

# TEXT OR VIDEO? MODERATORS INFLUENCING THE CHOICE OF ONLINE EDUCATIONAL MATERIAL

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**Abstract.** Technologies and the internet are invading the education space. While online educational content is accentuating—if not replacing—traditional learning methods, the present study examines the extent of usage of online educational material—both textual and audio-visual—by choosing a stratified-random sample of 300 university students. We find a trend in favour of educational videos against e-learning text content. Moving beyond the extent of use of such online educational content, the present study also examines smartphone usage, language and understanding, and reading habits as moderators that influence the choice between textual and audio-visual educational content online. To understand the influence of the chosen factors on exposure to textual and visual educational content, a test of interaction between these variables were executed. Study results showed that the variables reading habit and English language and understanding interacted with the extent of smartphone usage in its relationship with the extent of usage of online text and audio-visual content for educational purposes. Further, active readers were found to prefer online text over video content. There was also a positive association between the consumption of online text and video content indicating that users who use one of the types of online content for learning also end up using the other type of content. Using the study results, the online usage patterns of students are modeled.

**Keywords:** e-learning, internet, youtube, ebooks, moderation analysis

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## Introduction

If the observation of Papert (1980) that “one can’t teach people everything they need to know and the best the one can do is position them where they can find what they need to know and when they need to know it” has any indication, then the online educational resources are more crucial for learning than they are usually assumed, in this era of the internet. Learning through the smartphone is becoming increasingly popular. Students and younger learners that are digital natives are able to relate to with these handy devices and easily adaptable to educational apps, while the other learners enjoy the flexibility of learning as and when they like from the desktop computer (Moore, 2017). An advantage of online learning is that individuals can take a course from the comfort of their school, office or home. Even with a busy schedule, one can find spare time to take a course (De, 2018).

A typical video consists of moving images, sound, and text. So when a learner is watching an interactive video, he or she is engaging in multi-sensory learning, which means learning through two or more senses. Video can also be used to reinforce information that has been previously explained through text. In today’s tech-dominated world, a majority owns a smartphone or a tablet. Videos can be distributed in short bursts to learners’ devices without much effort. This rapid delivery of videos allows learners not only an “anytime anywhere” access, but also lets them learn at their own pace (Athmika, 2017). Using videos for micro-learning ensures that complex procedures and demonstrations of specific skills are delivered in small quantities, which enhances knowledge retention.

Furthermore, the ubiquitous YouTube allows learners to watch longer eLearning videos in short segments, and the audience can watch the videos whenever they like and take their own time to absorb the information being offered (Pappas, 2015). Videos can extend even beyond verbal and nonverbal communication by including visual aids like images and footage, which further strengthen the mood (Clarine, 2016).

With instant mobile access to all aspects of the digital educational experience, learning has no limits. Such connectedness encourages interaction between learners and educators by engaging them whenever and wherever they’re ready, on the devices of their choosing. Several experts have

mentioned the need to shift from the traditional classroom setting, where the student is seen as a passive consumer of educational knowledge, to a classroom in which learners are considered active participants and where collaboration and information sharing is induced in a resource-rich environment. To advance this shift and the necessary educational reform, hardware and software developers promote new technological tools (Montrieux, 2015). Videos in e-Learning inject freshness in the learning.

According to a report by Ambient Insight, 83 percent of organisations will use videos in their digital learning by the end of 2016. And, a plethora of studies has revealed that a learner can only remember 10 percent of what is read, 20 percent of what is visual, 30 percent of what is heard, and 50 percent of what is visual and heard. This is why videos, with their visual and auditory elements, are an essential component of e-learning courses (Bonthala, 2016). The affordances of new, ubiquitous and powerful communications technologies and their ability to create and sustain communities of learners have quietly established e-learning in the mainstream of higher education (Garrison, 2011). Uploading eLearning content to YouTube makes it available throughout the YouTube network, which means that your learners can access it and view it on the go via their smartphones and tablets, devices used in mobile learning. It doesn't matter how small the screen is; you can use YouTube as a platform for not only searching online video resources, but also sharing presentations, and inviting your learners to take an active part through their commenting (Pappas, 2015).

The aim of the present study is to find the Consumption of Online Text and Audio-visual content, Smartphone usage, and the effect of Reading Habits and English Language and Understanding on consumption of one of the type of online educational material.

The study also analyse whether gender and location have any relation to the Online Text and Audiovisual content consumption, smartphone usage, Reading habit and English language understanding. To bring in some clarity at this point, the following research questions are raised:

### **Research Questions**

*RQ1: What is the extent of usage of online text content for learning among the target group?*

*RQ2: What is the extent of usage of online audio-video content for learning among the target group?*

- RQ3: What is the extent of usage of smartphones among the target group?*
- RQ4: How much the target group is engaged in reading?*
- RQ5: What is the level of English language usage and understanding among the target group?*
- RQ5: Are demographic variables Gender and Location associated with the extent of usage of smartphones, the extent of reading, and English language usage and understanding related to the extent of usage of online text and audio-video content for learning?*
- RQ6: Are the extent of usage of smartphones, the extent of reading, and English language usage and understanding related to the extent of usage of online text and audio-video content for learning?*
- RQ7: Do the variables extent of usage of smartphones, the extent of reading, and English language usage and understanding interact in their effect on the extent of usage of online text and audio-video content for learning?*

In India, there is a vast difference of outlook between rural and urban landscapes. The reach and access of media are different in rural and urban areas. Similarly, the learners may have different preference to learning methods. They may tend to use either online text content or audiovisual content due to their time constraints, personal interests, and other factors, too. The reading habit and English language understanding could have some influence on the learners' choice of educational learning material.

Using YouTube videos as part of eLearning course encourages the audience to develop their note-taking skills by viewing, rewinding, and replaying the video material until they have fully grasped its essence and key points (Pappas, 2015). Bell (1995) emphasized on motivation in teaching. Only motivated learners will invest their time to absorb the knowledge (Pappas, 2015). Education technology aims to improve education, hence technology should facilitate the learning process and increase the performance of the educational system with regards to its effectiveness and efficiency.

The evolution of Information and Communication Technology (ICT) in education started when MIT used the computer for flight simulator to train pilots (Roblyer 2002). Progressively, both young and adults are dependent on smartphones (CourseSmart, 2011). The younger generation has grown up with electronics and technologies surrounding them and has significant exposure to these digital devices, which also affect their lives and thinking (Barclay et al, 2015, 2015a, and 2016). However, many educators do

not fully utilise smartphones' capabilities for learning. Smartphones with their many existing features and future potential uses can enhance learning but hardly replace classroom or conventional e-learning methods.

Hence, learning with smartphones can only be used as a complementary to traditional learning and e-learning (Wang et al. 2009).

A smartphone is so handy and is becoming a multipurpose mobile device that can assist people to perform their daily as well as professional activities. Smartphones are used by many to access information and knowledge from the Internet. People also develop knowledge by accessing the Internet using their smartphones. Hence, smartphones can also be considered as an educational device (Almunawar et al. 2015).

Based on the review of past studies and the logical discussions that have been raised, the following hypotheses are proposed:

### **Hypotheses**

*H<sub>a1</sub>: Gender is associated with the Extent of Usage of Online Text Content for educational purposes.*

*H<sub>a2</sub>: Gender is associated with the Extent of Usage of Online Audio Video Content for educational purposes.*

*H<sub>a3</sub>: Gender is associated with the Extent of Usage of Smartphone.*

*H<sub>a4</sub>: Gender is associated with the Extent of English Reading habits.*

*H<sub>a5</sub>: Gender is associated with the Extent of English Language Understanding.*

*H<sub>a6</sub>: Location is associated with the Extent of Usage of Online Text Content for educational purposes.*

*H<sub>a7</sub>: Location is associated with the Extent of Usage of Online Audio Video Content for educational purposes.*

*H<sub>a8</sub>: Location is associated with the Extent of Usage of Smartphone.*

*H<sub>a9</sub>: Location is associated with the Extent of English Reading Habit Content.*

*H<sub>a10</sub>: Location is associated with the Extent of Usage of English Language Understanding.*

*H<sub>a11</sub>: Smartphone Usage is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes.*

*H<sub>a12</sub>: Reading Habit is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes.*

*H<sub>a</sub>13: English Language Understanding is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes.*

*H<sub>a</sub>14. Extent of usage of smartphones interacts with the extent of reading, and English language usage and interact in its effect on the extent of usage of online text and audio-video content for learning.*

## **Research Method**

A sample of 300 graduate students were chosen for this study using a stratified random sampling procedure. The respondents were chosen from the Central University of Tamil Nadu, where about 13 students were chosen from each of the 23 departments to respond to the quantitative survey questionnaire. Both male and female from different locations within the age group of 17 to 36 years were chosen. A quantitative survey method with a questionnaire consisting of six pages was used to obtain self-reported data on the variables chosen. As many as 25 questions measured five variables: Extent of usage of online text content for learning (6 items); Extent of usage of online audio-video content for learning (5 items); Extent of smartphone usage (6 items); Reading habits (4 items); and English language and understanding (4 items). These apart, the demographic variables measured were gender and Location.

For the variable Extent of usage of online text content for learning, the questions are devices that a user access for educational online text content in four multiple choices, which kind of text content formats a user access come up with a five multiple choices, which sources one uses to access educational online text content with seven choices, how often the user accesses online text content for educational purpose on an average with four multiple choice, how many hours the learner spends in a week reading online educational text content with five ordinal choices and have these online texts been useful to the user with four multiple choices.

To measure the Extent of usage of online audio-video content for learning, the questions asked were devices that a user used to access educational online audio-video content with four multiple choices, which sources one uses to access educational online audio-video content with five choices, how often the user spends on online audio-video content for educational purpose on an average with four multiple choice, how many hours the learner spends in a week listening to or viewing online educational

audio-video content in a five choice ordinal and have these online texts been useful to the user with four multiple choices.

For the variable Extent of smartphone usage, the questions asked were: does the user have a smartphone with a yes/no choice, whether the learner finds it easy to read on smartphone, does the learner find it easy to view audio-video content on smartphone and do they have free Internet available on smartphone with three choices, their opinion on Internet availability on smartphone, whether it is speed or slow with four choices and the amount of money a user spends on Internet for a month in the smartphone with four ordinal options.

For the variable Reading habits, the four questions asked were: does the respondent like reading with three options, amount of time the user spends a week in reading with four ordinal options, does the learner think that reading is the best way to increase knowledge with three options and does s/he think reading increases understanding with three choices.

For the variable, English language and understanding, a five-point rating scale was used and the questions were: how good one is with English speaking, how good s/he is in English reading, at english writing and English comprehending. Google Forms were used to collect anonymous responses, apart from hard copy questionnaires. Microsoft Excel and IBM SPSS software were used for data collection and analysis.

### **Findings: Descriptive Analysis**

*RQ1: What is extent of usage of online text content for learning among the target group?*

*RQ2: What is extent of usage of online audio-video content for learning among the target group?*

*RQ3: What is extent of usage of smartphones among the target group?*

*RQ4: How much the target group is engaged in reading?*

*RQ5: What is the level of English language usage and understanding among the target group?*

To answer the above research questions, self-reported data were collected from a sample of 300 respondents. The scale variables were then converted into ordinal variables and the frequency analysis provided an inference about what is the extent of usage of online text and audio-visual content for learning purposes, smartphone usage, reading habit and English

understanding. Of the 300 samples, moderate Online Text content consumers (132) accounted for a majority of 44 percent, while 30 percent consumed low text content and 26 percent consumed high text content. In the case of Audio-visual content, a majority of 46 percent were moderate consumers, while 27.3 percent consumed low AV content and 26 percent consumed high AV content. In Extent of usage of Smartphone, a majority of 65.7 percent were high consumers, while 14 percent used Smartphone low and 20 percent are moderate Smartphone users.

In the case of Reading habits, a majority of 46.7 percent were moderate Readers, while 10.3 percent were low Readers and 43 percent were high readers. In the case of English Language and Understanding, a majority of 266.3 percent had high English language and understanding, while 4.7 percent had low English language and understanding and 29 percent had moderate English language and understanding (refer Tables 1 to 5).

Table 1 **Extent of Usage of Text Content**

Online Text consumption	Frequency	Percent	Valid Percent	Cumulative Percent
Low	90	30.0	30.0	30.0
Moderate	132	44.0	44.0	74.0
High	78	26.0	26.0	100.0
Total	300	100.0	100.0	

Table 2 **Extent of Usage of AV Content**

Online AV consumption	Frequency	Percent	Valid Percent	Cumulative Percent
Low	82	27.3	27.3	27.3
Moderate	138	46.0	46.0	73.3
High	80	26.0	26.7	100.0
Total	300	100.0	100.0	

Table 3 Extent of Usage of Smartphone

Smartphone consumption	Frequency	Percent	Valid Percent	Cumulative Percent
Low	42	14.0	14.0	14.0
Moderate	61	20.3	20.3	34.3
High	197	65.7	65.7	100.0
Total	300	100.0	100.0	

Table 4 Extent of Reading habit

Reading habit	Frequency	Percent	Valid Percent	Cumulative Percent
Low	31	10.3	10.3	10.3
Moderate	140	46.7	46.7	57.0
High	129	43.0	43.0	100.0
Total	300	100.0	100.0	

Table 5 English Language and Understanding

English Language Understanding	Frequency	Percent	Cumulative Percent
Low	14	4.7	4.7
Moderate	87	29.0	33.7
High	199	67.3	100.0
Total	300	100.0	

### Hypothesis Testing

**H<sub>a1</sub>:** Gender is associated with the Extent of Usage of Online Text Content for educational purposes.

To test this hypothesis, an independent-sample t-test was conducted to compare the extent of usage of Online Text content among different genders and the results are presented in Table 6.

Table 6 Gender vs. Extent of usage of Text Content: T-Test

		F	Sig	t	df	Sig. (2-tailed)
Text Content	Equal variances assume	0.434	0.511	-.834	298	.405
	Equal variances not assume	0.401	.840	-.834	279.4	.409

## Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Text Content	Male	137	2.4611	.68637	.05864
	Female	163	2.5245	.63078	.04941

T-Test results indicated that there was no statistically-significant difference in the Extent of Usage of Text Content among different genders. Hence, the hypothesis that gender is associated with the Extent of Usage of Online Text Content for educational purposes is not accepted.

**H<sub>a</sub>2:** Gender is associated with the Extent of Usage of Online Audio-Visual Content for educational purposes.

To test this hypothesis, an independent-sample t-test was conducted to compare the extent of usage of Online Audio Video content among different genders and the results are presented in Table 7.

Table 7 Gender vs Extent of usage of Audio Video Content: T-Test

		F	Sig	t	df	Sig. (2-tailed)
AV_Content	Equal variances assume	0.041	0.840	-.422	297	.673
	Equal variances not assume	0	0.840	-.422	289.082	.673

## Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
AV Content	Male	137	2.4876	.60530	.05171
	Female	162	2.5173	.60706	.04769

T-Test results indicated that there was no significant difference in the Extent of Usage of Audio Video content among different genders. Hence, the hypothesis that gender is associated with the Extent of Usage of Online Audio-Visual Content for educational purposes is not accepted.

**H<sub>3</sub>:** Gender is associated with the Extent of Usage of Smartphone.

To test this hypothesis, an independent-sample t-test was conducted to compare the extent of usage of Online Text content among different genders and the results are presented in Table 8.

Table 8 **Gender vs Extent of usage of Smartphone: T-Test**

		F	Sig	t	df	Sig. (2-tailed)
Text Content	Equal variances assume	0.323	0.570	-.422	297	0.882
	Equal variances not assume		0	-.422	275.568	0.883

## Group Statistics

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
Smartphone_Usage	Male	137	2.5255	.43202	.03691
	Female	162	2.5185	.38609	.03033

**H<sub>4</sub>:** Gender is associated with the Extent of English Reading habits.

To test this hypothesis, an independent-sample t-test was conducted to compare the extent of Reading Habit among different genders and the results are presented in Table 9.

Table 9 Gender vs Extent of English Reading Habit: T-Test

		F	Sig	t	df	Sig. (2-tailed)
Reading habit	Equal variances assume	1.060	0.3041	-1.478	298	0.140
	Equal variances not assume			-1.482	291.67	0.140

## Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Reading_Habits	Male	137	2.6661	.46502	.03973
	Female	163	2.7469	.47790	.03743

T-Test results indicated that there was no statistically-significant difference in the Extent of Reading Habit among different genders. Hence, the hypothesis that gender is associated with the Extent of Reading Habit for educational purposes is not accepted.

**H<sub>5</sub>:** Gender is associated with the Extent of English Language Understanding. To test this hypothesis, an independent-sample t-test was conducted to compare the extent of English Language Understanding among different genders and the results are presented in Table 10.

Table 10 Gender vs Extent of language understanding:T-Test

		F	Sig	t	df	Sig. (2-tailed)
ELU	Equal variances assume	0.003	0.9581	-1.524	298	
	Equal variances not assume			-1.5132	263.08	

## Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
ELU	Male	137	3.5858	.69824	.05965
	Female	163	3.7040	.64385	.05043

T-Test results indicated that there was no significant difference in the Extent of English Language Understanding among different genders. Hence, the hypothesis that gender is associated with the Extent of Usage of Online Audio-Visual Content for educational purposes is not accepted.

**H<sub>6</sub>:** Location is associated with the Extent of Usage of Online Text Content for educational purposes. To test this hypothesis, an independent-sample t-test was conducted to compare the extent of Online Text Content among different locations and the results are presented in Table 11.

Table 11 **Location vs Extent of usage of Text Content: T-Test**

		F	Sig	t	df	Sig. (2-tailed)
Text Content	Equal variances assume	0.041	0.839	1.259	298	0.209
	Equal variances not assume			1.251	263.08	0.212

Group Statistics

	Location	N	Mean	Std. Deviation	Std. Error Mean
Text_Content	Urban	126	2.5516	.67081	.05976
	Rural	174	2.4550	.64466	.04887

T-Test results indicated that there was no statistically-significant difference in the Extent of Usage of Text Content among different locations. Hence, the hypothesis that location is associated with the Extent of Usage of Text Content for educational purposes is not accepted.

**H<sub>7</sub>:** Location is associated with the Extent of Usage of Online Audio Video Content for educational purposes.

To test this hypothesis, an independent-sample t-test was conducted to compare the extent of Online Audio Video Content among different locations and the results are presented in Table 12.

Table 12 Location vs Extent of usage of AV Content: T-Test

		F	Sig	t	df	Sig. (2-tailed)
AV Content	Equal variances assume	0.133	0.716	-0.031	297	0.975
	Equal variances not assume			-0.031	275.206	0.975

## Group Statistics

	Location	N	Mean	Std. Deviation	Std. Error Mean
AV_Content	Urban	125	2.5024	.58784	.05258
	Rural	174	2.5046	.61942	.04696

T-Test results indicated that there was no significant difference in Extent of Usage of Audio Video Content among different locations. Hence, the hypothesis that location is associated with the Extent of Usage of Online Audio-Visual Content for educational purposes is not accepted.

**H<sub>a</sub>8:** Location is associated with the Extent of Usage of Smartphone.

To test this hypothesis, an independent-sample t-test was conducted to compare the extent of Smartphone among different locations and the results are presented in Table 13.

Table 13 Location vs Extent of usage of smartphone: T-Test

		F	Sig	t	df	Sig. (2-tailed)
Smartphone usage	Equal variances assume	1.034	0.310	1.565	297	0.119
	Equal variances not assume			1.590	283.3	0.113

## Group Statistics

	Location	N	Mean	Std. Deviation	Std. Error Mean
Smartph one_Us age	Urban	126	2.5648	.38237	.03406
	Rural	173	2.4904	.42252	.03212

T-Test results indicated that there was no statistically-significant difference in the Extent of Usage of Smartphone among different locations. Hence, the hypothesis that location is associated with the Extent of Smartphone usage for educational purposes is not accepted.

**H<sub>9</sub>:** Location is associated with the Extent of English Reading Habit Content.

To test this hypothesis, an independent-sample t-test was conducted to compare the extent of English Reading Habit among different locations and the results are presented in Table 14.

Table 14 **Location vs Extent of Reading habit T-Test**

		F	Sig	t	df	Sig. (2-tailed)
Reading habit	Equal variances assume	2.139	0.145	1.559	298	0.120
	Equal variances not assume		0	1.589	285.9	0.113

## Group Statistics

	Location	N	Mean	Std. Deviation	Std. Error Mean
Reading_ Habits	Urban	126	2.7599	.43864	.03908
	Rural	174	2.6739	.49450	.03749

T-Test results indicated that there was no statistically-significant difference in the Extent of Reading Habit among different locations. Hence, the hypothesis that location is associated with the Extent of Reading Habit for educational purposes is not accepted.

**H<sub>a10</sub>:** Location is associated with the Extent of Usage of English Language Understanding. To test this hypothesis, T-Test was run and the results are presented in Table 15.

Table 15 **Location vs Language understanding T-Test**

		F	Sig	t	df	Sig. (2-tailed)
ELU	Equal variances assume	1.673	0.197	2.078	298	0.39
	Equal variances not assume			2.105	280.98	0.39

Group Statistics

	Location	N	Mean	Std. Deviation	Std. Error Mean
ELU	Urban	126	3.7440	.63598	.05666
	Rural	174	3.5819	.68855	.05220

T-Test results indicated that there was no statistically-significant difference in the Extent of English Language Understanding among different locations. Hence, the hypothesis that location is associated with the Extent of English Language Understanding for educational purposes is not accepted.

**H<sub>a11</sub>:** Smartphone Usage is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes.

To test this hypothesis, a Pearson's product-moment correlation was run and the results are presented in Table 16.

Table 16 **Smartphone usage vs Extent of usage of Text and AV Content:**

		Text Content	Audio-visual Content
Smartphone Usage	Pearson Correlation	.248**	.302**
	Sig. (2-tailed)	.000	.000

The data showed no violation of normality, linearity or homoscedasticity. There were a statistically-significant positive relationship

between Smartphone Usage and the Extent of Usage of Online text Content for Educational Purposes ( $r = 0.248$ ,  $n = 300$ ,  $p < 0.0005$ ).

That is, the more the people used smartphone, the more they tended to use online text content for educational purposes.

Similarly, there was a statistically-significant positive correlation between Smartphone Usage and the Extent of Usage of Online Audio-visual Content for Educational Purposes ( $r = 0.302$ ,  $n = 300$ ,  $p < 0.0005$ ). That is, the more the people used smartphone, the more they tended to use online audio-visual content for educational purposes. Hence, the hypothesis (**H<sub>a11</sub>**) that Smartphone Usage is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes is accepted.

**H<sub>a12</sub>**: Reading Habit is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes.

To test this hypothesis, a Pearson's product-moment correlation was run and the results are presented in Table 17.

Table 17 **Reading Habit vs Extent of usage of Text and AV Content**

		Text Content	Audio-visual Content
Reading Habit	Pearson Correlation	.264**	.003
	Sig. (2-tailed)	.000	.960

The data showed no violation of normality, linearity or homoscedasticity. There were a statistically-significant positive relationship between reading Habit and the Extent of Usage of Online text Content for Educational Purposes ( $r = 0.264$ ,  $n = 300$ ,  $p < 0.0005$ ).

That is, the more the people were accustomed to reading, the more they tended to use online text content for educational purposes.

However, there was no statistically-significant correlation between Reading Habit and the Extent of Usage of Online Audio-visual Content for Educational Purposes ( $r = 0.003$ ,  $n = 300$ ,  $p = 0.960$ ). Hence, the hypothesis (**H<sub>a12</sub>**) that Reading Habit is positively associated with Extent of Usage of Online Text for Educational Purposes is accepted.

**H<sub>a13</sub>**: English Language Understanding is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes.

To test this hypothesis, a Pearson's product-moment correlation was run and the results are presented in Table 18.

Table 18 **Language Understanding vs Extent of usage of Text and AV Content**

		Text Content	Audio-visual Content
English Language Understanding	Pearson Correlation	.185**	.168
	Sig. (2-tailed)	.001	.003

The data showed no violation of normality, linearity or homoscedasticity. There were a statistically-significant positive relationship between English Language and Understanding and the Extent of Usage of Online text Content for Educational Purposes ( $r = 0.185$ ,  $n = 300$ ,  $p < 0.0005$ ). That is, the more the people were able to understand English Language, the more they tended to use online text content for educational purposes. Similarly, there was a statistically-significant positive correlation between English Language and Understanding and the Extent of Usage of Online Audio-visual Content for Educational Purposes ( $r = 0.168$ ,  $n = 300$ ,  $p < 0.0005$ ). That is, the more the people were able to understand English Language, the more they tended to use online audio-visual content for educational purposes. Hence, the hypothesis (**H<sub>a13</sub>**) that English Language and Understanding is positively associated with Extent of Usage of Online Text and Audio-visual Content for Educational Purposes is accepted.

Table 19 **Extent of usage of Text Content vs AV Content**

Correlation	Extent of usage of Audio-visual Content	
Extent of usage of text content	Pearson Correlation	.672**
	Sig. (2-tailed)	0.00

### Moderation test

While the variable Smartphone usage is strongly associated with Extent of usage of Text Content and Audio-Video Content and both Reading Habit and

English Language and Understanding is also associated with the Online Text as well as Audio Video Content. However, these variables, Reading Habit and English Language and Understanding are suspected to have a moderation effect on the relationships between Smartphone usage and the Extent of usage of Text and Audio Visual content.

To examine this, the correlations between Smartphone usage and the Extent of usage of Online Text Content and Online Audio-Video Content for educational purposes were run for the respondents with different levels (low, moderate and high) of Reading Habits and English Language and Understanding. For this, the scale variables Reading Habits and English Language and Understanding were converted into ordinal variables with three levels. This is done to test whether the latter interacted with the variable Smartphone usage in its effects of the Extent of usage of online content for educational purposes.

In the first case, to determine if Reading Habit has a moderating effect on relationship between Smartphone usage and Extent of Usage of Text Content for Educational Purposes, correlation was run between Smartphone usage and Text content for different levels of Reading habit (low, moderate and high) and relationships are plotted in a graph to examine if there were any visible differences among the relationship slopes (Fig. 1).

Results showed that the relationship slopes for Smartphone usage and Text content were different for the three levels of Reading habit: Low  $R^2 = 0.193$ ; Moderate  $R^2 = 0.031$ ; and High  $R^2 = 0.012$ . Correlations between Smartphone Usage and Text usage was also run for different levels of Reading habit and the results are presented in Table 20 to check whether there were significant differences in these correlations.

It was observed that the correlations were different between Smartphone usage and Text content for the three levels of reading habits: low reading level ( $r = 0.439$ ,  $p = 0.013$ ); moderate readers ( $r = 0.176$ ,  $p = 0.038$ ); and highly active readers ( $r = 0.108$ ,  $p = 0.224$ ). Hence, we find that Reading Habit interacts with Smartphone Usage in its relationship with the Extent of Usage of Online Text content for education.

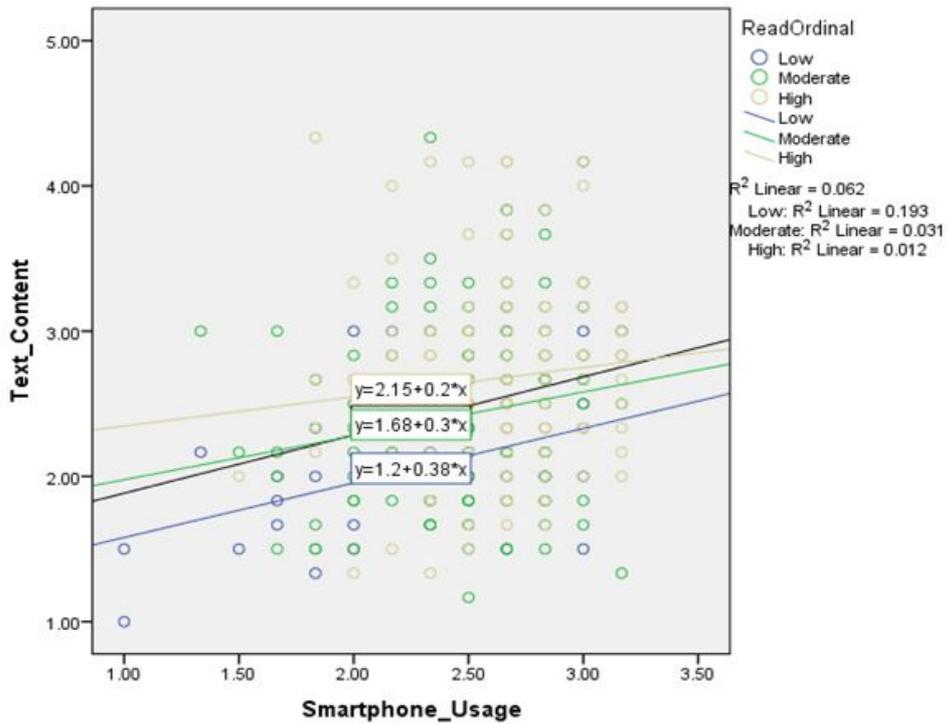
**Table 20. Reading Habit as Moderator:  
Difference in Correlations between Smartphone Usage and Text**

Reading Habit		Low reading	Moderate reading	High reading
Extent of Usage of Online Text Content				
Smartphone usage	Pearson Correlation	.439	.176	.108
	Sig. (two-tailed)	.013	.038	.224

In the second case, to determine if Reading Habit has a moderating effect on the relationship between Smartphone usage and Extent of Usage of Audio Video Content for Educational Purposes, correlation was run between Smartphone usage and Audio Video Content for different levels of Reading habit (low, moderate and high) and the relationships are plotted in a graph to examine if there were any visible differences among the three relationship slopes (Fig. 2). Results showed that the relationship slopes for Smartphone usage and Audio Video Content were different for the three levels of Reading habit: Low  $R^2 = 0.344$ ; Moderate  $R^2 = 0.048$ ; and High  $R^2 = 0.061$ . Correlations between Smartphone Usage and Audio Video content usage was also run for different levels of Reading habit and the results are presented in Table 21 to check whether there were significant differences in these correlations.

It was observed that the correlations were different between Smartphone usage and Audio Video content for the three levels of reading habits: low reading level ( $r = 0.587, p = 0.001$ ); moderate readers ( $r = 0.219, p = 0.010$ ); and highly active readers ( $r = 0.247, p = 0.005$ ).

Fig. 1 Text content vs Smartphone usage (reading ordinal)



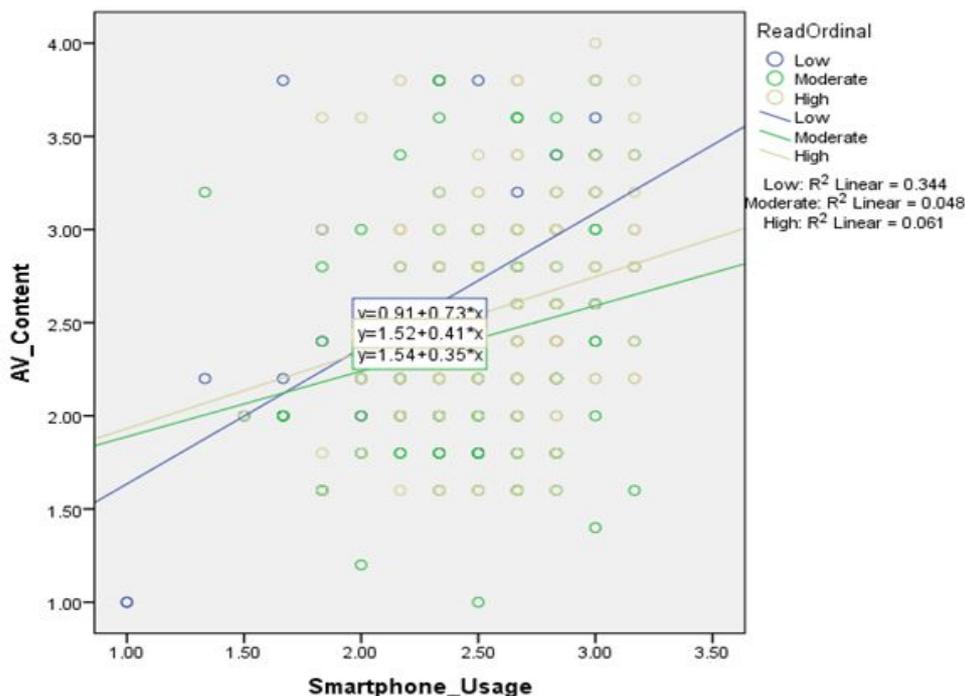
Hence, with the findings, it may be concluded that Reading Habit interacts with Smartphone Usage in its relationship with the Extent of Usage of Online Audio Video content for education.

Table 21 Reading Habit as Moderator:

Difference in Correlations between Smartphone Usage and AV

Reading Habit		Low reading	Moderate reading	High reading
Extent of Usage of Online AV Content				
Smartphone usage	Pearson Correlation	.587	.219	.247
	Sig.	.001	.010	.005

Fig. 2 AV content vs Smartphone usage ( reading ordinal)



In the third case, to determine if English Language and Understanding has a moderating effect on the relationship between Smartphone usage and Extent of Usage of Text Content for Educational Purposes, correlation was run between Smartphone usage and Text content for different levels of English Language and Understanding (low, moderate and high) and the relationships are plotted in a graph to examine if there were any visible differences among the three relationship slopes (Fig. 3). Results showed that the relationship slopes for Smartphone usage and Text content were different for the three levels of English Language and Understanding: Low  $R^2=1$ ; Moderate  $R^2=0.138$  ; and High  $R^2=0.011$ .

Correlations between Smartphone Usage and Text usage was also run for different levels of English Language and Understanding and the results are presented in Table 22 to check whether there were significant differences in these correlations. The correlations were different between Smartphone usage and Text content for the three levels of English Language and Understanding: low English Language and Understanding ( $r = 0.287$ ,  $p =$

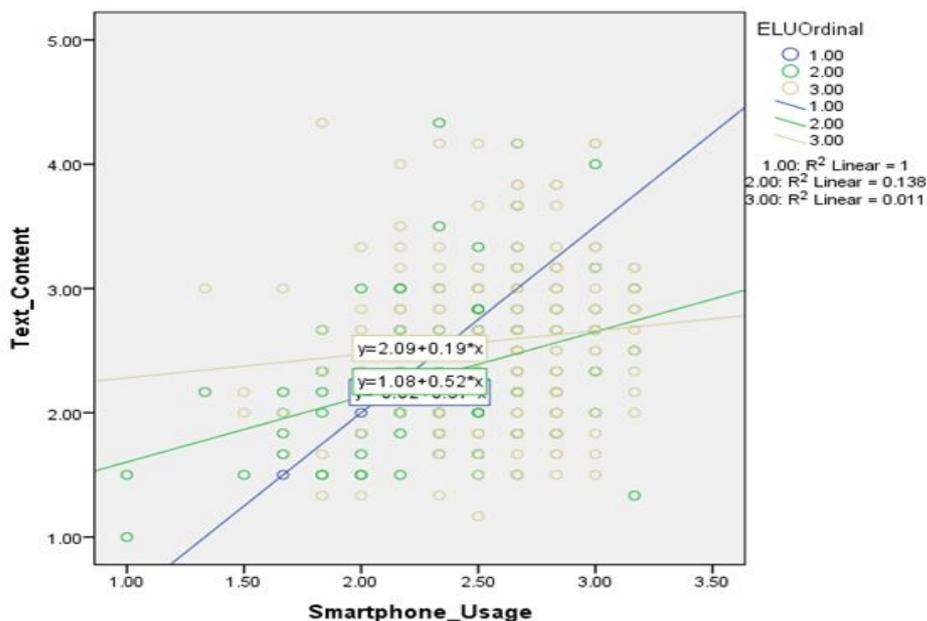
0.319); moderate English Language and Understanding ( $r = 0.377, p = 0.000$ ); and highly language understanding ( $r = 0.105, p = 0.141$ ). Hence, we find that English Language Understanding interacts with Smartphone Usage in its relationship with the Extent of Usage of Online Text content for education.

Table 22 **English Language Understanding as Moderator: Difference in Correlations between Smartphone Usage and Text**

Reading Habit		Low Elu	Moderate Elu	High Elu
Extent of Usage of Online Text Content				
Smartphone usage	Pearson Correlation	.287	.377	.105
	Sig. (two-tailed)	.319	.000	.141

In the fourth case, to determine if English Language Understanding has a moderating effect on the relationship between Smartphone usage and Extent of Usage of Audio Video Content for Educational Purposes, correlation was run between Smartphone usage and Audio Video Content for different levels of English Language Understanding (low, moderate and high) and the relationships are plotted in a graph to examine if there were any visible differences among the three relationship slopes (Fig. 4).

Fig. 3 Text content vs Smartphone usage (ELU ordinal)



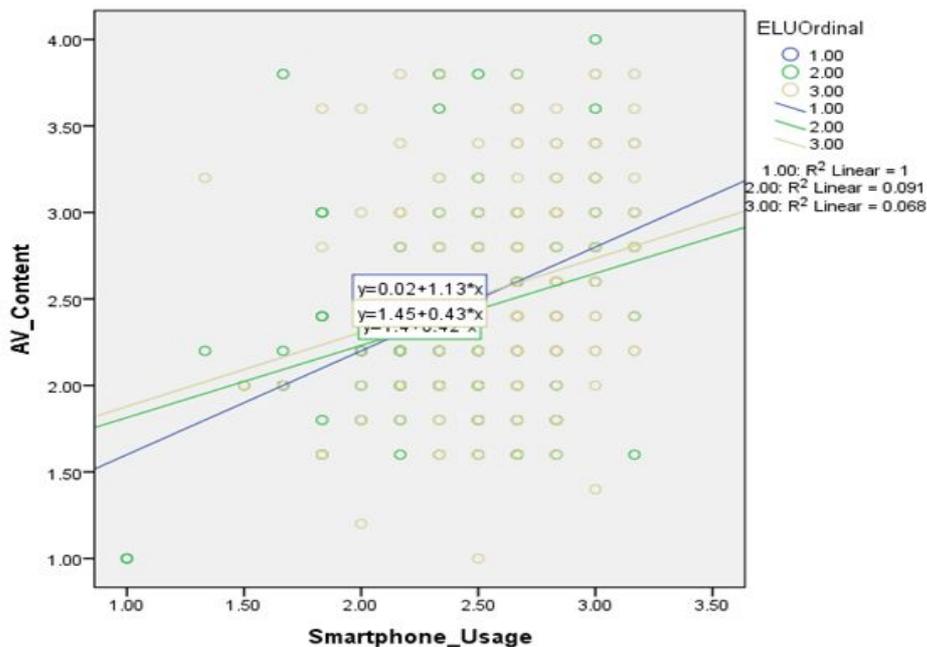
Results showed that the relationship slopes for Smartphone usage and Audio Video Content were different for the three levels of English Language Understanding: Low  $R^2 = 1$ ; Moderate  $R^2 = 0.091$ ; and High  $R^2 = 0.068$ . Correlations between Smartphone Usage and Audio Video content usage was also run for different levels of English Language Understanding and the results are presented in Table 23 to check whether there were differences in these correlations. It was observed that the correlations were different between Smartphone usage and Audio Video content for the three levels of English Language Understanding: low Language Understanding level ( $r = 0.153, p = 0.601$ ); moderate Language Understanding ( $r = 0.293, p = 0.006$ ); and highly Language Understanding ( $r = 0.261, p = 0.000$ ).

Hence, we find that Language Understanding interacts with Smartphone Usage in its relationship with the Extent of Usage of Online Audio Video content for education.

**Table 23 English Language Understanding as Moderator: Difference in Correlations between Smartphone Usage and AV**

Reading Habit		Low Elu	Moderate Elu	High Elu
Extent of Usage of Online AV Content				
Smartphone usage	Pearson Correlation	.153	.293	.261
	Sig. (two-tailed)	.601	.006	.000

**Fig. 4 AV content vs Smartphone usage (ELUordinal)**



**Discussion and Conclusion**

Gender is not associated with the Extent of Usage of Online Text Content, Extent of Usage of Online Audio-visual content, Extent of Usage of Smartphones, Extent of Reading Habits and English Language Understanding among the target student group of 18-35 years.

The research was conducted among the millennials and both men and women belonging to this age group or the so-called digital natives did not

have any statistically significant difference in Reading Habits, Smartphone usage, English Language Understanding and in the consumption of Online Text and Audio-visual content. Among the millennials, there is no difference in the Extent of Smartphone Usage, Extent of Reading habit consumption of Online Text and Audio-visual content, between the rural and urban populace.

Smartphone usage has a positive relationship with Online Text consumption and Audio-visual consumption for educational purposes. Reading habit, however, is associated only with Online Text consumption. English Language and Understanding had relevance both in Text and Audio-visual content consumption.

The usage of Text content was also related to Audio-visual content, which means that those logging into the Internet for consumption of Text for educational purposes tended to also use the Audio-visual content. Further, the moderation analysis found out that Smartphone usage is interacting with Reading habit and English Language Understanding in its relationship with the Extent of Usage of Text Content and Audio-visual content.

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