i.e., environmental, social and economic sustainability. The content validity of tool was established through expert opinion and a pilot study.

Data were analyzed qualitatively and quantitatively. Percentages were calculated based on the responses of teachers against each specific theme. The results were interpreted through thick description.

### **RESULTS**

#### **1.0 Perception of Teachers pertaining to Academic Activities on sustainable development performed in elementary schools. (Objective No. 1)**

Academic activities performed in schools to promote ESD under each sub-dimensions such as environment, social and economic sustainability are mentioned below.

### 1.1 Academic Activities performed in School with reference to Environmental Sustainability

Responses of teachers pertaining to the academic activities performed to promote ESD based on environmental sustainability are categorized into four major themes as mentioned in Table-1.

**Table 1: Academic Activities to promote Environmental Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Teaching chapters of different subjects related to environment.	31 (77.50%)
2	Use of teaching learning materials for environment related topics.	02 (05.00 %)
3	Activities based teaching for developing skills regarding environmental sensitivity. (discussing topics related to environment, project work and other)	26 (65.00 %)
4	No idea about environmental sustainability.	05 (12.50 %)

Table-1 depicts that 77.50 % of teachers teach the chapters of different subjects related to environment; 65.00 % teachers practice activities for developing skills regarding environmental sustainability i.e., discussing topics related to environment, project work etc.; 5% of activities are based on use of teaching learning materials for environment related topics. Most astonishing fact was that 12.50 % of teachers didn't have any idea about environmental sustainability.

### 1.2 Academic Activities performed in School with reference to Social Sustainability

Responses of elementary school teachers pertaining to academic activities performed to promote ESD based on social sustainability are categorized in to four major themes as mentioned in Table-2.

**Table-2: Academic Activities to Enhance Social Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Teaching about social norms, discipline & making aware of social sustainability through academic subjects.	29 (72.50 %)
2	Removing blind beliefs through textbook contents.	02 (05.00 %)
3	Reading life history of great persons.	23 (57.50 %)
4	No idea about social sustainability.	06 (15.00 %)

Table-2 reveals that majority of teachers (72.50%) teach about social norms, discipline and making aware of social sustainability through academic subjects whereas 57.50% focus on reading life history of great persons. Only 5% of teachers perform to remove blind beliefs through textbook contents. Most importantly, 15% of teachers have no idea about academic activities related to social sustainability.

### 1.3 Academic Activities performed in School with reference to Economic Sustainability

Responses of elementary school teachers pertaining to academic activities performed to promote ESD based on economic sustainability are categorized in to three major themes as depicted in Table-3.

**Table-3: Academic Activities to Enhance Economic Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Teaching academic subjects related to economics. (industry, invention and discoveries)	28 (70.00 %)
2	Linking academic topics to day today economic instances.	02 (05.00 %)
3	No idea about economic sustainability.	10 25.00 %)

Table-3 depicts that majority of teachers (70 %) conduct academic activities by teaching academic subjects related to economics i.e., industry, invention and discoveries whereas only 5 % of teachers perform activities on linking academic topics to day economic instances. One-fourth of teachers (25 %) don't have any idea about economic sustainability.

**2.0 Perception of Teachers pertaining to Non-Academic Activities on sustainable development performed in elementary schools. (Objective No. 2)**

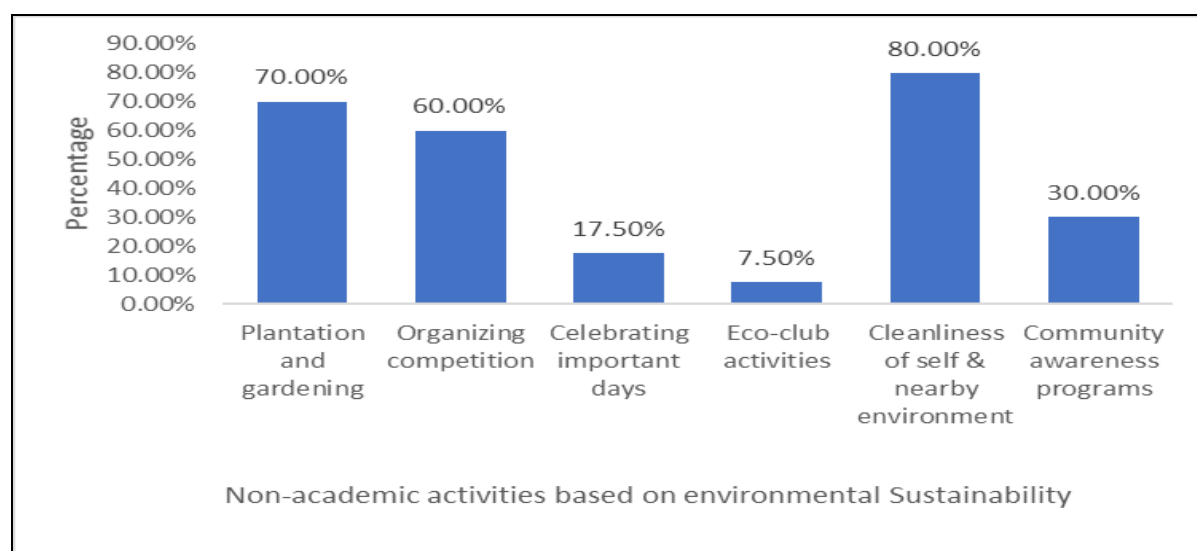
Non-Academic activities performed in schools to promote ESD under each sub dimension such as environment, social and economic sustainability are mentioned below.

**2.1 Non-Academic Activities performed in School with reference to Environment Sustainability**

Responses of teachers pertaining to non-academic activities performed to promote ESD based on environmental sustainability are categorized in to eight major themes and are depicted in Table-4.

**Table-4: Non-academic Activities to promote Environmental Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Plantation and gardening	28 (70.00 %)
2	Organizing competitions	15 (60.00 %)
3	Celebrating important days	07 (17.50 %)
4	Eco-club activities	03 (07.50 %)
5	Cleanliness of self and nearby environment	32 (80.00 %)
6	Community awareness programs	12 (30.00 %)
7	Promoting Eco-friendly activities and habits	17 (42.50 %)
8	No idea about environmental sustainability	04 (10.00 %)



(Fig. 1: Non-academic Activities performed in School to promote Environmental Sustainability)

Table-4 indicates that majority of teachers (80.00 %) focus on on cleanliness of self & nearby environment; 70 % perform programmes like plantation and gardening to enhance environmental sustainability; also 60 % of teachers organize various competitions among students. Less than half of teachers focus on promoting eco-friendly activities, celebrating important days, and community awareness program. Even 10% teachers have no idea about environmental sustainability.

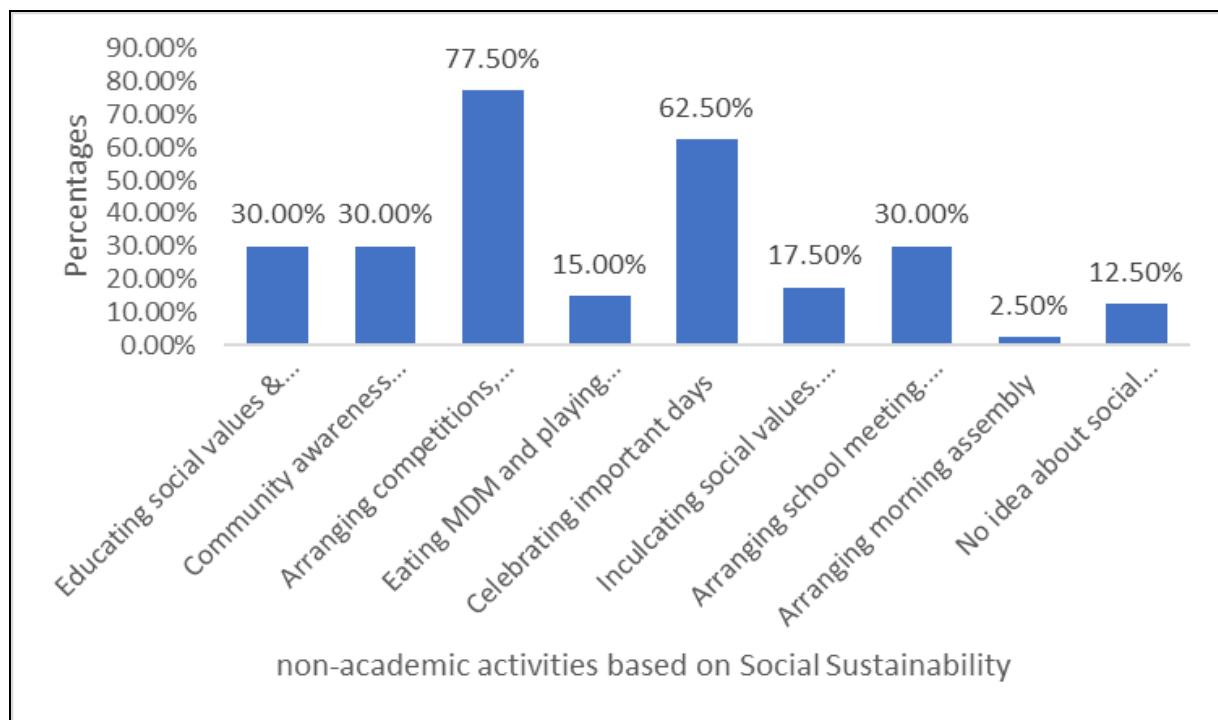
**2.2 Non-Academic Activities performed in School with reference to Social Sustainability**

Responses of elementary school teachers pertaining to non-academic activities performed to promote ESD based on social sustainability are categorized in to nine major themes as mentioned in Table-5.

**Table-5: Non-academic Activities to promote Social Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Educating social values and skills providing equal opportunities, treating equally in an inclusive setup	12 (30.00 %)
2	Community awareness programs	12 (30.00 %)
3	Arranging competitions, games and sports	31 (77.50 %)
4	Eating MDM and playing together	06 (15.00 %)

5	Celebrating important days	25 (62.50 %)
6	Inculcating social values. (Respecting parents, helping others etc.)	07 (17.50 %)
7	Arranging school meeting. (SMC, MTA, PTA, Meena Manch)	12 (30.00 %)
8	Arranging morning assembly	01 (02.50 %)
9	No idea about social sustainability	05 (12.50 %)



(Fig. 2: Non-academic Activities performed in School to promote Social Sustainability)

Table-5 reveals that majority of teachers (77.50%) organize various competitions, games and sports among students; 62.50% of teachers focus on celebrating important days for promoting social sustainability. One-third of teachers (30%) perform activities on educating social values and skills providing equal opportunities; and treating equally in inclusive setup. One-third (30%) of teachers perform community awareness program. Very less portion of teachers (15%) emphasize on eating MDM and playing together, 17.50% emphasize on inculcating social values such as: respecting parents, helping others; 30% on arranging school meeting such as: meeting of School Management Committee (SMC), Mother Teacher Association (MTA), Parents Teacher Association (PTA), and Meena Manch. Also 12.50% teachers have no idea about social sustainability.

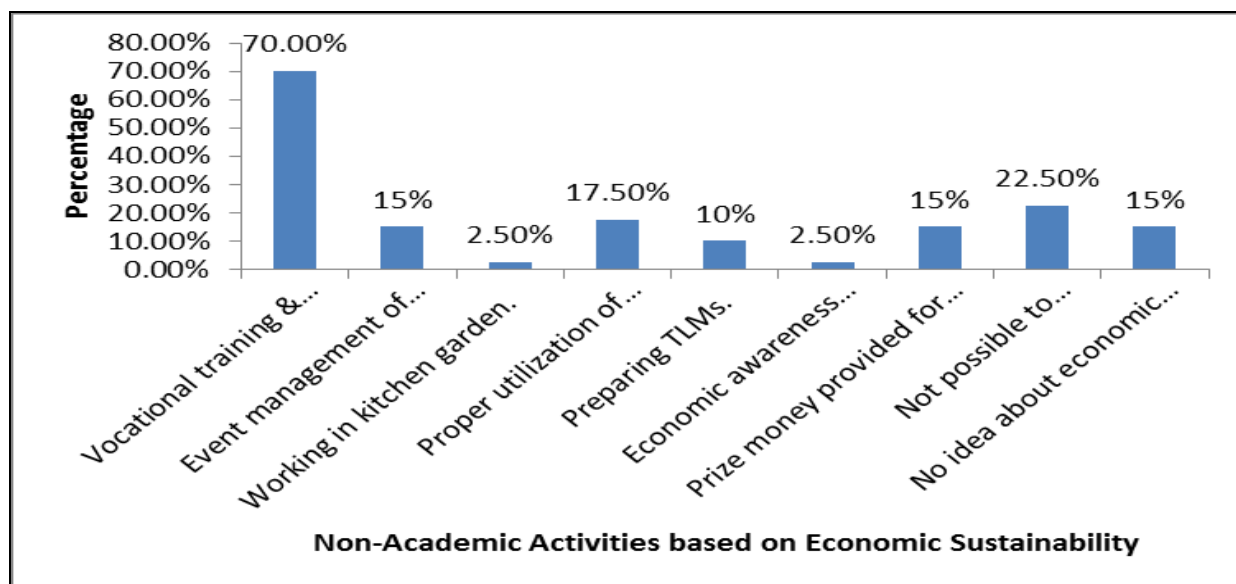
### 2.3 Non-Academic Activities performed in School with reference to Economic Sustainability

Responses of elementary school teachers pertaining to non-academic activities performed in order to promote ESD based on economic sustainability are categorized in to nine major themes and are depicted in Table-6.

**Table-6: Non-academic activities to promote Economic Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Vocational training and preparing useful materials from waste.	27 (70.00%)
2	Event management of different functions of school.	06 (15.00%)
3	Working in kitchen garden.	01 (02.50%)
4	Proper utilization of money from prizes & other source	07 (17.50%)
5	Preparing TLMs.	04 (10.00%)
6	Economic awareness program & community work.	01 (02.50%)

7	Prize money provided for winners of different competition.	06 (15.00%)
8	Not possible to implement economic sustainability.	09 (22.50%)
9	No idea about economic sustainability.	06 (15.00%)



(Fig. 3: Non-academic Activities performed in School to promote economic Sustainability)

Table-6 reveals that 70.00% of teachers perform activities on vocational training & preparing useful materials from waste; 15% on event management of different functions of school; 2.50% on working in kitchen garden, 17.50% on proper utilization of money; 10% on preparing TLMs; 2.5% on economic awareness program & community work; 15% based on providing prize money provided for winners of different competition; 22.50% teachers found economic sustainability impossible to implement & 15% teachers have no idea about economic sustainability.

### 3.0 Initiatives taken by Teachers to promote Education for Sustainable Development (Objective No. 3)

Initiative taken by teachers to promote ESD under each sub dimension such as environment, social and economic sustainability are mentioned below.

#### 3.1 Initiatives to promote Environmental Sustainability

Responses of elementary school teachers regarding the initiatives taken by them to promote economic sustainability are categorized in to seven major themes as shown in Table-7.

**Table-7: Efforts taken by the teachers to enhance Environmental Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Inspire and aware about the importance of nature & natural resources.	29 (72.50 %)
2	Linking academic concepts with environment and real world.	10 (25.00 %)
3	Arranging various competitions.	02 (05.00 %)
4	Using teaching-learning materials.	25 (62.50 %)
5	Citing examples related to environment values and awareness.	05 (12.50 %)
6	Critical and reflective discussion on environmental issues.	07 (17.50 %)
7	No idea about environmental sustainability.	05 (12.50 %)

Table-7 depicts that majority of teachers (72.50%) conduct activities on inspiring & creating awareness about the importance of nature and natural resources; 62.50% on using teaching-learning materials, 25.00% on linking academic concepts with real world; 10% on arranging competitions, 12.50% on citing examples related

to environmental values & awareness, 17.50% on critical & reflective discussion on environmental issues and 12.50% teachers don't have any idea about environmental sustainability.

### 3.2 Initiatives to Promote Social Sustainability

Responses of elementary school teachers regarding the initiatives taken by them to promote social sustainability are categorized in to seven major themes as shown in Table-8.

**Table-8: Initiatives taken by Subject Teacher to enhance Social Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Discussing social issues.	03 (07.50 %)
2	Making aware of their national/social rights, responsibilities and social values.	23 (57.50 %)
3	Pedagogic strategies for social sustainability (play way, drama, essay, storytelling & citing examples).	29 (72.50 %)
4	Developing social sustainability teaching through school subjects.	07 (17.50 %)
5	Promoting group work.	06 (15.00 %)
6	Use of teaching learning materials.	06 (15.00 %)
7	Treating all equally & ensuring participation of all.	06 (15.00 %)

Table-8 depicts that majority of teachers (72.50%) use pedagogic strategies for social sustainability such as: play way, drama, essay, storytelling and citing examples to enhance social sustainability. More than half of teachers (57.50%) create awareness on national/social rights, responsibilities & social values. Only 15% of teachers teach through school subjects, group work and treating all equally & ensuring participation of all.

### 3.3 Initiatives to promote Economic Sustainability

Responses of elementary school teachers pertaining to initiatives taken by them to promote social sustainability are categorized in to eight major themes as mentioned in Table-9

**Table-9: Initiatives taken by Teachers to enhance Economic Sustainability**

Sl. No.	Activities	Responses of Teachers (N=40)
1	Advice to form kitchen garden.	03 (07.50 %)
2	Advice regarding different carrier option.	02 (05.00 %)
3	Suggest earning while learning.	03 (07.50 %)
4	Suggest to students to assist their parents in their profession.	04 (10.00 %)
5	Advice students to save money & utilize wisely.	23 (57.50 %)
6	Economic awareness.	28 (70.00 %)
7	Not possible to do this.	04 (10.00 %)
8	No idea about economic sustainability.	16 (40.00 %)

Table-9 explains that majority of teachers (70.00%) foster economic awareness among students and more than half of teachers (57.50%) advice to save money and utilize wisely. Less than 10% of teachers advice students to form kitchen garden; advice regarding different carrier option; suggest earning while learning; suggesting students to assist their parents in their profession. Also 10% of teachers have responded that it is not possible to implement economic sustainability and even 40 % don't have any idea about economic sustainability.

## 4.0 MAJOR FINDINGS

1. Majority of teachers (more than 65%) teach chapters of different subjects related to environment activity and skill based practices such as: discussing topics related to environment, project work etc. Most astonishingly it is revealed that 12.50 % of teachers don't have any idea about environmental sustainability.
2. Majority of teachers (more than 50%) perform academic activities based on social norms and discipline; awareness among students; reading life history of great persons to promote social sustainability. Like environmental sustainability 15% teaches don't have any idea on social sustainability.

3. Two third of the teachers (70%) teach academic subjects related to economics i.e., industry, invention and discoveries as academic activity to promote Economic Sustainability. Similar to other types of sustainability, 25 % teachers don't have any idea about economic sustainability.
4. More than two-third of teachers (80.00 %) perform non-academic activities based on cleanliness of self and nearby environment; 60 % of teachers conduct activities on organizing competitions; and 70 % of teachers conduct plantation and gardening to enhance environmental sustainability.
5. Majority of teachers (77.50%) conduct non-academic activities by arranging competitions, games, sports etc. to promote social sustainability.
6. Two third of the teachers (70%) perform non-academic activities based on vocational training and preparing useful materials from waste to promote economic sustainability and 22.50% teachers found economic sustainability impossible to implement.
7. To promote environmental sustainability, majority of the teachers (72.50%) take initiatives by inspiring and creating awareness about the importance of nature and natural resources. Majority of teachers (62.50%) also various TLMs to teach in innovative way for promoting environmental sustainability.
8. Majority of the teachers (72.5%) take initiatives in applying pedagogical strategies like play way, drama, essay, storytelling and citing examples to promote social sustainability. More than half of teachers (57.50%) create awareness about national/ social rights, responsibilities and social values for the same.
9. Majority of the teachers (70.00%) take initiatives for economic awareness; 57.50% advice to save money & utilize wisely to promote economic sustainability.

## **EDUCATIONAL IMPLICATIONS**

### *Present Status*

- It seems that majority of teachers (>70%) perceived that academic activities are based on teaching subjects related to ESD; where they ignored other important activities such as use of teaching learning materials for environment related topics, removing blind beliefs through textbook contents, linking academic topics to day today economic instances; which was found to be performed by (<10%) of teachers.
- Very negligible percentages (<20%) of teachers conducted non-academic activities such as eco club activities, celebrating days, arranging morning assembly, providing social values, organizing economic awareness program, involving students in event management and forming kitchen garden.
- Many teachers are unaware of these three aspects of ESD.

### *Action Plan*

- Curriculum framers need to incorporate the concepts of environment, social and economic sustainability in school curriculum as mandatory components.
- Policy makers and administrators need to plan for in-service training programs for teachers to promote ESD in schools.
- School administrators need to organize capacity building programmes to encourage teachers, conduct action research regarding need, importance and effect of these activities in promoting ESD among students and community members.

## **DISCUSSION**

From the result it can be comprehend that there are various academic and non-academic activities are performed in elementary schools to promote ESD, which reflects good awareness level about ESD in schools and it also reflects that schools do understand the significance of ESD (Smith II, 2009; Moy, 2008; Anyolo, 2018; Perez & Bua, 2019). In comparison to economic sustainability, activities are found to be more in case of environment sustainability and social sustainability, which tells that economic sustainability, is yet to be considered as important as other two aspects of ESD. The result also explained various academic activities like integration of sustainability concept, value and skill in school subjects (Smith II, 2009; Moy, 2008; Anyolo, 2018; Perez & Bua, 2019), reflection of sustainability in TLMs (Schrage, 2015; Alexander, 2014) and pedagogical techniques (Schrage, 2015; Alexander, 2014; Jasper, 2008, Balakrishnan, 2019; Leonard, 2012) and through real life situations to promote ESD. Not only academic activities but also various non-academic activities such as plantation, cleanliness, ESD relevant competitions, celebration of days, community activities and awareness, ESD based skill and values practice, conduction of games and sports (Alexander, 2014),



vocational training participation of students in school activities etc. are found to be effective measures to promote ESD. In addition to school activities, many initiatives are also taken by teachers to enhance the knowledge and practice of ESD among students. There various initiatives, activities and practices are conducted for ensuring sustainability but percentage of performing these activities are not satisfactory as not even a single activity could score 50% and above score. There are many other vital aspects and practices related to ESD (environmental, social and economic suitability) yet to be understood, reflected and practiced in these schools. This clearly shows the need of more awareness about ESD integration in school curriculum among the respective stakeholders.

## CONCLUSION

Education act as a vital medium for turning ESD based theory in to practice. School plays important role in implementing the knowledge and practice of sustainability from the very beginning stage human preparation through curricular activities, curricular subjects, pedagogy, assessment, TLMs and through its culture. More awareness and more research are required to improve this process of ESD based awareness and integration in school curriculum.

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