

## Teachers' attitude towards education for sustainable development: A descriptive research

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### Article Info

#### Article history:

Received Oct 8, 2021

Revised Oct 7, 2022

Accepted Nov 1, 2022

#### Keywords:

Attitude

Education for sustainable development

High school teachers

Normative survey

### ABSTRACT

Teachers are the torch bearers of sustainable development, promoting social change and maintaining balance between two important concepts development and sustainability. They have a pivotal role in promoting education for sustainable development (ESD) perpetuating social change leading to progressive development and a futuristic growth in the society. ESD is one of the millennium development goals acknowledged globally and need to get practiced widely. Teachers play prominent role in inculcating the knowledge, spreading values, and enriching skills that are needed for sustainability to cope with the change in attributes of workplace. The central theme of the study was to determine the attitude of high school teachers concerning ESD. For this, the normative survey method (N=150) was used to collect data. The data were collected by an attitude scale entitled "ESD attitude scale". This investigation examined teachers' attitude towards ESD based on teachers' gender, subject of teaching, and type of management of the institution. To achieve the objectives of the study, item-based assessment with percentage analysis, t-values and F-values were calculated. Research findings showed that teachers have a favorable attitude towards ESD. Gender and management of the institution were not found to change attitudes towards ESD of high school teachers, whereas the subject of teaching was found to change the same. With these pieces of evidence from the present study, educationalists can reform the existing high school education system for sustainable development.

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## 1. INTRODUCTION

Teachers have got a pivotal role in bringing social change leading to sustainable development and a futuristic growth in the society [1]. Environmental problems have become the front-runner of political and public debate today [2]. These environmental problems include a wide range of global environmental crises like loss of biodiversity, pollution, deforestation, ozone depletion, global warming, and natural calamities. One of the best ways to tackle such imperative environmental problems is to prepare conscious individuals who are equipped with knowledge related to environmental problems [3] and sustainability.

The term 'Sustainable Development' was conceived by the United Nations world commission on environment and development in 1987. In consideration of the Food and Agriculture Organization of the United Nations (FAO), sustainable development is the maintenance and fortification of the natural resources and the adaptation of scientific and technological transformation in such a manner to ensure the accomplishment and persistent satisfaction of human needs for existing and upcoming generations [4].

Sustainable development goals (SDGs) include the existence and welfare of human beings, all other species on the earth, natural resources, and all factors that upkeep life on earth.

Education is a powerful tool in bringing about social changes that result in the sustainable development of a nation. Education for sustainable development (ESD) is a program by the United Nations aiming at an insight into education that empowers individuals of all ages with responsibility for making a sustainable future. Education is the fundamental provision in influencing the approach of the newer generation through ESD by giving prominence to three major aspects of social, environmental, and economic by developing thought for sustainability, which aims to accomplish human needs in the present without disturbing that in the future [5].

ESD enables individuals to transform the way they think and act which leads to a sustainable future. The ESD goal should be perceived in the subject matter and how does it is presented before the learners. The socio-emotional learning associated with sustainable transformation gives competencies in higher education to impart sustainable changes [6]. There is a rising global recognition of ESD as a fundamental element of quality education and a strategic catalyst for sustainable development [7]. So, the focus of the research is to determine the attitude of high school teachers concerning ESD. The 2030 agenda of sustainable development stick on the embedded principles of sustainable development which must be promoted to all levels of education from elementary to university level [8]. The goals of sustainable development depend on various factors like population, environment, resources, and development. These goals are adequately understood and appreciated by the people of the country. So, there is a need to create correct perceptions about the various issues related to sustainable development. This is possible through ESD. Education for sustainable development makes awareness and proper understanding of environmental problems and possible solutions. Teachers especially high school teachers should be able to bridge the gap between theory and practice [9]. The attitude of teachers who give ESD plays a crucial role.

Research in higher education always attracts the area of sustainable development and studies and papers produced in this area a many but many of the studies just gives a detailed explanation of the various policy documents or treatise but studies explaining how this sustainable future can be brought in addressing the hegemony of developmental issues are totally missing [10]. The UN 2030 agenda on SDGs promote inclusive equity, prosperity with the environment, but the interconnectedness of the SDGs and complexity of the goals to be implemented make it difficult to address it as an educational learning outcome so when ESD are reviewed it keeps ambiguity especially when practiced [11]. The area of sustainability and its practice in the society always depend on the instructional designs that teachers use in the classroom to promote ESD, aiming future citizens to take actions for sustainable development [12].

## 2. LITERATURE REVIEW

Education for sustainable development has been a concept in the field of higher education discussing on the ethical attitude of university teachers towards sustainable development [13]. It was not a concept for the teachers from environmental education, biological science, or value education even the teachers of most prestigious science, technology, engineering and math (STEM) disciplines, with the implications of latest conceptual understanding in the ever-changing domains of education with practical applications for the societal growth. Knowledge, teaching experience and attitude are the key components in determining sustainability among teachers even in the case of STEM education [14]. Even in recent years continued discussions are going in the case of implementation of ESD programs. The views expressed by the teachers are against the abstract policies rather they feel comfortable on more specific plan of action and support in meeting the objectives of teaching [15]. Sustainability has been a concept which has wide implications in the higher education domain in terms of outreach and research. Teachers of higher education should prioritize the competencies of ESD [16]. This is because ESD is that form of education with shared understandings for meeting the developmental apprehensions to maintain a futuristic and prospective growth in the society [17]. Emotional awareness, environmental awareness and self-efficacy have very important roles in maintaining sustainability in the education curriculum [18]. Emotions' regarding sustainability becomes one of the important predictors on ESD [19].

Sustainability is a concept which must be inculcated in each domain rather than addressing it directly through a course or programs, because it only inculcates short term effects and lacks consistency [20]. Sustainability has to be introduced in all forms of education starting from kindergarten to higher education through teachers, the discussions on it are normally taking place at higher education level so elementary teachers need to be trained through professional development activities to inculcate ESD in their classroom and for practicing a sustainable lifestyle [21]. Prospective teachers need to demonstrate their attitude towards sustainable development, because they are most influential in training the leaders of tomorrow to maintain a sustainable future [22]. Sustainable structures need to be improved in early childhood education (ECE) leadership to strengthen their quality in human resource, organizational structure, pedagogical understanding, knowledge management, work efficiency and self-leadership [23]. Many a time it

was felt that teacher's awareness on inculcation of sustainable development in their curricula do not get priority which needs to be addressed early [24].

Teachers play an important role in inculcating the knowledge, values, and skills needed for sustainability from childhood to workplace [25]. The teaching of sustainability always forecast sustainability through the growth paradigm which later reflects upon the exacerbating biodiversity loss, negative energy transfer and climate change leading to a major threat to natural resources which in turn will result in social security and leads to tension in the minds of the teachers [26]. Development education and global citizenship education are the two important areas discussed along with sustainable development which focuses on outcome oriented educational interventions to address global sustainability issues [27]. The holistic understanding of the concept of sustainable development was done through the research undertaken in the field of teacher training through an online survey focusing on comparative judgment [28]. ESD provides an understanding on the relationship between issues of sustainable development and the creation of perspectives and values in people from all groups to voluntarily commit themselves to create the sustainable future [29]. The concept of ESD has been taught through policies and programs so there is always a missing link between the empirical studies and gut feelings of the people addresses these issues [30].

ESD is one of the SDGs acknowledged globally. Teachers play an important role in inculcating the knowledge, values, and skills needed for sustainability. It is necessary to determine the attitude of high school teachers towards ESD in the state not in a narrow perspective, but in a broad spectrum for making progress. The following are the research questions formulated by the investigators for this study: i) What is the level of attitude among high school teachers on ESD?; ii) Do gender differences make any changes in the attitude of secondary teachers towards ESD?; iii) What may be the changes brought in the secondary teachers on sustainable development with reference to the difference in their subject?; iv) Does the difference in management create any difference in their attitude to sustainable development?

### 3. RESEARCH METHOD

The study was descriptive research using a normative survey method to describe high school teachers' perspectives on their attitude towards ESD. The variables involved in the present study are: i) Criterion variable: The criterion variable of the study is the attitude towards ESD; ii) Demographic variables: The attitude of high school teachers is intended to analyze based on gender, subject of teaching and type of management.

The population of the study was high school teachers of Kerala State of India. The study group was composed of a total of 150 high school teachers from nine different schools of Kerala who responded to the survey. The stratified random sampling method was chosen as the sampling method in the present study by giving due representation to gender, subject of teaching and type of management of the institution. Table 1 presents the demographic information of the study group. From Table 1, 48% (72) of high school teachers are male and 52% (78) are female. The 34.7% (52) of high school teachers' subject of teaching is language, 30% (45) of that is arts and 35.3% (53) of that is science. Also, 44% (66) of high school teachers are from government schools and 56% (84) are from government aided schools.

The measurement tool used in the present study is an attitude scale entitled "ESD attitude scale" developed by Sağdıç and Şahin [31] with slight modification. It is a five-point Likert-type rating scale with options ranging from strongly disagree (SD) to strongly agree (SA). Strongly disagree (SD) corresponds to a score of '1', disagree (D) equals '2', undecided (U) assigns '3', agree (A) assigns '4' and strongly agree (SA) takes '5'. This scale consists of 32 items and three dimensions as "attitude on implementation of sustainable development", "attitude on limitation of sustainable development" and "attitude on the adequacy of ESD in the education system". The Cronbach Alpha reliability coefficient of the ESD attitude scale was found to be 0.941 which indicates that the scale is reliable to assess high school teachers' attitude towards ESD.

Table 1. Demographic information for the study group

Variables	Groups	No. of high school teachers	Percentage (%)
Gender	Male	72	48
	Female	78	52
Subject	Language	52	34.7
	Arts	45	30
	Science	53	35.3
Type of management	Govt	66	44
	Aided	84	56
Total sample		150	100

#### 4. RESULTS

The responses made by teachers to the attitude scale were examined employing descriptive statistics, percentage analysis and an item-based assessment. To find differences among attitudes based on subsamples, inferential statistics like independent samples t-test, one-way analysis of variance with post hoc method were applied. The statistical significance level was set at 0.05.

High school teachers' attitude towards ESD was examined through an item-based assessment. The percentage of attitude towards ESD among high school teachers was analyzed based on three dimensions-attitudes on implementation, limitations, and the adequacy of ESD. They are presented in Table 2 to Table 4 respectively. Table 2 presents the analysis of the sample in terms of attitude statements. There were 88% of high school teachers have an opinion that ESD can improve students' future decision-making skills, 87.3% of high school teachers believe that they should promote students to link between their personal lives, global environment, and development issues. As many as 84.7% of teachers opined that ESD provides knowledge, values and skills that can be applied in daily life. There were 82.7% of high school teachers reported that students should participate in various projects, global and local programs for sustainability, and 80.6% of teachers stressed that participatory learning and teamwork can improve students' meaningful learning.

Table 2. Percentage of high school teachers' attitude towards implementation of ESD

Sl. No	Statements	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
1	Future decision-making skills of the students	0	3.3	8.7	69.3	18.7
2	Critical thinking skills of the students	1.3	4.7	16	58.7	19.3
3	Teachers' professional repertoire	0.7	6.7	15.3	71.3	6
4	Conceptual understanding of the students	0	12.7	14	60	13.3
5	Meaningful learning of the students by participatory learning and teamwork	0	7.3	12	55.3	25.3
6	Knowledge, skills and values which can be applied in daily life	0	6	9.3	54.7	30
7	With integration at all levels of education	2	10	17.3	50.7	20
8	With teaching topics related to students' daily life	0.7	14	9.3	54.7	21.3
9	By using the available teaching materials in teacher's daily life	2	4.7	14	60	19.3
10	With the collaboration of private sectors, public sectors, and schools	0.7	12	18	54.7	14.7
11	When considering the social and cultural backgrounds of teachers' own country	0.7	10	12.7	52	24.7
12	With placing amongst the goals of each academic course	1.3	10.7	15.3	54.7	18
13	With consideration to it by teachers	1.3	11.3	18	54.7	14.7
14	By giving the right to make suggestions and decisions on matters of ESD for students	0	9.3	20.7	51.3	18.7
15	By establishing a link between their personal lives, the global environment and development issues	0	4.7	8	61.3	26
16	With the sharing of news in print and visual media among students	0	7.3	12.7	48.7	30.7
17	By participating in various projects, global and local programs for sustainability	0	6.7	10.7	60.7	22
18	By using role-play and debates	0	8	12.7	62	17.3
19	By determining students' own subject of study	0	20	23.3	50	6.7
20	By permitting the students openly to discuss the topics	0	8.7	13.3	62.7	15.3
21	By giving information about integrating, it into teachers' own course	4.7	8.7	11.3	59.3	16

In contrast to the dimensions in Table 2 and Table 3 (implementation of ESD), the teacher's response was concentrated on the choices of disagreeing and strongly disagreeing. There were 70.7% disagreed that the integration of sustainable development in the secondary education curriculum decreases students' motivation. The 66.7% of high school teachers opposed that teachers' integration of ESD in their lessons causes a waste of time. The 62.7% contradicted that ESD is an unrealistic educational approach. More than 50% of high school teachers opposed the difficulty to implement ESD, understanding ESD issues by students and integrate ESD in their own academic field.

There were 68.7% of high school teachers disagreed that textbook activities are sufficient for ESD. Majority of the teachers denied the sufficiency of education and curriculums in high schools to improve students' awareness about sustainable development and they refused that they are adequately informed about ESD. Descriptive statistics like mean, median, mode, standard deviation, variance minimum and maximum attitude scores were calculated from the collected data so that important properties of a good distribution can be ensured. The attitude of high school teachers towards ESD is identified in the framework of the study.

Table 3. Percentage of high school teachers' attitude towards limitations of ESD

Sl. No	Statements	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
1	A controversial area to be taught in secondary education	6	42.7	26.7	23.3	1.3
2	An unrealistic educational approach	10	52.7	19.3	18	0
3	Reduces students' motivation	22.7	48	16.7	10	2.7
4	Difficult to integrate into teachers' own academic field	16	42	16.7	20.7	4.7
5	Difficult for students to understand	9.3	46	25.3	16.7	2.7
6	Difficult to implement	15.3	43.3	19.3	18.7	3.3
7	A waste of time when teachers integrate it into their lessons	18.7	48	18	13.3	2

Table 4. Percentage of high school teachers' attitude towards the adequacy of ESD

Sl. No	Statements	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
1	Sufficient to improve students' awareness of sustainable development	23.3	32	19.3	21.3	4
2	Sufficient with textbook activities	22	46.7	16	11.3	4
3	Sufficient in curriculum	19.3	34.7	20.7	19.3	6
4	Adequately informed to high school teachers	29.3	24.7	14	25.3	6.7

Table 5 shows the total number of samples is 150, values of mean, median, mode are 115.41, 117, and 129 respectively. The standard deviation and variance of the total score of attitudes are 17.67 and 312.32. The nature of the distribution is symmetrical and follows a normal distribution. Based on the scores obtained, the total sample was classified into high, moderate and low groups. The conventional procedure of S.D distance from mean "M" was used for finding the level of attitude towards ESD. For this, the teachers who got around score (M+1SD) and above are treated as high-level group and teachers who got around score (M-1SD) and below are treated as low-level group. The scores obtained between these two scores are considered as an average group. The mean and standard deviation of the total score of attitudes are 115.41 and 17.673. If the attitude score is lying above M+SD (133.083) attitude is high, if it is lying between M-SD and M+SD (97.737 and 133.083) attitude is considered as moderate and if the score is lying below M-SD (97.737) attitude is low. The mean score of the attitude of the sample is 115.41 which lies between 97.737 and 133.083. Therefore, the attitude of high school teachers towards ESD is moderate as presented in Table 6.

Table 5. Descriptive statistics of the variable -attitude towards ESD

Descriptive statistics	
N	150
Mean	115.41
Median	117.00
Mode	129
Std. deviation	17.673
Variance	312.323

Table 6. The level of attitude of high school teachers towards ESD

Level of attitude	Frequency	Percent
Low	25	16.7
Moderate	111	74.0
High	14	9.3
Total	150	100

Table 6 discloses the levels of the attitude of high school teachers. It is clear from the table that 16.7% of high school teachers have a low attitude, 74% (N=111) of high school teachers have a moderate attitude towards ESD and 9.3% of high school teachers have a high attitude. Analysis based on research question 2. Independent samples t-test was used to examine the attitude among male and female high school teachers. In the study, the dependent variable attitude towards ESD is measured at the interval level of measurement and approaches a normal distribution. The independent variable is dichotomous. It consists of two groups; gender: male and female and paired observations. The sample size is large and met the assumptions for the independent t-test. The variances of both groups under comparison are significantly different ( $F=10.18$ ,  $p=.002 < 0.05$ ) and thus homogeneity of variances is violated. Therefore, the results of the independent t-test for unequal variances are reported. The result of the analysis is shown in Table 7.

Table 7. High school teachers' attitude towards ESD based on gender

Gender	N	Mean	Std. deviation	Calculated t-value	p-value	Remarks at 5% level
Male	72	112.47	20.030	1.95	.053	Not significant
Female	78	118.12	14.797			

Table 7 includes 72 male and 78 female high school teachers. The mean for males is 112.47 and the standard deviation is 20.03. For females, the mean is 118.12 and the standard deviation is 14.8. The significant value of  $p=.053$  is greater than 0.05 at the 0.05 alpha level. Also, it is observed that the calculated t-value of 1.95 is less than the critical value of 1.96 at 0.05 level. This implies that the difference in attitude mean score of male and female high school teachers under consideration is not significant at the 0.05 level. This means that the null hypothesis is not rejected. By implication, the stated null hypothesis was established that there exists no significant difference in the mean scores of attitudes towards the ESD between male and female high school teachers.

The data were analyzed using one-way ANOVA to examine the attitude of high school teachers based on their subject of teaching language, arts, and science. A sample size of 150 exceeded the minimum requirement for a one-way ANOVA. Data were inspected for normality and homogeneity of variances and satisfied assumptions for one-way ANOVA. The result of the analysis is shown in Table 8. The table shows that the F ratio is 35.534 with a p-value of 0.001, which is smaller than the alpha of 0.05. This implies an overall significant difference in the mean attitude score of high school teachers towards ESD based about teaching at the 0.05 level and the null hypothesis is rejected.

Table 8. The attitude of high school teachers based on their subject

Source of variance (Subject)	Sum of squares	df	Mean square	F value	p-value	Remarks at 5% level
Between groups	15165.959	2	7582.979			
Within groups	31370.235	147	213.403	35.534	.001	Significant
Total	46536.193	149				

The Scheffe test was used as a post hoc test to find which of the paired mean scores differ significantly. Descriptive statistics of high school teachers' attitude based about teaching are given in Table 9. This table reflects that the mean attitude score of high school teachers with the subject of teaching as language, arts and science are 101.67, 121.33 and 123.85 respectively. The results of the post hoc test are given in Table 10.

Table 9. Descriptive statistics -attitude of high school teachers based on their subject

Subject	N	Mean	Std. deviation
Language	52	101.67	20.318
Arts	45	121.33	9.190
Science	53	123.85	11.267

Table 10. Results of post hoc test - attitude towards ESD based on the subject

Variables	Mean difference	p-value	Remarks at 5% level
Language and arts	-19.660	.000	Significant
Language and science	-22.176	.000	Significant
Arts and science	2.516	.698	Not significant

Examination of the Scheffe post hoc analysis reveals that the two mean comparisons are significantly different. There is an average difference of -19.66 in the attitude of high school teachers with the subject of teaching language and arts and of -22.176 for language and science. Among the three pairs, language and arts; language and science are significantly different. On the other hand, no significant difference was detected between arts and science concerning their attitude (mean difference=2.52). The mean score for high school teachers with the subject of teaching language is considerably lower than the mean scores of arts and science teachers. The graph also shows that the mean score for arts is slightly lower than the mean score for science.

The data were analyzed using independent samples t-test. The dependent variable attitude towards ESD is measured at the interval level of measurement and approaches a normal distribution. The independent variable consists of two groups and paired observations with large sample size. The variances of both groups

under comparison are equal ( $F=.38, p=.54 > 0.05$ ) and thus have homogeneity of variances. The data met all assumptions for the independent t-test. The result of the t-test is as shown in Table 11.

Table 11. The attitude of high school teachers based on their management of institution

Type of management	N	Mean	Std. deviation	t-value	p-value	Remarks at 5% level
Govt	66	118.39	16.613	1.850	.066	Not significant
Aided	84	113.06	18.217			

It is inferred from Table 11 that, out of the total 150 samples, 66 teachers are from government and 84 teachers are from government-aided high schools. The mean for teachers from government high schools is 118.39 and the standard deviation is 16.61. The mean score for teachers from aided schools is 113.06 and the standard deviation is 18.217. The calculated t-value of 1.85 is less than the table value 1.96 and the p-value 0.066 is greater than 0.05 at the 0.05 alpha level. Hence the respective null hypothesis is accepted. Thus, the result shows that no significant difference between mean scores of attitudes towards ESD based on the type of management of their institution.

The study had given very significant results on ESD. 88% of the teachers had an opinion that ESD can improve student's future decision making skills. There were 70.7% of teachers disagreed on the opinion that integration of ESD in the curriculum decreases the students' motivation. As many as 68.7% of teachers disagreed that textbook activities are sufficient for ESD. On the other hand, study gives a very significant result that high school teachers are very much favorable to ESD. Since high school teachers represent a broad class of teaching community, 74% of them have moderate attitude towards ESD. When the attitude of high school teachers was compared based on their subject, it was found that their mean scores differ significantly. Teachers from languages and arts and from languages and science showed a significant difference in their mean scores on the attitude towards ESD. When the teachers from different institutions were compared on the attitude towards ESD it showed that there is no much difference in the attitude.

## 5. DISCUSSION

The current study investigated the teachers' attitudes towards ESD for the total sample and subsamples. Teachers are welcoming the inclusion of ESD in the curriculum [17]. The study revealed that 201 teachers have a favorable attitude on the implementation of ESD even though they face some limitations and inadequacies on ESD. The study suggests that attitudinal change should be considered an integral part of ESD. As attitudes are based on beliefs, they can be changed when presented with new information. ESD is affecting teacher education students in various levels of their training programs [32]. Therefore, teacher training institutions should also make scrupulous efforts to equip the future teachers not only with teaching skills but also promotion of positive attitude towards ESD.

Diversity of ESD research is happened between 1992 to 2018, where studies given a detailed understanding on the critical contributions of the past in ESD, transformative ideas and emerging trends in ESD research which brought a critical understanding that the area has been much explored through collaborative research from different cultures of the world [33]. There were high impact documents scholars and researchers who have given an intellectual structure of ESD through their intense research in this area [34]. The study on ESD had found plethora of research emerging in this field but lack practical approaches to give clarity framework blending with the developmental perspective of the society.

The findings of the present study proved that teachers had a favorable attitude towards ESD. The study suggests that attitudinal change should be considered an integral part of ESD. This finding helps government to take initiative to introduce more activities in the curriculum related to sustainable development. Integrating ESD can lead towards minimizing pollution, protecting biodiversity, and lessening deforestation. The findings further emphasize that teacher education programs give prominent space for teaching sustainability. Integrating ESD helps in leading an eco-friendly life. Teachers are powerful agents who can make changes in society through their knowledge transfer and so the attitude of teachers towards ESD plays a significant role. Teacher education must meet this challenge by reorienting itself towards ESD. Although the overall attitude of teachers towards ESD is favorable, the level of attitude is moderate. To enhance the attitude level of teachers, the teacher education programs must set up a broader outlook to promote sustainable development. Therefore, teacher training institutions should also make scrupulous efforts to equip the future teachers not only with teaching skills but also promotion of positive attitude towards ESD.

Disaster risk reduction education also addresses sustainability issues through the application of adaptive capacity which is further strengthened by a pedagogical design introducing phonetic approach to sustainable learning [35]. Massive open online learning (MOOCs) reflects 17 SDGs, which cover almost all SDGs but there are very important concepts which are missing in the curricula like zero hunger and peace, justice, and strong institutions [36]. Action research, augmented reality, serious games, multi core project-based learning; group model building are the curriculum based pedagogical practices to promote ESD [8]. ESD almost resembles with the value education. It is how teachers promote, connotes sustainability issue as value-oriented practices that keep in their personal lives and in professional spheres [37]. The constructivist conception in teaching varies in actual practice is only because of the difficulty to understand it meaningfully [38]. The subject of teaching has emerged as a major influencing factor on overall attitude towards ESD and creating instructional designs. This implies for the curriculum planners to restructure the curriculum of sustainability synthesizing the conceptual understandings and practice effectively.

Based on the findings of the study, the following were recommended for improvements. In a techno-driven society, the curriculum demands different pedagogies, and these pedagogies differ according to content, and technology brings sustainability in knowledge or education. The usability of strategies based on technological pedagogical content knowledge (TPCK) should be adopted in schools. The government should encourage proper teacher training for ESD in high school education, the high school curriculum should be remodelled with the practical implications of sustainable development. Teacher training programs should be restructured with the sustainable and futuristic thoughts so that curriculum transaction resonates with the changing demands of the society. The teacher training poses a new question as whether we need a new model or a developed existing model in case of ESD [39] in that case prospective teachers should be trained to teach sustainable development effectively.

In the case of pre-service teachers' various action projects on sustainable development are to be assigned with outcome-based strategies. Teachers should be oriented to the theory and practice associated with sustainable development to implement it effectively and should be incorporated in the curriculum for teacher training. International declaration to commit for sustainability by the universities has been signed but none of them came effectively in curriculum [16]. So, the first change should happen in the case of curriculum restructuring fostering sustainability, the policymakers should integrate ESD into all school subjects so that there can be uniformity in the curriculum to address sustainability and teachers should adopt effective attitudes towards ESD while teaching the students to bring about improved students' performance. All teachers irrespective of their subject of teaching should be provided with opportunities to take part in environmental projects and have a detailed perception on environmental sustainability [40]. Finally detailed and elaborate conceptual understandings focusing on systemic approach in sustainability has to be developed and published for learners across all domains. The 2030 agenda on ESD gives a semantic understanding on the emergence, efficacy, and eminence of the concept sustainable development [41]. The paradigm shift in sustainable practices can be brought in through this conclave.

## 6. CONCLUSION

The study on teachers' attitudes toward education for sustainable development has given a clear indication that teachers are favorable to implementing ESD through a well-structured curriculum, specifically designed teaching materials, and clearly specified instructional strategies. The study was focused on the attitude of high school teachers which represents a large group from the entire group of teachers and more than that they handle adolescent students who can be nurtured and specifically groomed to keep a positive attitude toward sustainable development and holistic growth of the society. Results of the study found that the teachers' mean scores of attitudes towards ESD do not vary significantly by gender and type of institution. Teachers with the subject of teaching language and arts: language and science show a significant difference in attitude towards ESD. One of the most significant contributions of the study was that the absolute majority of the teachers keep a moderate attitude towards ESD and those others were either confused about the practices or ignorant of the methodologies to promote sustainable development or were ambiguous to visualize effective and concrete changes in the society on sustainable development. Finally, the study was very effective in providing a clear perspective and sustainable pathway for teachers in promoting ESD.

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