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## **Effects of Digital Environmental Photography and Video on the conceptual Knowledge, Skills and Eco-friendly Habits of Students**

**Ananta Kumar Jena<sup>1</sup>**  
**Rajib Debnath<sup>2</sup>**  
**Joy Das<sup>3</sup>**  
**Somnath Gupta<sup>4</sup>**  
**Satarupa Bhattacharjee<sup>5</sup>**

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### **Abstract**

The study aimed to assess the effects of digital environmental photography and video on the conceptual knowledge, skills and eco-friendly habits of the elementary students over the traditional approach. 30 students of Class VIII of school I participated in the control group, and 20 students of class VIII students of school II assigned for digital environmental photography and video treatment. Non-equivalent pre-test posttest quasi-experimental design used and the effects of digital environmental photography and video on the conceptual knowledge, skill and habit of students over traditional approach assessed through ANCOVA and regression analysis. It resulted that there was statistically significant difference in the mean conceptual knowledge, skill and competency, and eco-friendly habit score of the participants of digital environmental photography and video group over the traditional group.

Keywords: conceptual knowledge, digital environmental photography, skills eco-friendly habits, video

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<sup>1</sup> Assam University

<sup>2</sup> Assam University

<sup>3</sup> Assam University

<sup>4</sup> Assam University

<sup>5</sup> Assam University

## **Introduction**

Recently, environmental education is not limited with the chalk and duster approach. With the development of the science and technology, classrooms reconstructed and installed with smart technologies, facilitated with informative software. In fact, teachers are using technology in the classroom interaction and activities. In the teaching of social studies, environmental education and geography, digital photography and video used to change the conceptual knowledge, skill and habits of the elementary school students. The present scenario of environmental pollution and its affect on the climate and weather is panic. That is why the researcher is interested to assess the effects of digital environmental photography and video on the benefit of the learners. Not only that, but also it helps to modify eco-friendly awareness, attitudes, values, actions and knowledge of ecology, skills and competencies, habits and all the ethical responsibilities among the elementary school students (Power, 2016). Environmental Education should administer separate goals for separate learning subjects. At the elementary school level, students can perceptually appreciate and comprehend how rich and colourful the environment is (Xuehua, 2014). Digital environmental photography and video could help to build critical thinking and relationship skills and demonstrate better academic performance across the curriculum, and is now the enriching way for both students' and teachers' to connect their own appreciation of the natural world to academics (Apgar, Jankovic, Astbury, Huddart, & Rosset, 2006). With digital environmental photography and video, students of elementary schools can improve their study habits and all types of knowledge, skills, attitudes, ethics, values and habits. Not only that, but also EE offer opportunities for experiential learning outside of the classroom, it enables students to make connections and apply their learning in the real world.. Digital environmental photography and video helps learn to see the learners' connectedness of social, cultural, political, economical, ecological and ethnic issues. Using digital environmental photography and video on the conceptual knowledge, skills and eco-friendly habits, the students of elementary schools can involve more and more effectively and interestingly in their study of Environmental Education.

### *Digital Environmental Photography and Video*

Digital environmental photography and videos has been designed to provide specialist skills using photographic and digital imaging including videos processes and technology relevant to contemporary and commercial practice.

Digital environmental photography and video involves more than the mere ability to use digital cameras or operate a digital device; it includes a big variety of complex cognitive, psychomotor, sociological and emotional skills and competencies, which users need in order to function effectively in digital environments. The tasks required meaningful materials from existing ones (such as environmental pictures on an elementary environmental education book). "Digital photography and video may be used as a measure of the quality of learners' work in digital environments" (Alkalai, 2004). Digital technologies are growing now day-by-day. In this regard, students of elementary schools also need to grow according to their emotional and mental growth that is why digital photography and videos takes important place in the subject Environmental Education. The focus of digital photography and video is to expose students to the actual environment they live in. They have to be acquainted with the environment related issues and problems. Through these students can link their conceptual knowledge, skills and eco-friendly habits with real life situations. By using the digital environmental photography and video students can develop, their knowledge more about environment and it can create more interest about environmental education. Digital environmental photography and videos are significantly important to all elementary school students for learning about the environment, learning through the environment implying a variety of activities, and by developing their conceptual knowledge, skills and improve their eco-friendly habits among elementary school

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students. The goal of use digital environmental photography and video need to focus not only on conceptual knowledge, skills and habit but more importantly on generating awareness, developing attitudes, values and skills, and promoting participation and action among children at all levels of school education (Furner & Marinas, 2013).

### *Change of Conceptual Knowledge, Skills and eco-friendly Habits on Environment*

Environmental Education is an essential component of all programmes and courses of the existing education system (Jena, 2011). Bartosh (2003) determined the impact of environmental education (EE) programmes on student achievement in traditional subjects such as mathematics, reading and writing, and traditional curricula and analyse their teaching and learning environments. De LaVega (2004) found there were statistically significant differences among the school students, and the parents' in their awareness, knowledge and attitude towards environmental issues. Measures have been used successfully to established education as a useful tool for the conservation of environmental towards sustainable development (Howe (2009). Not only that but also environmental education is needed to be clear about ideological and theoretical positions, the significance of context, and the freedom of learners (Katayama, 2009). The effects of arts, science and commerce streams, and gender on twelfth grade students' environmental awareness and environment related behaviour in Kolkata was investigated, and analyzed through One-Way ANOVA found that the scores of the boys and girls did not differ significantly in case environmental behaviour (Sengupta, Das & Maji (2010). Similarly, Jena (2011) found that there was a significant relationship between multimedia, observation and demonstration with hands-on experience, field visit and community participation with the environmental awareness of university students. Active teaching and learning approach is more effective in facilitating environmental education for sustainable development among schoolchildren (Alexandar and Poyyamoli, 2014; (Hanneman, 2013).

Conceptual knowledge refers a student's ability to reason in settings involving the careful application of concept definitions, relations, or representations of knowledge. (Star & Stylianides, 2013.). Change of Conceptual knowledge can be integrated in to Environmental Education at least three ways: These are; (1) Teaching environmental Education, (2) Learning environmental education, and (3) learning how to teach environmental education. A skill is an ability to perform an activity in a competent manner and habit does not suggest that they are creatures of steady routines. (Kilpinen, 2012). In this regard, Environmental education becomes a programme intended to lead the development of a society that helps to change of conceptual knowledge, skills and habits of the people (Denis, Williams, Dunnamah, Tumba, 2015).

### *Significance of using Digital Environmental Photography and Video in Learning*

Now institutions are trying to introduce digital environmental photography and video in the general classroom. The teachers can connect the hyperlinks to show the video directly in the classroom or can provide the digital photography related to environmental issues could motivate learner to change their conceptual knowledge, skill and eco-habits. Lee (2014) found Digital Photography could be used in fieldtrip or in any other outdoor learning to learn many times. Spencer (2012) explored the relationship between digital photography with children's connectedness to nature found students had a strong connectedness to nature more-better after instruction. Farnsworth (2011) found professional conservation photographers could provide more knowledge to the elementary students. Wesson (2011) found connecting children to nature by using technology could provide knowledge, skill and scientific development of eco-habit. Grimmette (2014) found environmental education has significant effect on school curriculum. Similarly, Rivet and Schneider (2004) found digital photography could enhance students' inquiry in a local ecosystem. Jena (2011) found multimedia has a significance relationship with environmental awareness. Sengupta and Maji (2010) found environmental awareness could be developed through education and practice. Conceptual knowledge could be cleared through environmental education. Panth (2011) found that environmental education through technology

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could disseminate knowledge, skill, value regarding environment. It is very difficult to predict how technology could enhance students' conceptual change of knowledge, skill and eco-habits. That is why the present study is undertaken. Question raised whether environmental education affects the conceptual knowledge of the elementary school learners, if so, then what much it is effective over traditional approach? Are the learners really practicing eco-friendly habits both inside and outside the school?

### **Objectives**

1. To study the effects of Digital Environmental Photography and Video on the Conceptual Knowledge of the Elementary students over traditional approach.
2. To study the effects of Digital Environmental Photography and Video on the Skills and Competencies of Elementary students over traditional approach.
3. To study the effects of Digital Environmental Photography and Video on the Eco-friendly Habits of the Elementary students.

### **Hypotheses**

H<sub>1</sub> There is significant effects of digital environmental photography and video on the conceptual knowledge of the elementary students over traditional approach.

H<sub>2</sub> There is significant effects of digital environmental photography and video on the skills and competencies of the elementary students over traditional approach.

H<sub>3</sub> There is significant effects of digital environmental photography and video on the eco-friendly habits of the elementary students over traditional approach.

### **Methodology**

#### ***Participants***

Fifty Class VIII students of two schools were randomly selected from North Tripura District of India. However, the whole class VIII students of two schools were the participants of the study. Class VIII of school I having (n=30) students age ranged 13.2-13.9, mean 13.5 and SD 5.6 was counted as the traditional group and class VIII of school II having (n=20) students, age ranged 13.3-13.8, mean 13.5 and SD 5.7 was assigned for digital environmental photography and video treatment.

#### ***Design of the Study***

Non-equivalent pre-test posttest quasi-experimental design was used to assess the effects of digital environmental photography and video on the Conceptual Knowledge, Skill and Habit of Students over traditional approach. For that purpose, two classes VIII of two elementary schools was randomly selected in Dharmanagar, North Tripura, India. The samples of two schools were not equivalent in age, gender, intelligent and maturity. Class VIII students of School 1 was treated in traditional approach and students of School 2 treated with digital environmental photography and video. One unit of environmental study of class eight is based on man-made pollution and its control was selected for intervention to experimental and control group where online video and offline digital photography used for the classroom intervention, but no such treatment was provided to the traditional group. Extraneous variables were controlled by ANCOVA and regression analysis.

#### **3.3.0 Instrumentation**

##### ***Pollution and Waste Management Test***

Pollution and Waste Management Test (Jena & Debnath, 2016) was an objective based multiple-choice test constituted with 30 items with 4 options each. All the items were equally weighted having 3 powerful distractors and one correct option. This test contained the items

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regarding pollution and its type, type of waste and management of wastes those concepts were the part of the curriculum. Content Validity (CVR=.83) and the test-retest reliability and Cronbach Alpha was .84 and .85 respectively. Maximum 10-12 minutes, the participants took to response the whole items.

### ***Environmental Skill Test***

Jena & Debnath, 2016 developed the Environmental Skill Test and used to assess the participants' skill on waste management. This tool has 30 items having 5-Point Likert type options, like frequent, seldom and often. The Content Validity (CVR=.84), test-retest reliability .85 and Cronbach Alpha reliability .87, maximum 10-12 minutes need to response the whole items.

### ***Environmental Habit Test***

Environmental Habit Test (Jena & Debnath, 2016) used to assess participants eco-friendly habit on waste management. This scale has 30 items having 5-Point Likert type options, like strongly agree, agree, undecided, strongly disagree, disagree. Content validity of the test found .83, test-retest reliability and Cronbach Alpha was.86 and .89 respectively. Maximum 10-12 minutes participants took to response the whole items.

### **Procedure of Experiment**

#### *Activity I Digital Environmental Photography on conceptual knowledge, skills and habit of environment*

Digital Environmental Photography group was counted as the experimental group, and the traditional group was treated with Traditional lecture. Two weeks instruction was provided to both experimental and control group. The researchers have used 350 digital photograph used in the class to aware the students regarding the concept, skills and habits of environment, ecology, pollution, solid waste management, health and hygiene (see photograph 1, 2, 3, 4,5 & 6).

Photograph 1 concept of solid waste



Photograph 2 concept of CO<sub>2</sub>



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Photograph 3 Skill of observing Diwali



Photograph 4 Effective hand washing skill



Photograph 5 habit of hand washing



Photograph 6 habit of tree plantation



*Activity II Video on conceptual knowledge, skills and habit of environment*

Video on conceptual knowledge, skills and habit in change of environmental *knowledge, skills and eco-friendly habit of the environment* was visualized to the experimental group but the traditional group was treated with traditional lecture. 50 online and offline videos used to aware the students regarding the concept, skills and habits of environment, ecology, pollution, solid waste management, health and hygiene (*see* offline video 1 & 2). Along with these online videos were visualized to aware the participants. Following hyperlinks were used during the activity.

1. [https://wapmon.com/video-dl/proper-handwashing-procedures/v\\_Sf0Degh90/](https://wapmon.com/video-dl/proper-handwashing-procedures/v_Sf0Degh90/)

2. <https://wapmon.com/video-dl/this-video-will-make-u-to-thro/4roaMdWup0R/>

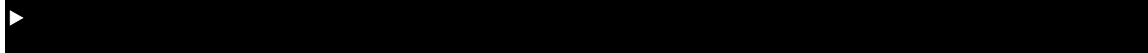
3. [Strategies to Control Environmental Pollution - YouTube](#)

▶ 1:13

<https://www.youtube.com/watch?v=3A4BFMjJtYo>

4. [Wooden lacing toy, educational eco friendly toy, learning organic toy ...](#)

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<https://www.pinterest.com/pin/521643569321363391/>

5. [Quiet Book, eco-friendly activity book \(2 -4 years old - Fine motor skills ...](#)



[https://www.youtube.com/watch?v=3X6eaV-q\\_dg](https://www.youtube.com/watch?v=3X6eaV-q_dg)

6. [Eco Friendly Habits & Products | How to Produce Less Waste - YouTube](#)



[https://www.youtube.com/watch?v=ykgiQ\\_c9u98](https://www.youtube.com/watch?v=ykgiQ_c9u98)

7. [What eco friendly habits make up your daily routine? - Goodnet](#)



[www.goodnet.org](http://www.goodnet.org) > PLANET

Video 1 solid waste management

Video 2 tree plantation habit



Before instruction pre-test on conceptual knowledge, skill and habit was administered to both the group, and after instruction post-test on conceptual knowledge, skill test and habit test was administered. ANCOVA used to analyse and interpret the data to draw the conclusion

### **Analysis and Results**

The effect of Digital Environmental Photography and Video on the Conceptual Knowledge, Skills and Habits of secondary school students was assessed through Pollution and Waste Management Test, Skill Test and Environmental Habit Test. SPSS used in the Analysis of Covariance to assess the effect of independent variable on dependent variables. ANCOVA is the extended statistics of ANOVA where experimental manipulation and the effects of extraneous variable minimized through covariates. Not only that ANCOVA assessed the within group error variance and eliminated the confounding variables.

**H<sub>1</sub> There is significant effects of Digital Environmental Photography and Video on the Conceptual Knowledge of the Elementary Students over Traditional Approach**

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Table 1.1 Mean and SD of Conceptual Knowledge of Traditional group and Digital Environmental Photography and Video group

Group	N	Mean	Std. Deviation
Traditional Group	30	17.23	3.245
Digital Environmental Photography and Video Group	30	24.00	2.853
Total	60	20.62	4.563

Table 1.2 ANCOVA of Conceptual Knowledge of Traditional group and Digital Environmental Photography and Video group.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	689.968 <sup>a</sup>	2	344.984	36.536	.000
Intercept	381.495	1	381.495	40.402	.000
Group	497.922	1	497.922	52.733	.000
Pretest	3.151	1	3.151	.334	.566
Error	538.215	57	9.442		
Total	26731.000	60			
Corrected Total	1228.183	59			

a. R Squared = .562 (Adjusted R Squared = .546)

Table 1.3 Estimated marginal mean and Standard error of Traditional group and Digital Environmental Photography and Video group

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Traditional Group	17.355 <sup>a</sup>	.599	16.155	18.555
Digital Environmental Photography and Video Group	23.878 <sup>a</sup>	.599	22.678	25.078

a. Covariates appearing in the model are evaluated at the following values: Pretest = 13.53.

Table 1.4 Bonferrone Multiple Comparison.

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>
Traditional Group	Digital Environmental Photography and Video Group	-6.523*	.898	.000
Digital Environmental Photography and Video Group	Traditional Group	6.523*	.898	.000

Table 1.1 reveals the Mean and SD of Conceptual Knowledge of Traditional group and Digital Environmental Photography and Video group. Traditional group of Conceptual Knowledge Mean (17.23) and SD (3.245) was lower than the Digital Environmental Photography and Video group Mean (24.00) and SD (2.853). The Mean difference was higher because of Digital Environmental Photography and Video intervention over Traditional group. Univariate Analysis of Covariance used to analyse the mean difference between pretest and post test score of Traditional and Digital Environmental Photography and Video intervention for Change of Conceptual Knowledge. Here pretest of both Traditional and Digital Environmental Photography and Video group was used as covariate. Post-test of both the groups was the dependent variable and after the intervention to both the group, the effect was assessed to know the differential effect of two different interventions. Here, pretest used as the covariate to minimize the effect of intervening variables. History, testing, maturation, regression, instrumentation like extraneous variables was minimised through the covariates and regression model. The ANCOVA value  $F=DF \ 2/57 \ 52.733 \ p<.05$  was significant and  $R^2 =.562$  and adjusted  $R^2 =.546$ . The descriptive statistics reveals the mean of Traditional and Digital



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Environmental Photography and Video group was 17.23 and 24.00 but after the use of pretest as the covariate in the univariate analysis of covariance the estimated marginal means was 17.355 for Traditional group and 23.878 for Digital Environmental Photography and Video group. This was because of pretest (13.53) covariate appearing in the model evaluated. Table 1.4 reveals Bonferrone Multiple Comparison for mean estimating the mean difference between Traditional and Digital Environmental Photography and Video group. The mean difference between Digital Environmental Photography and Video group and Traditional group was 6.523  $p < .05$  was statistically significant. This is because of Digital Environmental Photography and Video intervention among the participants over the Traditional group.

**H<sub>2</sub> There is significant effects of Digital Environmental Photography and Video on the Skills and Competencies of the Elementary Students over Traditional Approach.**

Table 2.1 Mean and SD of Skills and competencies of Traditional group and Digital Environmental Photography and Video group.

Group	N	Mean	Std. Deviation
Traditional Group	30	15.60	1.905
Digital Environmental Photography and Video Group	30	22.43	1.675
Total	60	19.02	3.877

Table 2.2 ANCOVA of Skills and competencies of Traditional group and Digital Environmental Photography and Video group

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	717.644 <sup>a</sup>	2	358.822	120.781	.000
Intercept	209.090	1	209.090	70.380	.000
Pretest	17.228	1	17.228	5.799	.019
Group	464.829	1	464.829	156.463	.000
Error	169.339	57	2.971		
Total	22585.000	60			
Corrected Total	886.983	59			

a. R Squared = .809 (Adjusted R Squared = .802)

Table 2.3 Estimated marginal mean and Standard error of Traditional group and Digital Environmental Photography and Video group

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Traditional Group	15.879 <sup>a</sup>	.335	15.207	16.550
Digital Environmental Photography and Video Group	22.154 <sup>a</sup>	.335	21.483	22.826

a. Covariates appearing in the model are evaluated at the following values: Pretest = 13.35.

Table 2.4 Bonferrone Multiple Comparison.

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>
Traditional Group	Digital Environmental Photography and Video Group	-6.276*	.502	.000
Digital Environmental Photography and Video Group	Traditional Group	6.276*	.502	.000

Table 2.1 reveals the Mean and SD of Skills and competencies of Traditional group and Digital Environmental Photography and Video group. Traditional group of Skills and competencies mean (15.60) and SD (1.905) was lower than the Digital Environmental Photography and Video

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group Mean (22.43) and SD (1.675). The Mean difference was higher because of Digital Environmental Photography and Video intervention over Traditional group.

Univariate Analysis of Covariance used to analyse the mean difference between pretest and post test score of Traditional and Digital Environmental Photography and Video intervention for Skills and competencies. Here, pretest of both Traditional and Digital Environmental Photography and Video group was used as covariate. Post-test of both the groups was the dependent variable and after the intervention to both the group, the effect was assessed to know the differential effect of two different interventions. Here, pre-test used as the covariate to minimize the effect of intervening variables. History, testing, maturation, regression, instrumentation like extraneous variables was minimised through the covariates and regression model. The ANCOVA value  $F=DF \ 2/57 \ 156.463 \ p<.05$  was significant and  $R^2 =.809$  and adjusted  $R^2 =.802$ . The descriptive statistics reveals the mean of Traditional and Digital Environmental Photography and Video group was 15.60 and 22.43 but after the use of pretest as the covariate in the univariate analysis of covariance the estimated marginal means was 15.879 for Traditional group and 22.154 for Digital Environmental Photography and Video group. This was because of pretest (13.35) covariate appearing in the model evaluated. Table 1.4 reveals Bonferrone Multiple Comparison for mean estimating the mean difference between Traditional and Digital Environmental Photography and Video group. The mean difference between Digital Environmental Photography and Video group and Traditional group was 6.276  $p<.05$  was statistically significant. This is because of Digital Environmental Photography and Video intervention among the participants over the Traditional group.

**H<sub>3</sub> There is significant effects of Digital Environmental Photography and Video on the Eco-friendly Habits of the Elementary Students over Traditional Approach.**

Table 3.1 Mean and SD of the Eco-friendly Habits of Traditional group and Digital Environmental Photography and Video group.

Group	N	Mean	Std. Deviation
Traditional Group	30	56.67	6.604
Digital Environmental Photography and Video Group	30	67.73	11.730
Total	60	62.20	10.963

Table 3.2 ANCOVA of Eco-friendly Habits of Traditional group and Digital Environmental Photography and Video group

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1838.253 <sup>a</sup>	2	919.126	9.973	.000
Intercept	4769.345	1	4769.345	51.748	.000
Pretest	1.186	1	1.186	.013	.910
Group	1832.165	1	1832.165	19.879	.000
Error	5253.347	57	92.164		
Total	239222.000	60			
Corrected Total	7091.600	59			

a. R Squared = .259 (Adjusted R Squared = .233)

Table 3.3 Estimated marginal mean and Standard error of Traditional group and Digital Environmental Photography and Video group

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Traditional Group	56.655 <sup>a</sup>	1.756	53.139	60.171
Digital Environmental Photography and Video Group	67.745 <sup>a</sup>	1.756	64.229	71.261

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a. Covariates appearing in the model are evaluated at the following values: Pre-test = 39.37.

Table 3.4 Bonferrone Multiple Comparison of mean and Standard error of Traditional group and Digital Environmental Photography and Video group

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>
Traditional Ggroup	Digital Environmental Photography and Video Group	-11.090*	2.487	.000
Digital Environmental Photography and Video Group	Traditional Ggroup	11.090*	2.487	.000

Table 3.1 reveals the Mean and SD of Eco-friendly Habits of Traditional group and Digital Environmental Photography and Video group. Traditional group of Eco-friendly Habits Mean (56.67) and SD (6.604) was lower than the Digital Environmental Photography and Video group mean (67.73) and SD 11.730. The Mean difference was higher because of Digital Environmental Photography and Video intervention over Traditional group. Univariate Analysis of Covariance used to analyse the mean difference between pretest and post test score of Traditional and Digital Environmental Photography and Video intervention for Change of Eco-friendly Habits. Here pre-test of both Traditional and Digital Environmental Photography and Video group was used as covariate. Post-test of both the groups was the dependent variable and after the intervention to both the group, the effect was assessed to know the differential effect of two different interventions. Here, pre-test used as the covariate to minimize the effect of intervening variables. History, testing, maturation, regression, instrumentation like extraneous variables was minimised through the covariates and regression model. The ANCOVA value  $F=DF \ 2/57 \ 19.879 \ p<.05$ . 05 was significant and  $R^2 =.259$  and adjusted  $R^2 =.233$ . The descriptive statistics reveals the mean of Traditional and Digital Environmental Photography and Video group was 56.70 and 67.74 but after the use of pre-test as the covariate in the univariate analysis of covariance the estimated marginal means was 56.655 for Traditional group and 67.745 for Digital Environmental Photography and Video group. This was because of pre-test (39.37) covariate appearing in the model evaluated. Table 3.4 reveals Bonferrone Multiple Comparison for mean estimating the mean difference between Traditional and Digital Environmental Photography and Video group. The mean difference between Digital Environmental Photography and Video group and Traditional group was 11.090  $p<.05$  was statistically significant. This is because of Digital Environmental Photography and Video intervention among the participants over the Traditional group.

### Findings

It was found that Digital Environmental Photography and Video has significant effect on the conceptual knowledge of the learners. There was statistically significant difference in the mean score of Digital Environmental Photography and Video group participants over traditional group participants (Bartosh, 2003; De LaVega, 2004; Howe, 2009; Rickinson, 2001). There was statistically significant effects of Digital Environmental Photography and Video on the skills and competencies on the elementary school students over traditional approach. Due to the effect of Digital Photography and Video on Environmental education learners performed better and developed skill and competency over traditional approach. This result was supported by (Ogueri, 2004; Wilson, 2004; Young, 2009). However, no study found contrast to the current result. It was found that there was statistically significant effects of Digital Environmental Photography and Video on the eco-friendly habits of the elementary school students over traditional approach. After exposed to Digital Environmental Photography and Video the experimental group eco-friendly habit mean score found significantly better over traditional approach. This result was supported by (Davis, 2003; De Lavega, 2004; Hwang, 2008; Thathong, 2005), and no study found against the effect of Digital Environmental Photography and Video on the eco-friendly habit of the learners.

## **Discussion**

Recently Environmental Education is providing to the learners through online and offline mode by using software providing animation, YouTube video, blog, Whatsapp and other related media and technology. In the recent study a rural school was adopted and provided Digital Environmental Photography and Video for the learners' change of conceptual knowledge, change of skill and competency and the effects on eco-friendly habits of the learners, relating to the result of the study it showed experimental group was statistically significantly better in the change of conceptual knowledge over traditional approach. In India, conceptual knowledge of environmental education is providing through lecture, discussion, field visit, in campus and off campus learning, but the recent study used an innovative teaching technique used Digital Photography and Video in Environmental Education and found its significant effect in the conceptual change on knowledge among the elementary school students over traditional group participants. The result of the study corroborated with the researchers findings (Alexandar and Poyyamoli, 2014; Hanneman, 2013; Katayama, 2009; Karimzadegan, 2015; Sengupta, Das & Maji, 2010). But no study found contrasting to the recent result. Therefore, it is clarified that Digital Environmental Photography and Video has significant effect on the conceptual change of knowledge.

Skill and competency improved in the recent study among the participants after Digital Environmental Photography and Video intervention. In Indian classroom especially, in rural elementary schools are providing environmental education without assessing their skill and competency how good and how bad improved. But, in the recent study, domain general and domain specific skill, and competency assessed after intervention through follow-up activities, home visit, group counselling and advising the participants family member to look after their children regarding effective hand washing, stopping open defecation, hand washing before and after taking meal, using dustbin to dispose the unused material etc. overall there was significant effect found on Digital Environmental Photography and Video on the conceptual change of skill and competency over traditional approach. This result was corroborated with the researchers' findings (Barch, 2012; Kimaryo, 2011; Majumdar, 2012; Pant, 2011; Spence, 2011; Yalcin, 2016). However, no such study found which was contrasting to the result. The eco-friendly habit developed among the experimental group participants after Digital Environmental Photography and Video intervention over traditional group. In an Indian elementary school, experiment was conducted to show the waste management technique and how behave eco-friendly habit within and outside the school campus. The researcher provided video and photography on waste management, sanitation, community participation and maintaining hygienic practices both inside and outside the school and home. As result the experimental group learners used use-me pot, dustbin, permanent bag instead of plastic bag politeness, took cold drinks without using straw, avoided to play with plastic doll, avoided plastic bottle to drink water, avoided plastic Tiffin box, put the apple pills, grape stack and decomposed the refused portions of fruit and vegetables for bio compost. As a whole, the study clarified that Digital Environmental Photography and Video has significant effect on the eco-friendly habit of the learner. This result was supported by the researchers' findings (Gough, 2011; Ifegbesan, 2009; Kopar, 2013; Nussbaum, 2013; Sivamoorthy, Nalini & Kumar, 2013; Yeshalem, 2013). However, no such study found contrasting to the result.

## **Conclusion**

India is a country of huge population whom are staying in the rural and remote areas. UNESCO has implemented different policy and programmes both officially and via NGO to improve the conceptual change of knowledge starting from the grass rote level. So many programmes are arranged by the government of India as well as different international bodies. But still the knowledge regarding environment, climate, pollution, waste management, eco-friendly skill and habits are not developed among the people of India. Using Environmental Video and Photography was an effort through the experiment to integrate Environmental Education in the

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elementary school methods of teaching. The researcher has prepared and collected different types of conceptual video on waste management and showed the participants during instruction, those helped participants in their conceptual change of knowledge, skill and habit. The following educational implications the researcher put in front of the world of educationists, researchers and policy makers.

1. Curriculum, syllabus and instructions should be changed into ICT based module and trained teachers should operate that.
2. After environmental education, the teacher should frequently visit the learners' home to follow-up the conceptual change of knowledge.
3. Frequently orientation and refresher courses should be offered to the teachers for their development of their eco-friendly skill, knowledge and competency.
4. Teachers, curriculum framers, policy makers and researchers should practice the eco-friendly habits those will encourage the elementary students to wise use the environment.
5. The teacher should take the elementary school students to the nearby eco-friendly park, waste management plant and organise waste management show in the school.

These are the following recommendations the researcher could in front of the world of educationists, policy makers and stakeholders.

1. In the recent study conceptual knowledge was assessed after intervention but if needs further investigation to know the achievement of the learner with regard to their gender.
2. The impact of Digital Environmental Photography and video on the domain general skill and domain specific skills needs further investigation.
3. The survey, case study, cross-sectional and longitudinal study should be conducted in relation to technology and Environmental Education.
4. It needs further investigation on Digital Environmental Photography and video and its impact on Secondary and University level students.
5. Different follow-up activities guidance and counselling related activities and action research should be conducted to know the skill and competency and eco-friendly habits of the learners.

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