

Analyzing the E-learning Video Environment Requirements of Generation Z Students using Echo360 Platform

Swapna GOTTIPATI* & Venky SHANKARARAMAN

School of Information Systems, Singapore Management University

*swapnag, venks@smu.edu.sg

Abstract: As with any other generational cohort, Generation Z students have their own unique characteristics that influence their approach to learning process. They are the future workforce and several efforts are undertaken by Government and education institutes to consider the characteristics of Gen-Z in developing the a curriculum and teaching environment suitable for these students. E-learning plays a key role in students learning process and has been widely adopted by many education institutions. In particular, videos play a major role in the learning process of Gen-Z students. The purpose of this paper is to focus the on requirements of Gen-Z students and to provide suggestions for how to create a e-learning video environment for them. This study aids the education institutes in designing and developing e-learning environment appropriate for Gen-Z students. For this project, we study the e-learning videos environment, Echo 360, and the behavior of Gen-Z students to suggest the additional features to improve the e-learning video environment. Around 76 students participated in our study where they had to complete an e-learning session and a qualitative survey to provide feedback about the session. Our study shows that the students appreciate the video based learning due the flexibility, pace and independence. At the same time, they prefer online interactions, and provided technology based suggestions for e-learning environment improvements.

Keywords: e-learning video environments, Echo 360, Generation Z students, requirements

1. Introduction

E-Learning has become a key learning methodology in education systems. The online tools should be designed to enhance the flexibility and accessibility of the teaching and learning experience of e-learning users. Critical to successful and effective e-learning is understanding the users of the tools and their requirements (Shili et al. 2016; Ivanova & Smrikarov, 2009). Generation Z (Gen-Z) students have been raised in a world of instant access to knowledge and information, a world of automation, remote controls, and simulation capabilities to stimulate the mind. They prefer non-traditional teaching methods and are far more technologically savvy. The students believe in smart work and not hard work. Therefore, the institutions should cater for the requirements of the Gen-Z students for the success of e-learning education methods.

1.1 E-Learning

E-learning is a methodology widely practiced in education institutes to deliver the teaching and learning experiences through technology (Shili, 2016).

Advantages of e-learning include convenience, cost, higher retention, greater collaboration, global opportunities, flexibility and mobility. Some disadvantages can be lack of control, isolated, learning approach and technology issues (Olliges & Mahfood, 2003). Nevertheless, e-learning is highly popular and adopted by several learning institutes around the world.

The majority of students who enter higher education are required to use online learning resources or activities to support their formal or informal learning. Examples include virtual learning environments, discussion forums/lists, e-mails, podcasts, or library information databases. Content

types widely used in e-learning can be categorized into text (Wikis), documents (slides, pdf, docs, xls) and videos (Kinshuk & Nian-Shing, 2006; Stefan, 2007).

Central to e-learning success are communication technologies, content frameworks and methodologies which are generally categorized as synchronous or asynchronous. Asynchronous e-learning is a flexible online learning methodology that is often facilitated by tools such as e-mail and discussion boards. It supports learning process and network among learners and with teachers outside the constraints of time (Kinshuk & Nian-Shing, 2006; Hampton & Keys, 2017). Synchronous e-learning requires the learners and teachers to be online at the same time. It is commonly supported by media such as videoconferencing and chat. Learners experience synchronous e-learning as a real class room environment with the key feature of asking and answering questions in real time (Stefan, 2007)

Successful e-learning experience will use a combination of technologies that can integrate various components of the learning process namely; instructors, students, course content and assessments. Within the higher education and e-learning fields there is a growing level of interest in exploring and understanding the e-learning tools and experiences of students in universities (Olliges & Mahfood, 2003; Zhang & Nunamaker, 2003).

1.2 Millennials and Z Generations

Millennials or Gen-Ys are the people born between 1978 and 1994. Most of the undergraduates, graduates and significant number of faculty belong to this cohort. Most of them are considered as first generation technology users and they experienced world with computers and internet since childhood. Their world is different from previous generations in the aspects of exposure to technology (Michael & Richard, 2004; Reynol & Jeanna, 2006). Considering these differences, previous works offered specific suggestions for meeting the needs of millennial and Gen Y students; provide cutting-edge technology, interactive web services and an infrastructure for virtual communities; and offer additional technological support for these first-generation technology driven students (Tracy, 2007; Reynol & Jeanna, 2007). Learning shifted from instructor-centered to learner-centered, and is undertaken anywhere, from classrooms to homes and offices. With the availability of advanced information and communication technologies, e-learning had a far-reaching impact on learning millennials (Zhang & Nunamaker, 2003; Jones et. al, 2007; Ivanova & Smrikarov;2009).

Generation Z students are cohort after millennials or those who were born in 1995 or later. They are sometimes referred to as ‘post-millennials’ and they have started appearing in Universities (Hampton et al., 2016) . There are many key differences between millennials and Gen-Z and therefore there is a burning need for redesigning education practices to suit the Gen-Z characteristics (Loehr, 2015).

Gen-Z students view education as a necessity for individual success and societal prosperity. Although Gen-Z students share some of the same characteristics of millennials, they have their own unique characteristics (Loehr & Generation 2015). The cohort can be described as compassionate, thoughtful, determined, and responsible (Seemiller et al, 2016). A significant aspect of Gen-Z is the widespread usage of the Internet from a young age. Members of Gen-Z grew up with technology and addicted to digital devices. They spend more time online interacting on social media websites for a significant portion of their socializing. These students prefer non-traditional teaching methods, and like using logic-based approaches and experiential learning. (Kinshuk & Nian-Shing, 2006) “How to” videos, online encyclopedias, and multiple other resources are available for students to access to help them learning (Hampton & Keys, 2017). According to the recent study of Microsoft Corp, new generation have an 8-second attention span almost close to the attention span of a gold fish. At the same time, 11 percent of them are diagnosed with attention deficiency syndrome (MCS, 2017). Other studies also show that Gen-Z are less focused and prefer individuality (Hampton & Keys, 2017). Therefore, it is crucial to study and analyse the requirements of the Gen-Z students in designing the e-learning tools else they will lose their interest, leading to the failure of e-learning efforts.

In this paper, we study the perspectives of Gen-Z students on the e-learning video environments. We want to capture new ideas from students that can benefit them more in learning process. Most importantly we are looking at e-learning video environment for Information Systems Gen-Z students. Our research approach is based on Echo 360, a learning video platform for education. The outcome of this study aids instructors and instructional designers to develop more efficient and effective instructional methods based on student learning style. Furthermore, the project outcomes aid in improving the e-learning features to fit various learning approaches of Gen-Z students.

The rest of the paper is organized as follows. In section 2, we present the research methodology used in our project. Section 3 describes the experiment setup for data preparation, and quantitative and qualitative analysis of our research results. Conclusions drawn from this research are presented in Section 4.

2. Research Methodology

This research study is conducted on undergraduate students from School of Information Systems, Singapore Management University. We studied their e-learning requirements using third year course, Enterprise Web Solutions. The course is conducted for 15 weeks in the normal class room settings. We introduced e-learning session for one of the weeks. The methodology involved three main stages.

In the first stage, the course instructors prepared videos for topic, “Analytics in Enterprise Web Solutions”, using Echo 360 (Fei et al, 2017). Echo is a tool that enables to create videos and at the same time provides the statistics of the student participations. Echo360 lecture capture system provides recording choices based on the curriculum, instructor preference and venue. The tool provides features to create videos, editing videos and publishing videos online. It provides students with an easy option to access course materials online from anywhere and at any time. It has features such as; pause, play, share, discussions, bookmarks, feedback etc.

The instructors of the course prepared short videos, 15min to 20mins. Short videos are useful for Gen Z students who are less focused and low attention span (Hampton & Keys, 2017). Each video contains lecture content followed by exercises to apply the learning. This arrangement enables to address their individuality and challenging nature.

In the second stage, we posted the videos to e-learn, SMU’s learning management system. The students are required to complete the e-learning within the week.

In the third stage we surveyed the students using online survey form and collected the results. We also collected the statistics from Echo on various aspects such as students’ video views, completion of view for each student and date. The survey was designed to identify the following:

1. What are the likes and dislikes about the e-learning and videos?
2. What are the suggestions they would give for the improvements of e-learning session and videos?

Likert scale surveys are useful to know the numerical scale of sentiments. However, the opinions and suggestions on the videos which are expressed as plain text are critical to understand the requirements of the students. Our objective is to analyze Gen-Z students’ thoughts and apply for the e-learn improvements. Therefore, we created the survey as open ended questionnaire to capture textual comments. Finally, we analyzed the qualitative results from the survey and quantitative statistics from Echo to understand the behavior and the e-learning video environment needs of the Gen-Z students.

3. Experiments and Findings

In this section, we first present data preparation followed by the details of results. We present our quantitative analysis based on the statistics from Echo. We then present the qualitative analysis of the survey data. We finally present the summary of the e-learning video environment requirements of Gen-Z students.

3.1 Data Preparation

Over 76 students participated in the study, and we collected Echo data and survey data to analyse the e-learning needs for Gen-Z students. The students are of age group between 18 and 21, who are born in and after 1995. 76 students participated in e-learning during week 6 of the course delivery. The students completed e-learning session out of class and then participated in the survey.

3.2 Background of Videos

The course topic is on analytics in enterprise web. Three videos are created to give an overview of analytics, its role in enterprise web and the tools useful for embedding analytics in the enterprise web. After each video, the students will be given an online quiz to test their understanding. The content of the video includes both theory and application based learning components, which is a general pedagogy in courses under Information Systems program.

3.3 Echo Statistics

Recall that the instructors created three videos and published to SMU's online Learning Management System, e-learn. We collected the statistics about the individual students' data such as; amount of participation, time and date of participation, completion status of the videos, bookmarks, unique views and cumulative (total number of views) views and download status. The tool also enables to collect the overall course statistics by weekly.

Figure 1 shows the overall views. The views on November 11th represent the test video created by the instructors for training purpose before the semester. The instructors created three videos related to the course content during January. The actual course started in January and the views in February depict students' participation in e-learning week. For all three videos, the total number of unique views is 127 and total number of cumulative views is 154. We observe that total number of students' cumulative views is more than total number of unique views. Note that students do not need to completely view the video to capture these statistics. The cumulative views are more than unique views for several reasons.

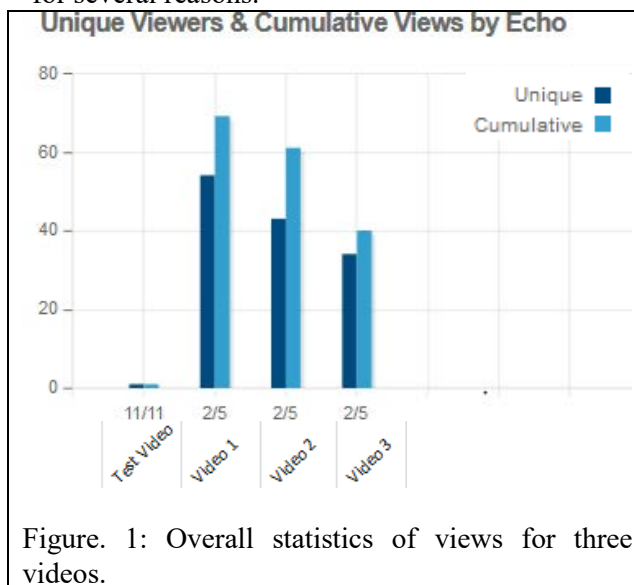


Figure. 1: Overall statistics of views for three videos.

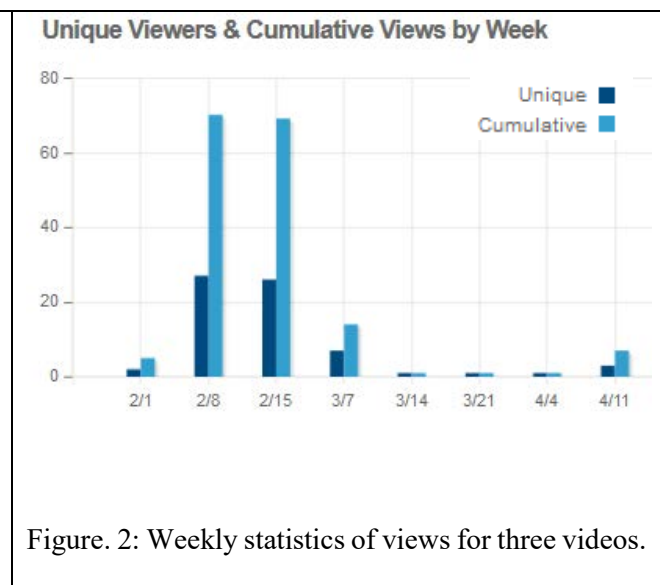


Figure. 2: Weekly statistics of views for three videos.

Firstly, the students might have viewed the videos partially and revisited to view the remaining part. Secondly, the students might have viewed the videos multiple times for better understanding. We observe that the views on video 1 are higher than the other two videos – video 2 and video 3. This also shows that the Gen-Z students are uninterested in viewing the other videos. Therefore, it is necessary to understand their issues with the videos and the environment. Survey questions and analysis will address these issues in sub section C. To further understand the behaviour of the students, we analysed the views by week. Figure 2 shows the weekly statistics of the video views.

We performed a deeper analysis on the statistics and observed that eight students watched the videos for the second time during March and April. In our analysis, we observed that the final exam is in the first week of April. This shows that e-learning videos are helpful for Gen-Z students to revise for the final exam. To study the participation of the students, echo provides duration statistics. Table I shows the participation of the students on all three videos.

Echo statistics from Table 1 shows that the Gen-Z students used e-learning videos for learning and revising for exams. However, many of them they didn't view all the videos or in other words, they didn't complete the e-learning. Many students have ended the e-learning session after watching the first

video. Average completion of video 1 is 77.3% which is higher than video 3, 50.1%. To study the reasons for this behaviour, we designed the survey as explained in Section 2.

Table 1: E-learning video completion statistics

Video Title	Average Completion (%)
IS305- Week 6 -Video 1	77.32
IS305 -Week 6 - Video 2	60.12
IS305- Week 6 - Video 3	50.14

3.4 Survey Statistics

In echo statistics analysis, we observe that the students didn't complete the e-learning session and most of them ended the session after video 1. We observed that the survey questions based on Likert scale are not effective when collecting the feedback from students. Moreover students tend to provide scoring randomly. At the same time, we wanted them to provide us an effective feedback by using a simple survey form with qualitative questions only. We asked three questions in the online survey form to students to understand their thoughts on e-learning video environment, Echo360.

1. What you like about e-learning videos?
2. What is that you didn't like about e-learning videos?
3. How can we improve? Provide suggestions.

The responses are textual in nature and hence we use word clouds to analyse and summarise the responses. Figure 3 shows the responses of likes and Figure 4 shows the responses for dislikes.



We observe that the students like about e-learning factors such as independence, time flexibility, pace, repetition, replay, different learning speeds, availability, convenience, and venue flexibility. These are the common aspects of Gen-Z students as studied by previous researchers. To study the issues on why they didn't complete the e-learning sessions, Figure 4 aids us to analyse their dislikes and needs. We note that though they are independent learners who appreciate online learning, they also look for interactions and availability of professors to answer their questions and clarify their doubts. Table 2 shows the suggestions for improvements to e-learning tool.

Table 2: Suggestions for improvements in e-learning videos

Category	Student Suggestions
Tool improvements	1. Real-time Chats, threading Forums concurrent with slides, Discussions forums, Video chats, 2. Video transcripts 3. Notes taking 4. Site navigations 5. Reminders 6. FAQ
Content and delivery improvements	1. Post Q&A sessions, 2. Instructor on call, online, 3. More exercises, quizzes and labs, 4. Faster pace, 5. Videos with professor teaching and not just slides, 6. Flip classroom. 7. e learning before lessons and labs. and discussions during lessons

The analysis of the third survey question, “suggestions”, is depicted in Table 2. We categorised these suggestions into tool improvements, and content and delivery improvements. We observe that Gen-Z students provide suggestions which are technology based. They provided innovative ideas based on their day to day life experiences. Suggestions such as discussion forums, chats, flip-class rooms show the tech savviness of the Gen-Z students.

4. Conclusion

Gen-Z students appreciate online learning education methods and the same time, they also expect more sophisticated tools that can provide online interactions, reminders, concurrent chat sessions, notes taking features and better site navigation designs. At the same time, they look for faster pace and short videos to balance their focus levels and lower attention spans. Our study summarizes the e-learning video environment requirements for Gen-Z students. The research provides suggestions on additional features to e-learning video environments to align with the Gen-Z student needs and the success of the e-learning sessions.

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