ISSN (Print): 0972-2467
ISSN (Online): 0976-2477
SRELS Journal of Information Management, Vol 56(3), June 2019, p. 113-121 DOI: 10.17821/srels/2019/v56i3/144112

Use of YouTube by Students: A Case Study of Pondicherry University

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Abstract

This study examined the use of YouTube for educational purposes. An online questionnaire was designed using Google form and data were collected from Pondicherry University students. Data screening, validity and reliability were carried out before analysis with the help of SPSS software. AMOS version 22 and SPSS version 20 were used for data analysis. An independent samples t-test and one-way ANOVA test reveal that there is a significant difference between age and purpose of viewing videos (p-*value* = 0.003), similarly between gender and learning motivated by educational videos from YouTube (p-*value* = 0.001) and between gender and educational outcome (p-*value* = 0.005). The findings of this study show that educational videos from YouTube aided the students in preparing assignments, presentations and seminars. Also, it helps them to achieve a better educational outcome.

Keywords: Educational Outcome, Educational Videos, Educational use of YouTube, Motivate Learning, YouTube

1. Introduction

Information and Communications Technologies (ICTs) are essential tools (Huffman & Huffman, 2012) to assist in learning activities (Torres-Ramírez, García-Domingo, Aguilera, & Casa, 2014). Present generations of students are digitally oriented (McCormick, Holland & Szydlo, 2010) so they look for educational resources on the Web which they can use for self-learning (Duverger & Steffes, 2012). Nowadays social media, particularly YouTube resources are extensively used by students for enhancing subject knowledge (Shah & Khan, 2015). YouTube is the largest and most prominent video sharing platform with approximately 300 hours of videos uploaded every minute, over 5 billion videos are viewed every day and more than 5 billion videos are shared till date (Aslam, 2018) so it is the most popular video viewing site (Buzzetto-More, 2014). Moreno & Mayer (1999) found that an introductory learning course using videos greatly influenced the learners, facilitated learning difficult concepts and attracted weaker learners in understanding the concepts (Moreno & Mayer, 1999). Students learn better, faster (Mayer & Moreno, 2002) and understand the concepts more clearly when words (Mayer, 2003), pictures and audios are delivered together than words alone (Mayer, 2010).

2. Purpose of the Study

A study on the effect of educational videos on students' learning is always desirable, because literature indicates that individuals differ in their learning styles (Young, Hausler & Sanders, 2008). Alias et al. (2013) found that there is lack of research focusing on the influence of the use of educational videos for teach (Alias et al., 2013). This study seeks to extend the earlier work on YouTube and examines the use of YouTube videos for educational purposes.

The objectives of the study are:

1. To find out the purpose(s) of viewing educational videos on YouTube,
2. To find out how YouTube videos motivated learning, and
3. To examine the impact of YouTube educational videos on students' outcome.

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3. Research Hypotheses

Considering the above-stated objectives, the following 9 hypotheses were formulated. Hypotheses 1-3 relate to objective 1, Hypotheses 4-6 relate to objective 2, and Hypotheses 7-9 relate to objective 3.

H1. There is a significant relation between gender and purpose of viewing videos on YouTube.
H2. There is a significant relation between age and purpose of viewing videos on YouTube.
H3. There is a significant relation between education qualification and the purpose of viewing videos on YouTube
H4. There is a significant relation between gender and motivated learning by YouTube.
H5. There is a significant relation between age and motivated learning by YouTube.
H6. There is a significant relation between education qualification and motivated learning by YouTube.
H7. There is a significant relation between gender and educational outcome.
H8. There is a significant relation between age and educational outcome.
H9. There is a significant relation between education qualification and educational outcome.

4. Review of Literature

Mayer and Moreno (2002) stated that "the cognitive process of integrating is most likely to occur when the learner has corresponding pictorial and verbal representations in working memory at the same time" (Mayer & Moreno, 2002). Integration of YouTube videos into the learning process (Berk, 2009) has proved to enhance the learning process (Eick & King, 2012). Moreover, viewing educational videos on YouTube captures students' learning attention (Buzzetto-More, 2014) and also improves learning progress (Tan & Pearce, 2011). More precisely, properly selected educational videos on YouTube have inspired the students involved more intensely with subject matter (Buzzetto-More, 2014) and helped them in recollecting the subject learned earlier (Duverger & Steffes, 2012), promoted flexible education environments (Liu, 2010), enhanced multiple methods of learning and improve students' level of understanding (Logan, 2012).

Eick and King (2012) indicate that YouTube videos helped in developing the cognitive concept of multimedia learning (Eick & King, 2012) and helped students to develop critical thinking (Logan, 2012). YouTube offers a novel and effective form of learning to students (Alwehaibi, 2015). Active knowledge acquisition through videos from YouTube promoted student's commitment and has constructive effects on their proficiency development (Choi & Rhee, 2014). It is found that viewing videos on YouTube enhanced the acquisition of vital skills to critically analyze a subject (Alpay & Gulati, 2010). Videos created by subject experts and specialists give students sureness and ease in learning (Jackman & Roberts, 2014), helpful to students as an active learning tool (Fleck, et al., 2014). YouTube is widely used as an educational tool by college students for preparing their class assignments, presentations, projects and examinations (McCormick, Holland & Szydlo, 2010).

Videos from YouTube have the capability to help assimilate related subject content and understand it. YouTube videos motivated student's interactivity with content (Fleck, et al., 2014), improved commitment (Berk, 2009) and enriched knowledge transfer (Greenberg & Zanetis, 2012) also It was also noticed that shorter videos of less than 15 minutes duration appeal to be viewed more than longer videos. Nowadays, students are audio-visual spatial learners particularly motivated by YouTube videos (Greenberg & Zanetis, 2012). YouTube videos enable students to choose (Liu, 2010) and control way of learning (Logan, 2012), help students to be attentive, generate interest, enhance conception of new ideas (Miller, 2009) improve memory and understanding (Eick & King, 2012). Jaffar (2012) found that 98% of the students extensively used YouTube as online information materials to supplement subject learning. YouTube motivates learning and can be used as supplementary material for learning when videos are properly matches to course objectives (Jaffar, 2012).

Alwagait, Shahzad and Alim (2015) studied the relationship between social media use and education performance; and found that upsurge in the use of social networks decreases education performance of students (Alwagait, Shahzad and Alim, 2015). A study conducted on common social media in Saudi college found that YouTube is used as additional resource to complement classroom learning, YouTube is used as additional resource and it is more effec tive compared to textbooks to overcome learners' problems (Khalid & Muhammad, 2012). Education achievement is associated with numerous aspects course experience (Diseth, Pallesen, Hovland & Larsen, 2006), and student's awareness of the learning environs (Choi, 2005).

5. Methodology

The study used survey methods and questionnaire tool for collecting data. An online survey questionnaire was used to collect primary data for the study.

5.1 Sample

The sample consists of 150 students of Pondicherry University, including UG, PG and Ph.D. scholars. A total of 150 respondents participated in this online survey (Table 1), of the total, 89(59.3%) are males and 61(40.7%) are females and the majority (80.7%) of the respondents belong to the age group between 21-25 years. Considering their education qualification, 75(50%) of them are undergraduate students, 70(46.7%) are master's students and 5(3.3%) are Ph.D. scholars. of the total, 96.7% of them have seen educational videos on YouTube. Although the majority (96.7%) of the respondents had seen videos 106(70%) of them actually subscribed to educational channels on YouTube.

Table 1. Demographic profile of the respondents

Measure	Item	Frequency	(%)
Gender	Male	89	59.3
	Female	61	40.7
Age group (*in years*)	Below 20	13	8.7
	21-25	121	80.7
	26-30	13	8.7
	31-35	3	2
Educational qualifications	UG	75	50
	PG	70	46.7
	Ph.D.	5	3.3
Device used	Mobile phone	66	44
	Laptop	82	54.7
	Desktop	2	1.3
Viewing educational videos on YouTube	Yes	145	96.7
	No	5	3.3
Time spent on YouTube (daily basis)	(below 2 hours	119	79.3
	above 2 hours	31	20.7
Subscribing educational channels on YouTube?	Yes	106	70.7
	No	44	29.3

5.2 Data Collection Instrument

This study used a simple random sampling method to collect data. A closed-ended online questionnaire was designed using Google form. The questionnaire consists of 4 sections: the first section deals with personal data, while second, third and fourth sections cover 'purpose of viewing videos on YouTube', 'YouTube motivates learning' and 'role of YouTube on educational outcome'. The responses to 'purpose of viewing videos on YouTube' were measured using a 5-point Likert scale with 1 representing never and 5 representing always, 'YouTube motivates learning' and 'role of YouTube on educational outcome' were measured using a 5-point Likert scale with 1 representing strongly disagree and 5 representing strongly agree. The variables for this study were adopted from the review of the literature; accordingly, this questionnaire was designed. A pilot study was conducted by distributing 10 questionnaires (Isaac & Michael, 1995) and the final questionnaire was modified based on the feedback.

5.3 Data Collection and Treatment

A total of 150 responses were collected from the Pondicherry University students. SPSS AMOS version 22 and Statistical Package for Social Sciences (SPSS version 20) was used for the analysis of the collected data. ANOVA test was employed to test the hypotheses as it is suitable to compare the mean of two or more than two groups (Kothari, 2004).

Preliminary data screening was carried out and the researcher conducted Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The prime goal of EFA is to discover core variables that are interrelated to each other. The Kaiser–Meyer–Oklin (KMO) in EFA test must be greater than 0.50 (Kaiser, 1974). In this study, the KMO is .887 which is strong and indicates a strong correlation between variables. There is a stronger correlation between variables when KMO value is closer to 1 (Munro, 2003). CFA was employed to validate the factor structure of a set of observed variables. EFA and CFA are important and interdependent (Munro, 2003). For this study cross-loading of the construct were verified and met the discriminant validity criteria (Fornell & Larcker, 1981). As shown in Table *2* this study has acceptable AVE and CR values.

Cronbach's alpha test was carried out to check the reliability of the constructs as shown in Table 3. A Cronbach alpha efficiency value exceeding 0.70 ($a > 0.70$) designates reliability of the scale (Gaur & Gaur, 2009). In this study, all construct have above 0.70 Cronbach alpha values which is fit enough to proceed statistical test.

Table 2. Convergent validity and discriminant validity

Construct	CR	AVE	ML	Ps	AO
ML	0.915	0.606	0.778		
PS	0.798	0.577	0.246	0.759	
AO	0.873	0.581	0.740	0.306	0.762

CR=composite reliability, AVE=average variance extracted, ML=motivate learning, PS=purpose of viewing, AO=educational outcome

6. Data Analysis

The collected data were examined keeping the objectives in mind.

6.1 Viewing of Videos on YouTube

Students watch videos on YouTube for different purposes including preparing assignments, seminar presentations and to prepare for examinations. Respondents were asked to specify how frequently they use YouTube. It was found (Table 4) that the prime purpose of viewing videos on YouTube was to prepare for 'seminar presentations' (mean score = 3.27), 'to prepare for examinations' (mean score =3.36) and 'to prepare assignments' (mean score = 3.33). Overall, students see education videos on YouTube for enhancing their knowledge.

6.2 Motivate Learning

Seven variables were used to examine how YouTube motivated student's learning in. As indicated in Table 5, it is found that students are motivated by viewing educational videos on YouTube, which 'Encourage peer learning' (mean score = 3.65), 'Motivates in developing metacognition skills' (mean score = 3.78), 'Inspire learning

Table 3. Means, standard deviations and reliability (Cronbach's alpha) of the 15 items

Item	Item label	N	Mean	SD	Cronbach's alpha
ps1	To prepare assignments	150	3.33	1.21	0.776
ps2	To prepare a seminar presentation	150	3.27	1.18	
ps3	To prepare for an examination	150	3.36	1.30	
Total score for the purpose of viewing videos on YouTube			9.96	3.96	
ml1	Inspires my learning	150	3.85	0.89	0.914
ml2	Encourages learning	150	3.93	0.81	
ml3	Motivates learning	150	3.90	0.90	
ml4	Stimulates critical thinking	150	3.85	0.94	
ml5	Motivates in developing metacognition skills	150	3.78	0.93	
ml6	Encourages peer learning	150	3.65	0.90	
ml7	Inspires learning concentration	150	3.80	0.92	
Total score for YouTube motivates learning			26.76	6.29	
ao1	Enhances my understanding	150	4.07	0.82	0.867
ao2	Broadens understanding of the subject	150	4.01	0.90	
ao3	Get different perceptions from experts	150	3.97	0.97	
ao4	Improves my existing presentation skills	150	3.87	0.84	
ao5	Achieves a better grade	150	3.64	0.97	
Total score for role of YouTube on educational outcome			19.56	4.5	

Table 4. Purpose(s) of viewing videos on YouTube

Items	N**	R**	S**	VO**	A**	Mean	SD
To prepare assignments	11 (7.3%)	24 (16%)	54 (36%)	26 (17.3%)	35 (23.3)	3.33	3.27
To prepare a seminar presentation	10 (6.7%)	30 (20%)	49 (32.7%)	32 (21.3%)	29 (19.3)	3.27	1.18
To prepare for an examination	15 (10%)	25 16.7%)	40 (26.7%)	31 (20.7%)	39 (26%)	3.36	1.30

**N=Never, R=Rarely, S=Sometimes, VO=Very Often, A=Always

Table 5. YouTube motivating learning

Items	SD**	D**	U**	A**	SA**	Mean	SD
Inspires my learning	4 (2.7%)	7 (4.7%)	27 (18%)	81 (54%)	31 (20.7%)	3.85	.89
Encourage learning	1 (0.7%)	10 (6.7%)	19 (12.7%)	89 (59.3%)	31 (20.7%)	3.92	.81
Motivate learning	5 (3.3%)	4 (2.7%)	26 (17.3%)	81 (54%)	34 (22.7%)	3.90	.90
Stimulate critical thinking	3 (2%)	12 (8%)	24 (16%)	76 (50.7%)	35 (23.3%)	3.85	.94
Motivate in developing metacognition skills	3 (2%)	13 (8.7%)	2.8 (18.7%)	76 (50.7%)	30 (20%)	3.78	.93
Encourage peer learning	3 (2%)	13 (8.7%)	38 (25.3%)	75 (50%)	21 (40%)	3.65	.90
Inspire learning concentration	4 (2.7%)	10 (6.7%)	27 (18%)	80 (53.3%)	29 (19.3%)	3.80	.92

**SD= Strongly Disagree, D=Disagree, U=Undecided, A=Agree, SA=Strongly Agree

concentration' (mean score = 3.80), 'Inspires my learning' (mean score = 3.85), 'Stimulates critical thinking' (mean score = 3.85), 'Motivates learning' (mean score = 3.90), and 'Encourages learning' (mean score = 3.92). Overall, students are motivated in different ways by viewing educational videos on YouTube.

6.3 Educational Outcome

Wise and effective use of YouTube has a positive impact on students' educational outcome. Five items were used to measure the educational outcome by viewing YouTube videos. The respondents were asked to indicate their opinion on a 5-point Likert scale. As shown in Table 6 students after viewing educational videos on YouTube felt that it helped them to 'Achieve a better grade' (mean score = 3.64), 'Improve existing presentation skills' (mean score = 3.87), 'Get different perceptions from experts', (mean score = 3.97), 'Broaden understanding of the subject' (mean score = 4.00), and 'Enhance understanding' (mean score = 4.07). In general, students improved their educational outcome by viewing education videos on YouTube.

6.4 Hypotheses Testing

Earlier studies have shown that age, gender, educational qualification impact use of YouTube (Huffman & Huffman, 2012; Mayer, 2010; Jackman & Roberts, 2014). To test the first three hypotheses, an independent sample t-test and One-way ANOVA test were carried out to examine if a significant difference existed between the purpose of viewing and control variables i.e. gender,

Table 6. Educational outcome

Items	SD**	D**	U**	A**	SA**	Mean	SD
Enhance understanding	2 (1.3%)	8 (5.3%)	9 (6.0%)	89 (59.3%)	42 (28%)	4.07	.82
Broaden understanding of the subject	2 (1.3%)	11 (7.3%)	15 (10%)	78 (52%)	44 29.3%)	4.00	.90
Get different perceptions from experts	3 (2.0%)	13 (8.7%)	15 (10%)	73 (48.7%)	46 30.7%)	3.97	.97
Improve existing presentation skills	1 (0.7%)	9 (6%)	30 (20%)	78 (52%)	32 21.3%)	3.87	.84
Achieve a better grade	4 (2.7%)	15 (10%)	38 (25.3%)	67 (44.7%)	26 17.3%)	3.64	.97

**SD= Strongly Disagree, D=Disagree, U=Undecided, A=Agree, SA=Strongly Agree

Table 7. t-test and ANOVA test results

Variable	Indicator	Mean	SD	t or F-*value*	p-*value*
Gender	Male	3.2809	3.2809	1.582	0.211
	Female	3.3770	3.3770		
Age	Below 20	2.9231	1.09843	4.982	0.003*
	21-25	3.4408	0.96821		
	26-30	3.0000	1.09713		
	31-35	1.5556	0.19245		
Education	UG	3.3156	1.03380	1.616	0.202
	PG	3.3810	0.97023		
	Ph.D.	2.5333	1.46439		

*significant at 0.05

Table 8. t-test and ANOVA test results

Variable	Indicator	Mean	SD	t or F-*value*	p-*value*
Gender	Male	3.9567	0.60930	13.351	0.001*
	Female	3.6300	0.84691		
Age	Below 20	3.6593	0.90264	0.504	0.680
	21-25	3.8217	0.74944		
	26-30	3.9341	0.35769		
	31-35	4.1429	0.14286		
Education	UG	3.7562	0.79947	0.734	0.482
	PG	3.8816	0.66872		
	Ph.D.	4.0286	0.39641		

*significant at 0.05

Table 9. t-test and ANOVA test results

Variable	Indicator	Mean	SD	t or F-*value*	p-*value*
Gender	Male	3.9933	0.62118	8.163	0.005*
	Female	3.7967	0.85361		
Age	Below 20	3.6154	0.82648	1.113	0.346
	21-25	3.9223	0.73818		
	26-30	4.0462	0.52379		
	31-35	4.2667	0.46188		
Education	UG	3.9147	0.76489	0.416	0.661
	PG	3.8914	0.70253		
	Ph.D.	4.2000	0.56569		

Table 10. Results of tested hypotheses

Sl. No.	Hypotheses	Results
H1	There is a significant difference between gender and purpose of viewing videos on YouTube	Rejected
H2	There is a significant difference between age and purpose of viewing videos on YouTube	Accepted
H3	There is a significant difference between education qualification and the purpose of viewing videos on YouTube	Rejected
H4	There is a significant difference between gender and motivated learning by YouTube	Accepted
H5	There is a significant difference between age and motivated learning by YouTube	Rejected
H6	There is a significant difference between education qualification and motivated learning by YouTube	Rejected
H7	There is a significant difference between gender and educational outcome	Accepted
H8	There is a significant difference between age and educational outcome	Rejected
H9	There is a significant difference between education qualification and educational outcome	Rejected

age and educational qualification. Findings in Table 7 indicate that there is a statistically significant difference among students of different age groups and the purpose of viewing YouTube for educational purposes (*F*-value = 4.982, *p*-value = 0.003). Therefore, the stated alternate hypothesis (H2) is accepted and rejects the null hypotheses p-value = 0.211 and p-value = 0.202 (H1 and H3) as their significant value is above 0.05.

Hypotheses H4, H5, H6 were proposed to test if there is a significant difference between learning motivated by viewing YouTube videos and control variables i.e. gender, age and educational qualification. Findings in Table 8 show that there is a statistically significant difference suggesting a relation between gender (*t*-value = 13.351, *p*-value =

0.001) and learning motivated by viewing educational videos on YouTube. Thus, accepted hypothesis (H4) with *t*-values = 0.001 and overruled null hypotheses at p-value = 0.680 and p-value = 0.482 (H5 and H6) which is above significant value (p=0.05).

Hypotheses H7, H8 and H9 were proposed to test if there is a relation between educational outcome and control variables i.e. gender, age and educational qualification. The Table 9 indicates that there is a statistically significant relation between gender and YouTube impact on educational achievements. Therefore, accepted H7 with *t*-values = 0.005 and rejected H8 and H9 as their significant value p-value=0.346 and p-value=0.661 is greater than significant value (p=0.05).

7. Discussion and Conclusion

The present study used demographic differences of the students to examine the purpose of viewing educational videos on YouTube. The findings of the study are summarized in the Table 10.

This study reveals that students view educational videos from YouTube to improve their understanding and educational outcome. Learning through videos is the most effective way as it offers both audio and visual senses (Mayer & Moreno, 2002; Mayer, 2010). Study conducted by Snyder and Burke (2008) had found that 94% respondents indicated that they had seen YouTube videos (Snyder & Burke, 2008), similarly in this study the majority (96.7%) had viewed educational videos on YouTube, 40.6% of the respondents view YouTube videos 'very often' to 'always' to prepare assignments, 40.6% refer YouTube videos 'very often' to 'always' to prepare seminars and 46.7% refer YouTube videos 'very often' to 'always' to prepare presentations.

This study found that students have a very positive opinion about educational videos on YouTube. It is suggested that further research should be carried out on how YouTube videos can be integrated into classroom learning, how to check the quality of the videos i.e. 'quality regulation', YouTube educational videos relationship with curriculum content, copyright, etc. areas can be explored.

8. Acknowledgments

Somipam R. Shimray gratefully acknowledges the financial support received from the University Grants Commission Indian through the research fellowship award number UGC-Ref. No.: 2881/(NET-June 2014). Mr. Prosperous Nongsiej is thanked for his valuable help in collecting data. The authors thank the anonymous reviewers for the valuable suggestions and comments which helped improve the quality of the original manuscript.

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