



## Effect of Using Video Clips in Teaching of General Science on Academic Achievement of Students: An Experimental Study

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**Abstract:** *The aim of this research was to measure the effect of short educational videos on students' academic achievement while teaching general science. The experimental research design was used for the present research. All twenty 7th grade students enrolled in government secondary school Rera District Bagh AJK Pakistan were taken as sample and generating random numbers, two equal groups were formed. Researchers developed a post-test containing Written MCQ Type questions from Text Book of General science. The data were collected by post-tests in order to find an effective way of teaching using video clips in the teaching of general science at the elementary level. The researcher analyzed data by using a t-test independent sample with the help of SPSS-24 software. The results of the study showed that teaching with educational video clips has a positive effect on achievement. To improve science teaching at this level, short and informative videos have been recommended.*

**Key Words:** Video clips, Achievement, Post-test

### Introduction

Student motivation is widely acknowledged as an important aspect of the learning process. In recent educational researches, an important impact which is encouraging employing a modern technology at the same time a supportive strategy in boosting student learning and effectiveness of technology in the classroom has been proven true these days. Students are familiar with modern gadgets and technologies because they are very much aware of most of them and they can simply use those easily ([Targamadze & Petrauskienė, 2010](#)).

Video clips have been used offline for a long time in the teaching-learning process to assist learners in a variety of circumstances

([Green et al., 2004](#)). Another word, "low-cost instructional video clips" has now been defined as critical for achieving specified goals and generating interest in a short amount of time without requiring a lot of resources. These types of video clips are essential learning aids, paving the way for better instruction based on the teachers' viewpoint. This demonstrates that motivation and psychological elements work together to promote learning at all levels ([Valle et al., 2007](#)). Video is vital to employ in the modern classroom because of the necessity to educate pupils and their ability to improve the learning process. In a scientific classroom, video is the type of technology that can help the students to grasp subjects in a better way.

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Many subjects are abstract and require further visual representation to aid students' understanding. As a result, the video will aid in the comprehension of scientific topics ([Irene, 2015](#)). Video clips have been increasingly popular among science teachers, particularly at the elementary level in many emerging countries' for dynamic and efficient classrooms during the last few decades. Teachers are becoming more experienced in using various media in their instruction as technology becomes more sophisticated and user-friendly ([Cruse, 2006](#)). Research regarding the effective use of instructor controlled interactive video (ICIV) versus traditional non-interactive video was conducted and the researcher noted that the results gained from instructor controlled interactive video was very high or extra useful than traditional or lecture method and non-interactive video ([Enigo, 1997](#)).

The authors' substantial efforts in evaluating the usage of video streaming as a learning tool or method by weighing the merits and downsides of this new teaching methodology are now given priority at all levels ([McKinney, 2009](#)). On the other hand, none of these researches have looked at the quantitative impact of using these tools on student motivation. An in-depth examination of this impact will enable teachers to develop materials on modern lines that are compatible with these emerging technologies, which are very vital aspects in achieving students learning outcomes that are positive in nature and can help in the deep understanding of a phenomenon, it can also leverage the full potential of motivation in adding together meeting and the educational goals regarding comprehension, self-reliance and learning process which enhance the efficiency of teachers and students.

According to Harmer (2006), video can enhance students' learning experiences by enriching their learning experiences, improving their understanding, developing their creativity, and increasing their willingness to learn modern technology.

It has been noticed that the use of videos during the process of teaching and learning in

a conducive environment is more beneficial in many ways, such as better learning by cognition and more stress on better memory), secondly emotional wellbeing (such as inspiration, obtaining good happiness from the process of learning), thirdly comprehension for visualisation ([Pekdag, 2010](#)).

There are various types of studies regarding the usage of videos in education that noticeably show that using educational videos is very effective during lecturing at almost all levels, particularly in elementary schools. The educational video clips offer many effects, like permitting interaction along with the content, aiding comprehension transmission in the intellect, have making recollection easier ([Greenberg & Zanetis, 2012](#)). According to [Berks \(2009\)](#), using movies or videos for educational purposes has a cognitive and other beneficial influence on a better understanding of scientific concepts. He claims that using videos in the classroom can have a variety of benefits, including affecting students' awareness, making possible students' attentiveness, on the condition that learning practices of quality are given to very much stressed free students whose interests are not very prominent, on the increase of thoughts, at the bottom of creativeness and ever increasing intellectual capacity.

According to [Mitra, Barrett, Williamson, and Jones \(2010\)](#), using educational videos clips with all elements of audio and visual facilitates full of life communication among all levels of the topic and the students; these also make certain with the intention of making all the content is extra having an important effect, and it makes stronger learning process by letting relations flanked by all types of the subject matter in these videos along with extra state of affairs. At what time video-supported education is contrasted to teaching without video clips, it is stated that the video-supported educational process is more effective since it supports the process of learning at all levels of schools.

Because elementary school pupils are naturally curious, science at the elementary level is an excellent textbook for them to study.

Students can learn about their world and come up with fresh ideas thanks to science. It's also a lively topic that includes many activities such as different tasks in the laboratory of science in which many experiments are being performed. In this way, we considered scientific knowledge as an excellent healthy activity for the little kids who are interested in science. Science is an important aspect of all children's educational foundations, and with the use of video instruction, the themes can be made more accessible to elementary pupils. Students of our generation are more interested in watching videos than in listening to lectures. A few studies were present in the literature on the relationship between video clips and elementary-level science teaching. Hence, a study was planned to measure the effects of videos on academic achievement at the elementary level.

This paper will give instructions to the department of education and school authorities and science teachers who are actually involved in teaching with technology-based methodology on how to create a curriculum based on the current scientific and creative demands of society. It is also hoped that this research will raise awareness among head teachers and instructors about the importance of short educational films in clips during the learning and teaching practices, particularly in different topics in general science at the elementary level in the district Bagh Azad Jammu and Kashmir Pakistan.

## Objectives

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The following three objectives will be achieved in this research

1. To measure the effectiveness of teaching through Educational Video Clips on academic achievement of students of 7<sup>th</sup> grade General Science (experimental group)
2. To measure the academic achievement of students taught through the traditional method in 7<sup>th</sup> grade General Science (control group)

3. To compare the academic achievement of elementary students of control and experimental groups in general science

## Hypothesis

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- H<sub>0</sub> 1: There may be a significant difference in academic achievement between the elementary students in general science using video clips and without video clips

## Methodology

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The experimental research method was used for this research. The researchers used only a post-test equivalent group design for this purpose. Twenty students enrolled in 7<sup>th</sup> grade from Government Girls High School Rera district Bagh AJ&K Pakistan were taken as samples. This high school is preferred in favor of conducting an experiment for a reason with the aim of it has very comfortable and large size classrooms with the facility of LCD (liquid crystal display) for displaying videos during teaching. The sample of the study was divided into two groups by simple random sampling technique of generating random numbers with the help of software Microsoft office excel. The sampled students were placed in the control group taught with the traditional method (usually using the lecture method or reading from a book) and the experimental group which was taught using short educational videos and there were ten students in each group. In the next step, lesson plans were designed for the teaching of general science at the elementary level. In the lesson plans, all the activities were included, along with the full methodology. For measuring the effectiveness of the method, relevant video clips from the internet were also selected and downloaded according to the needs of lessons. It is very important factor that the content quality of videos is more valuable than the video itself. The time limit was 8-10 minutes of each video. The rich content of video is a critical factor for the maximum effectiveness of the video. The researchers developed objective type (MCQs) post tests on the basis of the cognitive domain of Bloom Taxonomy at three levels

(Knowledge, Comprehension and application). Three levels were selected only due to the elementary level of students. The lesson plans, post-tests and video clips were sent to a panel of experts having more experience for validation. Experts made changes at some places in post-tests which were incorporated. After this researcher herself did experiment and taught the class using treatment i.e., video clips for experimental group and without treatment to control group. Before starting video, five minutes verbal demonstration was given to students. After each experiment the data was collected through post-tests (achievement

tests) from both the groups in written every day because students of elementary level have limited memory time. The experiment continued for one week. Then researchers marked the achievement tests and segregated marks according to first three levels of cognitive domain. The marks of five tests were aggregated as a whole and also segregated on three levels of cognitive domain. In research the analysis of gathered data is without a doubt is main step among many others. The data were analyzed using t-test independent sample. A software SPSS version 24 is mainly utilized for the calculation of the *t*-value.

## Results

**Table 1.** Overall test result of control and experimental groups

	Groups	N	M	SD	t-value	Df	P - value
Test result Overall	Experimental Group	10	43.37	.93	7.81	18	.000
	Control Group	10	34.10	3.64			

Table 1 shows that the Experimental Group's mean value ( $M = 43.37$ ,  $SD = .93$ ) was more high than the mean value of control group ( $M = 34.10$ ,  $SD = 3.64$ ), and the value of  $t(18) = 7.81$ ,  $P < .05$  indicates a clear difference between the two groups in the total 50-point exam. As a result, the  $H_0$  hypothesis is rejected, implying that a difference which is significant

at the .05 level was seen between the academic achievement of students in Control Groups and the achievements/marks of students in Experimental Groups. The experimental group's output was extremely high due to the utilisation of educational video clips during the teaching of elementary general science than the control group.

**Table 2.** Test result of knowledge level questions of control and experimental groups

	Groups	N	M	SD	t-value	Df	p value
Test result knowledge level question	Experimental Group	10	17.10	.35	4.03	18	.001
	Control Group	10	14.40	2.07			

Table 2 shows that the Experimental Group's mean value ( $M = 17.10$ ,  $SD = .35$ ) was greater than the mean value of the control group ( $M = 14.40$ ,  $SD = 2.07$ ), with the value of  $t(18) = 4.03$ ,  $P < .05$  show that a considerable mismatch has been seen involving the two groups of students in 20 marks exam. As a result, the  $H_0$  hypothesis is rejected, implying that difference which is significant at  $\alpha = .05$  (level of significance) was seen

between the academic achievement of students in control groups and achievements/marks of students in experimental groups. The experimental group's output was extremely high due to the utilisation of educational video clips during the teaching of general science at the elementary level. Using instructional video clips for educational purposes in the classroom has a net beneficial impact.

**Table 3.** Test result of experimental and control groups regarding comprehension level questions

	Groups	N	M	SD	T - value	df	P - value
Test result comprehension level questions	Experimental Group	10	13.67	.64	8.05	18	.000
	Control Group	10	10.30	1.16			

Table 3 shows that the Experimental Group's mean value (M = 13.67, SD = .64) was larger than the mean value of the control group (M = 10.30, SD = 1.16) and that the value of t (18) = 8.05, P < .05 that a considerable mismatch has been seen involving the two groups of students in 15 marks exam. As a result, the H<sub>0</sub> hypothesis is refuted, implying that a difference

which is significant at  $\alpha = .05$  (level of significance) was seen between the academic achievement of students in the Control Groups and achievements/ marks of students in the Experimental Groups. The experimental group's output was extremely high due to the utilisation of educational video clips for the teaching of elementary science.

**Table 4.** Test result of experimental and control groups of application-level questions

	Group	N	M	SD	t- value	df	P - value
Test result Application-level questions	Experimental Group	10	12.63	.50	6.74	18	.000
	Control Group	10	9.40	1.43			

Table 4 shows that the Experimental Group's mean value shown in bracket (M = 12.63, SD = .50) which was larger than the mean value of the control group (M = 9.40, SD = 1.43), along with t (18) = 6.74, P < .05 that a considerable mismatch has been seen involving the two groups of students in 15 marks exam. As a result, the H<sub>0</sub> hypothesis is refuted, implying that a difference which is significant at  $\alpha = .05$  (level of significance) was seen between the academic achievement of students in the Control Groups and achievements/marks of students in Experimental Groups. The experimental group's output was extremely high due to the utilisation of educational video clips during the teaching of general science. Using instructional video clips for educational purposes in the classroom has a net beneficial impact at the elementary level.

results in elementary level science teaching. It enables pupils to comprehend science in a more comprehensive manner. Students can view video snippets over and again without becoming exhausted, which allows them to be dynamic individuals. It increases the interest and creativity among pupils. They were very enthusiastic during teaching by displaying videos on LCD. The results of post-tests show that videos have a beneficial impact on science achievement at the elementary level. The findings show that in overall test and at all levels of cognitive domains, the achievement of students who were taught through videos have more mean value and significant result than students taught without videos. In the current study, competitors' perceptions of the benefits of instructional video clips are seen in the literature review. Students in various practises spent more time on task when instructional video snippets were used. Using instructional video clips improved the time paid on task by students in different practices. In such an

## Discussion

According to the findings of this study, teachers and students regards instructional video clips as a reliable method for achieving improved

arrangement, students don't hold on to getting ready from instructors when instructional video clips are presented (Kobarg et al., 2011). The current study revealed that using instructional video clips resulted in exceptional academic achievement. It was revealed that following treatment (using instructional video clips), the experimental group's achievement in General Science class was higher and the achievement of the group taught with the traditional method i.e., the control group was low. It was also discovered that the intention of using instructional video clips has a considerable effect on the teaching of general science education at the elementary level, with a considerable dissimilarity was observed among the mean value of the control groups and experimental groups. All things considered; scientific classes have varied focus points when using instructional video clips. This is based on an assessment that students should view; however, comprehension is lacking (Simon and Osborne, 2010). It is suggested that the instructional video clips are more effective as visual resources and a usable technique for teaching. In addition, the use of instructional video clips gave an appealing and intriguing learning atmosphere which pushes them to learn speedier.

## Conclusions

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The current research looked at the effects of educational video clips on students' academic progress in general science at the elementary level in District Bagh. Because the field of innovation is always improving, this type of research in the field of teaching must be conducted at various levels. The use of educational video clips has a good and critical effect on the entire learning cycle, and current research shows that it has an effect on students' achievement in the overall scientific course book at the elementary level. It provides pupils with a learning environment where they can expand their knowledge beyond elementary level general science textbooks.

## Recommendations

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Based on the research findings, some recommendations had been made to make educational videos more useful to the students.

1. It is recommended that the school education administration may adopt a syllabus including video instructions in general science at the elementary level.
2. It is recommended that elementary teachers, especially science teachers may use educational video clips during teaching science.

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