

## Effects of videos on Geography Learners' academic performance in high schools in the Lubombo region of Eswatini

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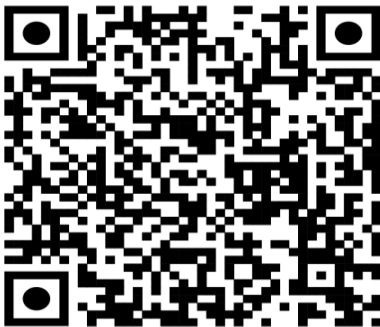
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### Abstract

This study investigated the effects of videos on geography learners' academic performance at the high school level in the Lubombo region, Eswatini. The cognitive theory informed the study of multimedia Learning. The research used descriptive surveys and quasi-experimental designs. Questionnaires and researcher-made tests were used for data collection. The research instruments were validated, and the reliability coefficient was obtained using Cronbach's Alpha formula for both instruments. The results revealed that there was no significant difference for both groups in the pre-test. However, in the post-test, results revealed a significant difference in the academic performance of students exposed to video and those taught using the lecture method. It was established that the use of video improves understanding, retention, class participation, class interaction, and attention and motivates learners. The study concluded that videos improved learners' academic performance in Geography. It is, therefore, recommended that geography teachers should use videos in teaching and learning in order to improve learners' academic performance.

**Key Terms:** Academic performance, effects, Geography, lecture method, video.

## INTRODUCTION

Education is undergoing a major shift as schools adopt multimedia in teaching and learning. Advancements have greatly influenced the shift in technology, availability of smartphones, access to the internet and appreciation of technology by both students and teachers. Multimedia in the form of videos seems to contribute to this change as educators have recognised the power of videos to capture learners' attention, increase motivation and enhance the learning experience (Bravo et al., 2011).

Instructional media material plays a significant role in learning. Sabitu and Nuradeen (2010) indicated that the success of any teaching and learning process that constantly influences students' academic performance relies upon the teachers' effectiveness. Subsequently, instructional strategies utilised by geography teachers in the teaching and learning process significantly influence students' academic performance. Rice and Wilson (1999) agreed that the utilisation of interactive media improves performance in geography and that both the teacher and students are effectively engaged with the construction of knowledge. They proceeded to emphasise the central role played by the teacher's pedagogy, and they concur with Clark (1994) that technology alone cannot make a difference, but the way the teacher engages that technology in teaching simplifies concepts. In line with the realisation of the EGCE geography syllabus objectives, the syllabus encourages teachers to use expository and heuristic strategies for teaching Geography.

Despite the use of a learner-centred approach in teaching and learning at the senior secondary school level in Eswatini, Geography has witnessed the poor academic performance. The poor performance in geography has been blamed on teachers' classroom practices and poor teaching methods of geography. However, such blames do not offer any solution for improving the situation (Mwesiga, 2017). Reports from ECESWA (2014-2018) further confirmed that the problem still existed in schools.

## LITERATURE REVIEW

This study was guided by Richard's Cognitive Theory of Multimedia Learning (CTML) postulated. E. Mayer' (2005). The theory postulates that multimedia supports the way that the human brain learns. The

cognitive theory of multimedia learning (CTML) centres on the perception that learners attempt to build meaningful connections between pictures and words. The theory argues that people learn more deeply from words and pictures than words alone, which are referred to as the multimedia principle. The learners learn more deeply than they could have with words or pictures alone (Mayer, 2009). According to CTML, one of the principal objectives of multimedia instruction is encouraging the learner to build a coherent representation mental from the material presented. The job of the learner is to make sense of the presented material as an active participant, eventually constructing new knowledge. According to Mayer and Moreno (1998), CTML is based on three assumptions: dual-channel, limited capacity, and active processing. The dual-channel assumes that working memory has auditory and visual channels. The limited capacity assumption is that each subsystem of working memory has a limited capacity. Then the active processing assumption suggests that people construct knowledge in meaningful ways when they are keen on the relevant material, organise it into a coherent mental structure, and integrate it with their prior knowledge (Mayer, 2009). The Cognitive Theory of Multimedia Learning is relevant in this study as the study seeks to determine the effects of video compared to lectures on Geography Learners' Academic Performance in schools in the Lubombo Region. The theory advocates for the use of words and pictures than words alone. The dual assumption, which states that working memory has auditory and visual channels, is relevant to this study as the video caters for both the auditory and visual channels. In geography, it is assumed that video supports the CTML through student collaboration. Therefore, the cognitive theory of multimedia was adopted to investigate the effects of video in teaching form 5 Geography students. Since the study used the control and experimental group, the cognitive theory of multimedia learning was used in the experimental group. This intervention (treatment) was given by watching geography content from video clips.

## RESULTS AND FINDINGS

### Difference between the Pre-test's Control and Experimental Groups.

The descriptive statistics like frequency and percentages were used, and the results summary is shown in table 1 below.

**Table 1: Pre-test Scores of both Control and Experimental Groups**

Marks range	control (N=36)		Experimental (N=36)	
	Frequency	percentage	frequency	percentage
0-9	18	50.0	15	41.7
10-19	16	44.4	15	41.7
20-29	1	2.8	4	11.1
30-39	1	2.8	2	5.6
40-49	0	0	0	0
Above 50	0	0	0	0
Total	36	100	36	99.9

It was established that the pre-test performance of both the control and experimental group was similar (below 50%). The control and experimental groups had the same knowledge level before treatment. The findings showed that there was no difference in performance between the control group and the experimental group during the pre-test. The study's findings indicated that the students' performance in the pre-test for both control and experimental was

similar. Their findings revealed that there was no difference in performance between the control and experimental during the pre-test.

### Performance of the Control and Experimental Group in the Post-test.

The descriptive statistics, including frequency and percentages were used and the results summary is shown in table 2.

**Table 2: Post-test Scores of both Control and Experimental Groups**

Marks	control (36)		Experimental (36)	
	Frequency	percentage	frequency	percentage
Below 50	11	30.6	3	8.3
51-60	13	36.1	8	22.2
61-70	7	19.4	13	36.1
71-80	5	13.9	11	30.6

81-90	0	0	1	2.8
<b>Total</b>	36	100	36	100

The table shows that the treatment group had more students (69%) scoring marks above 50 per cent, yet in the control groups, a majority of students scored less than 50 per cent, which is the ECESWA passing mark. The results point out that the experimental group performed better than the control group in the post-test.

The researcher also conducted a questionnaire to verify the results obtained from the post-test. All 72 students who were randomly assigned to control and experimental groups were given questionnaires on the

benefits of video and lecture methods in teaching and learning geography. Out of 72 questionnaires which were distributed, 97 per cent returned. Out of the total questionnaires received back, only Sixty-four were completed correctly. The rest were discarded and excluded from the analysis. The biographical data of the respondents is presented in Table 3. The participants consisted of 30 males and 34 females. Table 3 indicates that participants in the study were both males and females. Table 3 also illustrates that many students were below 20 years old.

**Table 3: Biographical Data of Respondents on Video and Lecture Method**

	Lecture		Video	
	Frequency	Percentage	Frequency	Percentage
<b>GENDER</b>				
Male	12	39	18	55
Female	19	61	15	45
<b>AGE</b>				
Below 20 years	23	74	27	81
Above 20 years	8	26	6	18
<b>Total</b>	62	100	66	100

**Table 4: Comparison of the Benefit between Lecture and Video**

Statement	Video		Lecture	
	Mean	SD	Mean	SD
Provides better Understanding	3.39	0.70	1.94	1.00
Class Participation is Greatly improved	3.48	0.67	1.77	0.76
Improves retention	3.48	0.76	2.13	1.06
Improves motivation	2.94	0.93	1.74	0.51
Class is more interactive	2.85	1.15	1.74	0.58
Improve attention span	3.06	0.86	2.06	0.81
<b>Total</b>	3.20	0.85	1.90	0.79

Table 4 shows that most of the responses from the experimental group indicate that the use of video benefits the learners because they were above the criterion mean of 2.50. The use of video was a welcome experience for the students based on their response to the instrument.

### Understanding of Geography Concepts

The results showed that understanding had a mean of 3.39 for the video group and 1.94 for the lecture group. The students in the experimental group agreed that the use of video helped improve their understanding of geography concepts. Learners actually saw and heard the concept being taught and were able to process it. The results showed that the

experimental group performed better than the control group. Video positively influenced learners who used it in terms of motivation and retention, which finally leads to understanding. The results from the experimental group also revealed that understanding had the highest influence on video use; 89.3 per cent agreed that using video leads to a greater understanding of the topics covered. It further revealed that video could help clarify difficult areas in Geography. Therefore, lessons in which video is used are more beneficial to students than conventional methods. In the control group, the mean for understanding was low; this shows that the students learned less. The teacher-centred conventional classroom teaching does not help learners to understand complex concepts. Students at the end of the topic are left behind, struggling to understand the notes given. The lecture method promotes rote learning where students have huge memorised knowledge without deeper understanding.

## Retention

The results in Table 4 indicate that the control group had a mean of 2.13, and the experimental group had a mean of 3.4 in retention. The results indicate that the experimental group mean is higher than the control group mean. This could be ascribed to the fact that learners could easily remember the lessons because they can visualise the processes of rivers and resultant landforms in the video lessons. After watching the video, students asked questions, and this was a sign of motivation, commitment and interest hence retention. The students viewed the video in a more relaxed environment, which allowed learners to review the content at their own pace. The study's findings noted that instructional strategy retained more knowledge of genetics than the subject exposed to traditional strategy. Students were able to remember taught concepts in geography in the experiment group hence improving in academic performance. It was also observed that the lecture method was ineffective in retention.

## Motivation

Table 4 also shows that video improved motivation among learners. In the experimental group, motivation attracted a mean of 2.94. The respondents agreed that video is motivating when used in teaching. Students were motivated to study on their own and

thus watched videos on their own time. However, the results showed that few students were not motivated. So the teacher had to give follow-up activities and supervise the students to make sure they completed the given tasks. Students perform best when the difficulty level is slightly above their current level. If the task is too easy, it provides boredom. The processes of rivers and landforms were slightly above the students' ability; therefore, students were motivated to watch the video. Research supports that students' motivation is a key element within the learning process. The results also showed that video positively influenced student participation in class. In the Control group, the main teaching was chalk and talk. The results revealed that motivation attracted a mean of 1.74. This shows that few respondents agreed that they were motivated by the lecture method. This, therefore, means that motivation has a strong effect on enhancing academic achievement. This has been evidenced by the findings in this study, where the experimental group achieved better than the control group.

## Class Participation

The results in Table 4 also showed that class participation had a mean of 1.77 in the lecture method and 3.48 in the video. The results also showed that class participation was limited in the lecture method compared to video instruction; therefore, students learned less.

## Class Interactive

Table 4 indicates that the Experimental group had a mean of 2.85 and the Control group had a mean of 1.74. The results show that students agreed that the class was more interactive when a video was used in teaching. Varied strategies such as brainstorming were used to engage the students during learning, and the learners were hands-on. The activities helped the students to be more engaged and retain more material.

## Attention Span

The results of the study indicate that the mean for attention span was higher for the Experimental group (3.06) and the Control group had a mean of (2.06). The results show that students who learned using video had an increased attention span.

The results of the questionnaire and test were triangulated to complement the results obtained in research question 2. The students attested that the use of video benefited them in their learning of geography. The test and questionnaire results suggest a relationship between understanding, participation, retention, motivation, class interaction and attention and overall students' academic performance. During learning, students agreed that video improved motivation, class participation, retention, and class interaction, and they were able to understand abstract

concepts; hence their performance in the test greatly improved. Based on the test and questionnaire results, it can be claimed that the treatment affected students' learning.

### Significant Difference in the Performance of the Control and Experimental Group in the Pre-test.

The independent t-test was used to compare the mean and determine if the difference between the control and experimental group was significant. Table 5 presents the results.

**Table 5: Statistical Comparison between the Pre-test Performance of both the Control and Experimental Groups (N=36)**

Group	N	Mean	SD	df	t	p
Control (Lecture)	36	9.33	6.74	35	-.943	.35
Experimental (video)	36	11.17	8.27			

Table 5 shows that there was no statistically significant difference between the pre-test performance of both control and experimental groups ( $t_{calc} = -.943$ ,  $p = .35$ ). This indicates that the control group ( $M = 9.33$ ,  $SD = 6.74$ ) performance was not significantly different to the experimental group ( $M = 11.17$ ,  $SD = 8.27$ ). The study indicates that the difference between the mean performance of the control and experimental groups in the pre-test was small. The student's performance was similar in both the control and experimental group in the pre-test. The findings also showed that the value of t (calculated) of the independent sample t-test was  $-.943$ , which was less than the t (tabulated) at alpha  $0.005$ .

The findings during the pre-test indicated that the experimental group performed not significantly different to the control group. Since the p-value of the pre-test was greater than the alpha level set, the results showed no significant difference between the two groups.

### Significant Difference between the Control and Experimental Groups in the Post-test.

The independent t-test was used to compare the mean and determine if the difference between the control and experimental group was significant. Table 6 shows the results.

**Table 6: Statistical Comparison between the Post-test Performance of both the Control and Experimental Group (N=36)**

Group	N	Mean	SD	Df	t	p
Experimental (video)	36	66.17	10.280	35	-3.695	0.00
Control (Lecture)	36	55.44	12.816			

$P \leq .05$

Table 6 shows that the experiment group ( $M = 66.17$ ,  $SD = 10.280$ ) performed significantly higher than the control group ( $M = 55.54$ ,  $SD = 12.816$ ) in the post-test. The Table also indicates that there was a statistically significant difference between the post-test performance of both the control group and experimental groups ( $t_{calc} = -3.695$ ,  $p = .00$ ). The p-value ( $.00$ ) being less than the level of significance of  $0.05$

implies that the results were statistically significant. This shows that there is a statistically significant difference in the post-test means of the experimental group and control group. The difference is in favour of the experimental group that was exposed to video.

The results showed that video is more effective on poor-performing students since a majority of students obtaining poor results drastically improved. The

experimental group scored higher compared to the control group. The findings of the study showed that media has a positive effect on academic performance. The findings of the study showed a positive and significant relationship between the use of video in learning and students' academic performance. The main findings suggest that video lectures increased senior students' retention, although their achievements were not found to be significantly better than the distance learners who did not have video lectures.

The findings revealed that the control and experimental groups had the same knowledge level before treatment. The results concur with the study conducted by Shabangu (2017) in Eswatini, who carried out a study on the impact of Information and Technology on History learners' academic performance. The findings showed that there was no difference in performance between the control group and the experimental group during the pre-test.

The study findings also indicated that in the post-test, the experimental group outperformed the control group as most students (92%) in the experimental group scored marks above 50 per cent, yet in the control group (69%) scored below 50 per cent. The results point out that the experimental group performed better than the control group during the post-test. The results showed that students exposed to video tend to perform better than those not. The finding is supported by Hansen and William (2008) and Tally and Scherer (2013), who, in different studies, observed that the use of video in teaching leads to better academic achievement compared to the use of conventional methods of teaching. However, these findings are contrary to Davis (2012) study on the effects of technology instruction on student achievement for fifth-grade science and maths instruction in Virginia. The study used 2010 and 2011 science and maths test scores for the control and experimental group. The results showed that the use of technological instruction did not increase student achievement in science. However, some students showed a slight improvement in their test scores in maths. The results concur with Olasin (2017) study, which assessed the impact of YouTube videos on academic writing and its skills on students' writing performance. The results showed that video improved

the writing performance of students. The video session afforded the participants the opportunity to have a team discussion on the content in class.

The study findings also revealed that there was no statistically significant difference between the pre-test performance of both control and experimental groups ( $t_{calc} = -.943$ ,  $p = .35$ ). This indicates that the control group ( $M = 9.33$ ,  $SD = 6.74$ ) performance was not significantly different to the experimental group ( $M = 11.17$ ,  $SD = 8.27$ ). The study indicates that the difference between the mean performance of the control and experimental groups in the pre-test was small. The student's performance was similar in both the control and experimental group in the pre-test. The findings also showed that the value of  $t$  (calculated) of the independent sample  $t$ -test was  $-.943$ , which was less than the  $t$  (tabulated) at  $\alpha = 0.005$ . The null hypothesis was accepted since there was no statistically significant difference between the pre-test performance of both the control and experimental group. The study findings are in line with Obondo et al. (2013) study, which showed that scores in the pre-test for both control and experimental group in geography were low. The control group had a mean of 5.8, and the experimental group had a mean of 6.1.

The results also showed the experiment group ( $M = 66.17$ ,  $SD = 10.280$ ) performed significantly higher than the control group ( $M = 55.54$ ,  $SD = 12.816$ ) in the post-test. This suggests that the use of video played a significantly positive role in students' academic performance. The findings also indicate that there was a statistically significant difference between the post-test performance of both the control group and experimental groups ( $t_{calc} = -3.695$ ),  $p = .00$ . The  $p$ -value ( $.00$ ) being less than the level of significance of  $0.05$  implies that the results were statistically significant. This indicates a statistically significant difference in the post-test means of the experimental group and control group. The difference is in favour of the experimental group that was exposed to video.

Based on the research findings, hypothesis 2 was rejected because there was a statistically significant difference between the post-test performance of both the control and experimental groups. This study's results suggested a positive and significant

relationship between the use of video in Geography and the student's academic performance. Video is effective in improving academic performance in Geography. The results showed that video is more effective on poor-performing students since a majority of students obtaining poor results drastically improved. The overall findings of this study agrees with Champox (2001), who concluded that film, like video clips, has some unique characteristics in communication and, as a source of information, has positive effects on learners. The results are similar to Ontoy (2013), who confirmed that the integration of video in teaching leads to better achievements in learners compared to the use of conventional teaching methods only. Orhan (2014) also observed a statistically significant difference between the experimental and control group's post-test achievement scores. The experimental group scored higher compared to the control group. The findings of the study showed that media has a positive effect on academic performance.

The test and questionnaire results suggest a relationship between understanding, participation, retention, motivation, class interaction and attention and overall students' academic performance. During learning, students agreed that video improved motivation, class participation, retention, and class interaction, and they were able to understand abstract concepts; hence their performance in the test greatly improved. Therefore, based on the test and questionnaire results, it can be claimed that the treatment affected students' learning.

## CONCLUSIONS AND RECOMMENDATIONS

**Conclusions:** Based on the results of this study, it can be concluded that video facilitates students learning in geography. Video proved to be better than the lecture

method in teaching geography. When the controlled group of students were taught concepts of geography by the lecture method and the experimental group of the students were taught by video, it was found that the achievement of the experimental group was better compared to that of the control group in the post-test and the acquired retention was better in the case of video. Teaching by video was effective; therefore, only a few students were found to be under extremely low levels of achievement in geography. Video is more effective on lower ability students who were previously perceived as weak and therefore can enhance learning. Video is one technique of teaching that arises above the challenges of performance. From the findings, the participants see video as beneficial to their learning since it improves motivation, retention, understanding, class participation, class interaction and attention, leading to improved academic performance compared to the lecture method. In conclusion, the treatment video has the potential to improve academic performance in geography at the high school level.

**Recommendations:** The use of video is recommended in teaching geography as it could improve learners' academic performance, so the Ministry of Education and Training should develop coherent plans, including teacher training for video use in the classroom. There is a need for the Ministry of Education and Training to incorporate the use of videos in the school curriculum. The teachers should raise awareness of the possible benefits of video use among all stakeholders. For example, parents and teachers can use educational videos to foster children's learning when every child has access to videos. Curriculum planners should design teaching resources which embrace the use of videos. Teachers must be equipped with the skills and knowledge they need to use videos in teaching.

## REFERENCES

- Bravo, E., Amante, B., & Enache, P. S. (2011). *Video as a New Teaching Tool to Increase Student Motivation*. DOI: 10.1109/EDUCON.2011.5773205.
- Champox, J. E. (2001). Film as Teaching Source. *Journal on Management Education*, 25(1), 78-99.
- Clark, R. E. (1994). Media will never influence Learning. *ETR and D*, 42(2), 21-29.
- Davis, K. (2012). *The Effects of Technology Instruction on the Academic Achievement of Fifth Grade Students*. Doctoral Dissertations and Project. <https://digitalcommons.liberty.edu/doctoral/556/>.
- Hansen, C., & William, M. (2008). Comparison of Cross-Cultural course Changes: From Traditional Lecture Course To Contemporary Course With Biblio-Learning, Video Learning and Experimental Exercise. *Journal of Instructional Psychology*, 30(3), 197- 206.

# Journal of Education and Learning

- Mayer, R. E. (2005a). Cognitive theory of multimedia learning. In R.E. Mayer (Ed). *The Cambridge Handbook of Multimedia Learning*. Cambridge University Press.
- Mayer, R. E. (2009). *Multimedia Learning* (2<sup>nd</sup> Ed). Cambridge University Press.
- Mayer, R. E., & Moreno, R. (1998). A split-attention effect in multimedia learning: Evidence for dual processing systems in working memory. *Journal of Educational Psychology*, 90, 312-320.
- Mwesiga, F. (2017). *Factors Influencing Students' Poor Performance in Geography Subject in Tanzania: The Case of Community Secondary Schools in Morogoro Municipality*. Unpublished Doctoral Dissertation faculty of Social Sciences, Mzumbe University.
- Obondo, G., Janction, K. T., & Violet, K. N. (2013). Enhancing Learning of Geography: A Focus on Video Use. *International Journal of Social Science. & Education*, 4 (1):277.
- Olasin, G. (2017). An evaluation of educational values of YouTube videos for academic writing. *The African Journal of Information Systems*. 9. <https://iopscience.iop.org/article/10.1088/1742-6596/1318/1/012014>.
- Ontoy, I. (2013). *Academic Achievement in Science of Grade V Pupils with the Integration of Video Clips*. Doi:10.6084/M9.FIGSHARE.156035.
- Orhan, E. (2014). The Effects of Multimedia Learning Materials on Students' Academic Achievement and Attitudes towards Science Courses. *Journal of Baltic Science Education*, 135, 1648-3898.
- Rice, M., & Wilson, E. (1999). How Technology Aids Constructivism in the Social Studies Classroom. *The social studies*, 90(1), 28-33.
- Sabitu, A. O., & Nuradeen, B. B. (2010). Teachers' Attributes as Correlates of Students' Academic achievement in Geography in the Secondary Schools in Obondo State, Nigeria. *Parkistan Journal of Social Sciences*, 5(7), 388-392.
- Shabangu, S. T. (2017). *The Impact of Information and Communication Technology on History Learners Academic Performance in Schools*. Published Masters' Thesis. Kwaluseni.
- Tally, C. P., & Scherer, S. (2013). The enhanced flipped classroom: Increasing academic performance with student-recorded lectures and practising testing in a flipped STEM Course. *The journal of Negro Education*, 82(3), 339-347.