

Video Lecture Styles in MOOCs by Malaysian Polytechnics

Muhamad Izzat Rahim
Faculty of Social Sciences and Humanities,
Universiti Teknologi Malaysia
Jalan Sultan Yahya Petra, Kuala Lumpur, 54100,
Malaysia
Academy of Language Studies,
Universiti Teknologi MARA
Kuala Pilah, Negeri Sembilan, 72000, Malaysia
(+60)-123749950
izzatrahim@gmail.com

Sarimah Shamsudin
Faculty of Social Sciences and Humanities,
Universiti Teknologi Malaysia
Jalan Sultan Yahya Petra, Kuala Lumpur, 54100,
Malaysia
(+603)-26154597
ssarimah.kl@utm.my

ABSTRACT

As the utilisation of Massive Open Online Course (MOOC) grows in Technical and Vocational Education and Training (TVET) discipline, TVET students are required to use video lectures uploaded on MOOCs frequently. However, video lectures come in various styles and it may affect students' academic performance and psychology. Acknowledging this issue, this study aims to investigate the styles of TVET video lectures included in MOOCs by Malaysian Polytechnics. The video lectures (N=90) were analysed using video lecture style taxonomy [12]. It was found that the TVET video lectures can be categorised into fifteen styles in which nine of the styles were not listed in the taxonomy. Hence, the findings of this study can benefit TVET students and instructors in utilising video lectures effectively for teaching and learning. Additionally, it can also help researchers in corpus selection to further the study of TVET video lectures.

CCS Concepts

• Applied Computing → Education → E-learning

Keywords

TVET; MOOCs; Video lectures; Video lecture styles

1. INTRODUCTION

The Malaysian government envisions that there will be an increase in the demand for Technical and Vocational Education and Training (TVET) graduates in the future [1]. Thus, empowering the TVET sector has become a national agenda. Through the National Education Blueprint (2015-2025), the government aims to create quality TVET graduates who can meet the need of skilled manpower for the growth of the nation. One institution that is entrusted to deliver quality TVET education is Politeknik Malaysia or Malaysian Polytechnics. Currently, there are about 27 Polytechnic institutions all over Malaysia that offer myriad of TVET programmes.

Publication rights licensed to ACM. ACM acknowledges that this contribution was authored or co-authored by an employee, contractor or affiliate of a national government. As such, the Government retains a nonexclusive, royalty-free right to publish or reproduce this article, or to allow others to do so, for Government purposes only.

ICEMT 2019, July 22–25, 2019, Nagoya, Japan

© 2019 Copyright is held by the owner/author(s). Publication rights licensed to ACM.

ACM ISBN 978-1-4503-7210-7/19/07...\$15.00

<https://doi.org/10.1145/3345120.3345169>

Realising the government's aspiration, Malaysian Polytechnics has taken steps to enhance the quality of delivery in its institution. One step is the utilisation of Massive Open Online Course (MOOC) in its syllabus. Since 2015, Malaysian Polytechnics has actively integrated MOOC into its syllabus [2]. Through MOOC, the face-to-face lessons are supplemented or replaced altogether. Additionally, Shaari, Ismail and Kok suggest that as of 2017, there are about 37 MOOCs offered by Malaysian Polytechnics [2]. The number is expected to increase as many polytechnics are developing their own MOOCs.

<https://doi.org/10.1145/3345120.3345169>One central feature of MOOCs is video lecture. It is an integral part of MOOCs. In fact, video lectures are considered to be the main medium of instruction in MOOCs [3]. Video lectures can be defined as instructional videos prepared by instructors for the purpose of supplementing classroom lectures [4]. Among the characteristics of video lectures are it is highly scripted [5], slow pace [4] and normally have short length between five to twenty minutes [6].

The ubiquitous usage of video lectures has sparked interest of instructors and scholars to investigate more about the usage of this technology driven method. One focus of the many studies conducted is the styles of video lectures. It concerns the way video lectures are designed and presented to the students.

Studies revealed that video lecture styles affected students' academic performance [4] [7]. It is suggested that students learn better using one type of video lecture style as compared to other styles [7] [8]. For instance, Homer, Plass and Blake found that students' cognitive load will increase when the students utilise video lectures that contain slides [9]. As a result, their learning performance is affected negatively. A study by Chen and Wu yielded similar result [10]. It was found that video with voice over style had significantly increased the cognitive load of students who used it [10].

Other studies found positive effect of video lecture styles towards students' academic performance [7]. Video lectures that contain real people enable students to visualise real life scenario better [7]. On the other hand, video lectures that utilise animation can help students to learn concepts or ideas that are impossible to be visualised using real people [11]. Thus, it can be said that video lecture styles impact students significantly especially in their academic performance. In addition to academic performance, video lecture styles might also affect students psychologically [12].

Based on the reported studies, there is a need to investigate the style of video lectures available in MOOCs for students. Thus, this study aims to investigate the styles of video lectures as existed in Malaysian Polytechnics' MOOCs. Findings for this study might benefit TVET students who need to utilise MOOCs in their study. The study is guided by these two research questions:

1. What are the video lecture styles used for TVET in MOOCs by Malaysian Polytechnics?
2. What are the most common and least common video lecture styles used for TVET in MOOCs by Malaysian Polytechnics?

The answers for these questions are hoped to benefit TVET students while utilising MOOCs. They would be made known about the common video lecture styles used in MOOCs by Malaysian Polytechnics. Additionally, it can also benefit the instructors and MOOCs developers. They can make an informed decision in choosing the best video lecture styles to be uploaded into their MOOCs in the future.

2. LITERATURE REVIEW

Video lecture styles have been the focus of some studies. For example, five types of video lectures are proposed by Nordin et al. [7]. The types are fully animated, mainly animated, semi live action semi animated, mainly live action and fully live action videos. They posited that each type consists of different style that may impact students academically in various ways. Thus, it is important for instructors to think carefully before choosing video lectures to be uploaded into MOOCs.

A more comprehensive list of styles of video lectures is suggested by Crook and Schofield [12]. They proposed a taxonomy that consists of 16 video lecture styles. These styles are assigned based on the features of the video lectures. For instance, presence in lecture style features the narrator or lecturer in full frame in the video while voice over slides style only features the voice of the lecturer over a series of slides. A more detailed explanation of the taxonomy can be seen in Table 1. Like Nordin et al. [7], Crook and Schofield explained that these styles play a significant role towards students [12]. It can affect them academically and psychologically.

A recent study also explored the possible styles that exist for video lectures [13]. Two main themes were suggested from this study namely instructional media and human embodiment. Instructional media refers to usage of technology to present the content of the video lectures. Technology such as animations and slides are considered as instructional media. Contrastively, human embodiment includes video lectures that mainly features the instructors or lecturers.

Using the taxonomy proposed by Crook and Schofield [12], Rahim and Shamsudin studied the styles used in technical video lectures [14]. They found three new styles that were not listed in the taxonomy previously. The new styles were animation, writing over video, and combination of voice over video plus presence in full screen. These new styles add to the existing list of video lectures styles. As explained by Chorianopoulos, there are myriad of potential new styles that can be created using new technology, creativity and strong sense of experimentation [13].

Although each reported study came up with their own list of video lecture styles, some similarities could be observed. Firstly, the video lecture styles are varied. New styles can be created using the latest technology available. Additionally, the scholars agree

that these styles may impact the students significantly especially in academic. Thus, it is important to recognise them.

Table 1. Video lectures taxonomy description [12]

Video Lecture Style	Description
A1 - Voice over slides	A sequence of slides is narrated by a hidden voice.
A2 - Voice over screencast	A record of continuous screen recording (as opposed to discrete and static slides) is narrated by a hidden voice.
A3 - Writing over slides	Narrated slides include superimposed the narrator's writing. Graphic annotation is added to one or more static images, implicitly by the speaker.
A4 - Khan whiteboard	Narrated whiteboard includes manual acts of superimposed writing ¹ . This is similar to A3, except that speaker's hand is made visible as they perform the annotation, thereby conveying a stronger sense of agency. (<i>'Sal Khan's name is associated with video design where a voice is narrated over a problem-solving illustration.'</i>)
B1 - Fixed frame outside	Video narrator in a window fixed adjacent to a slide sequence. It explores picture-in-picture presence of the lecturer. These may each vary in size but are small, typically occupying 20% of screen space.
B2 - Mobile frame outside	Video narrator in a window in various positions adjacent to the sequence of background presentation activity.
B3 - Fixed but overlapping	Video narrator at fixed position but overlapping the background sequence rather than being a framed picture in picture.
B4 - Mobile frame and overlapping	Video narrator is now framed, but presented at varying positions in the background sequence.
C1 - Presence in split screen	Video narrator and slide sequence are presented simultaneously and in adjacent frames.
C2 - Presence in picture	Video narrator is visually integrated with slide images as if standing in front of a display surface.
C3 - Presence overlapped by content	Symbolic material is superimposed on a video narrator.
D1 - Presence active on whiteboard	Narrator moves in front of content and acts upon it but visual presence overlaps a full-screen presentation surface.
D2 - Presence in lecture	Direct recording of narrator in traditional lecture context. The continuity of speaker and display surface is broken, conveying an in-room sense of the two.
D3 - Presence in full screen	Close up on a solitary narrator in local 'domestic' or topic-relevant context.
E1 - Presence in interview	Recorded interview.

E2 - Presence in discourse	Recorded conversation. This and E1 correspond to more traditional 'talking heads' formats common in broadcast expositions.
----------------------------	--

3. METHODOLOGY

3.1 Data collection

The video lectures for this study were collected from Malaysian Polytechnics MOOCs. The MOOCs are available at <https://www.openlearning.com/celtpoliteknikmalaysia>. There are about 33 polytechnic institutions listed on the website. However, not all these institutions have MOOCs.

Researchers self-enrolled to available MOOCs in order to gain access to the video lectures. The video lectures selected must adhere to the following criteria i) based on technical or vocational subject. ii) used as teaching points in the enrolled MOOCs.

3.2 Data analysis

Ninety video lectures were selected for this study. All video lectures were from technical or vocational disciplines such as electric safety, layered semi-conductor and introduction to engine cycle.

Firstly, the video lectures were labelled for ease of reference and discussion. The label used was L1 to L90. The video lectures were watched in its entirety firstly to ensure the researchers took into consideration of the features available in the video lectures.

The taxonomy by Crook and Schofield was used as the main reference to label the styles of the video lectures [12]. However, as cautioned by them, a video lecture may contain more than one style [12]. Thus, the video lectures were watched in its entirety to ensure reliability of the style labelling. Another factor that was considered in analysing the video lectures was the possibility of new styles. As explained by Chorianopoulos and Giannakos, technology availability and technical skills of video producers play a significant role in determining the styles of video lectures [15].

Two researchers were involved in the analysis process. The video lectures were first analysed and labelled in separation by the researchers. Later, the findings were compared, and any differences were resolved in discussion. Overall, only small differences were detected as the video lectures' features were easily noticeable.

4. FINDINGS AND DISCUSSION

Overall, ninety TVET video lectures were analysed using a taxonomy by Crook and Schofield as the main reference [12]. There were fifteen styles found from the analysed video lectures. The most used style was voice over animation. On the other hand, four styles were found to be the least used styles namely voice over video and screencast, writing over slides, screencast and mobile frame outside. Table 2 shows the overall styles used by TVET video lectures in MOOCs of Malaysian Polytechnics.

Voice over animation was utilised by 26 video lectures. This style combines animation on the topic with voice of instructors. The voice over is seen as substitute for the presence of instructor while the animation helps students to visualise ideas and concepts such as Interlocking Building System, water distribution and two strokes engine. For instance, in the video lecture of two strokes engine, the animation shows the inner part of the engine and how it works while a voice is explaining about the engine.

The high number usage of this style is due to the fact that animation enables students to visualise complex ideas or concepts better [11]. Additionally, Raihan explained that animation is a much-needed tool in TVET since it has unique feature [16]. For instance, it can be slowed down to explain certain concept or process. The slow-motion feature enables for step by step teaching. This helps students to learn more effectively.

Table 2. TVET video lecture styles in MOOCs by Malaysian Polytechnics

Video Lecture Style	Number of Video Lecture
Voice over animation	26
Voice over video	17
Voice over slides	11
Animation	10
Voice over screencast	6
Kahn whiteboard	4
Animation + active whiteboard	3
Slides	3
Presence active on whiteboard	2
Presence overlapped by content	2
Writing over video	2
Writing over slides	1
Voice over video and screencast	1
Screencast	1
Mobile frame outside	1

The least utilised styles were writing over slides, voice over video plus screencast, screencast and mobile frame outside. Only one video utilised each of these video lecture styles. Perhaps the low number is due to the complex nature of the styles. For instance, voice over video plus screencast features a combination of two styles. The first is a video on certain topic with voice over by the instructor. Secondly, screencast is a style that combines video capture of screen and voice over. Thus, to combine these two styles requires high technical and editing skills to create such feature in video lectures. Additionally, it might take a long time to produce such video lectures. As a result, as asserted by Chorianopoulos and Giannakos, many instructors choose the basic style as it is easier to be recorded and produced [15].

Nine alternative styles were also found in this study. These styles were not listed in the taxonomy by Crook and Schofield [12]. The styles are voice over animation, voice over video, screencast, animation, slides, writing over video, writing over slides, animation plus active whiteboard and voice over video plus screencast. This finding is similar to Rahim and Shamsudin [14] where the study also found different styles apart from the taxonomy by Crook and Schofield [12]. This shows that there are other styles that could be utilised in recording video lectures. Additionally, new styles of video lectures are expected as instructors and video developers continue to experiment in developing suitable video lectures for students [13].

The myriad of video lecture styles found in this study supports claims by Chorianopoulos [13] and Fardon [17] when they posited that there is no single or right way to deliver lectures. The myriad of styles found in the video lectures show that these lectures are delivered using flexible teaching method that can be implemented in many ways. Instructors or video developers may utilise their knowledge on the content, various technology and technical skills to develop the best video lectures according to the needs of the students.

In terms of length, the findings of this study are in line with suggestion by scholars that video lectures should not be too long [8] [18] [19]. The video lectures ranged from 1.14 to 19.54 minutes. This is fairly short as compared to other types of lecture such as face-to-face lecture. Furthermore, according to Guo, Kim and Rubin, short video lectures are more engaging for the students [8].

Pedagogically, the findings of this study may benefit TVET students who need to utilise video lectures in their study. They can be better prepared before watching the video lectures as they would have known what styles and features that may appear on the video. Additionally, instructors can make a more informed decision in choosing the best style to create their video lectures. They can choose the styles that have been outlined from this study or they may choose a new style as long as they have the necessary technology and technical skills.

Additionally, the findings can help researcher in corpus selection to study TVET video lectures. It can help researchers to select corpus of TVET video lectures that have similar features and characteristics to be studied.

5. CONCLUSION

Conclusively, the aim of this study was to uncover the styles used for TVET in MOOCs by Malaysia Polytechnics. Fifteen styles were found from the analysis. Some styles were as listed in Crook and Schofield's taxonomy while others were deemed as new [12]. This is the result of available technology and technical skills of instructors.

There are a few limitations for this study. First, the video lectures were collected from Malaysian Polytechnics' MOOCs. Thus, the findings cannot be generalised to all TVET video lectures from other institutions.

Secondly, the study only analysed the video lecture styles from the features of the videos as suggested by Crook and Schofield [12]. Further study is needed to understand the styles more as to help students utilise them better. It is suggested for future study to look into the discourse structure and linguistics features of these video lecture styles. This would therefore help to further distinguish each style from one another. Hence, students can be equipped with necessary linguistics knowledge about the video lectures to use it more effectively [20].

6. ACKNOWLEDGMENTS

This study was funded by the Ministry of Education (Malaysia) and supported by Universiti Teknologi Malaysia under Grant Number 4F987.

7. REFERENCES

[1] Mustafa, Z. 2018. Boost to TVET. *New Straits Times*. November 21, 2018.

[2] Shaari, R., Ismail, Y., and Kok, R. A. 2018. Introduction to Massive Open Online Course (MOOC): The issues and

challenges using MOOC as a teaching and learning method in Malaysian Polytechnic. *Advanced Journal of Technical and Vocational Education*. 2, 4, 22-29.

- [3] Chauhan, J. and Goel, A. 2015. An analysis of video lecture in MOOC. In *Proceedings of the 11th International Conference on ICT in Education, Research and Industrial Applications: Integration, Harmonization and Knowledge Transfer* (Lviv, Ukraine, May 14-16, 2015). ICTERI 2015. CEUR-WS.org. 1356, 35-50.
- [4] Brecht, H. D. 2012. Learning from online video lectures. *Journal of Information Technology Education: Innovations in Practice*, 11, 227-250.
- [5] Hyon, S. 1997. Models of lecture discourse: Applications for academic listening and future research directions. *Colloquium on Academic Listening within the EAP Curriculum*. Washington, DC: Distributed by ERIC Clearinghouse.
- [6] Johnston, T. C. 2015. Lessons from MOOCs: VL and peer assessment. *Academy of Educational Leadership Journal*, 19, 91-97.
- [7] Nordin, N., Norman, H., Embi, M.A., Mansor, A.Z., and Idris, F. 2016. Factors for development of learning content and task for MOOCs in an Asian context. *International Education Studies*. 9, 5, 48-61.
- [8] Guo, P. J., Kim, J., and Rubin, R. 2014. How video production affects student engagement: An empirical study of MOOC videos. In *Proceedings of the First ACM Conference on Learning Scale*, 41-50.
- [9] Homer, B. D., Plass, J. L., and Blake, L. 2008. The effects of video on cognitive load and social presence in multimedia-learning. *Computers in Human Behavior*, 24, 3, 786-797.
- [10] Chen, C. M., and Wu, C. H. 2015. Effects of different video lecture types on sustained attention, Emotion, cognitive load, and learning performance. *Computers & Education*. 80, 108-121.
- [11] Veletsianos, G. 2014. Why replacing teachers with automated education lacks imagination? *The Conversation*. August 30, 2014. Retrieved on 1 Jan 2019 from <http://theconversation.com/why-replacing-teachers-with-automated-education-lacks-imagination-30842>
- [12] Crook, C. and Schofield, L. (2017). The video lectures. *The Internet and Higher Education*, 34, 56-64.
- [13] Chorianopoulos, K. 2018. A taxonomy of asynchronous instructional video styles. *International Review of Research in Open and Distributed Learning*. 19, 1, 294-311.
- [14] Rahim, M. I. and Shamsudin, S. 2019. *Categorisation of TVET Video Lecture Designs in MOOC*. Manuscript submitted for publication.
- [15] Chorianopoulos, K., and Giannakos, M. N. 2013. Usability design for video lectures. In *Proceedings of the 11th European Conference on Interactive TV and Video*, 163-164.
- [16] Raihan, M. A. 2017. Interface design, emotions, and multimedia learning for TVET. In *Proceedings of the 1st International Conference on Engineering Research and Practice*, 116-125.
- [17] Fardon, M. 2003. Internet streaming of lectures: A matter of style. In *Proceedings of Educause Australasia Conference* (Adelaide, Australia, May 6-9, 2003). 699-708.

- [18] Hansch, A., Hillers, L., McConachie, K., Newman, C., Schildhauer, T., and Schmidt, P. 2015. Video and online learning: Critical reflections and findings from the field. *HIIG Discussion Paper Series*. No. 2015-02.
- [19] Buchner, J. 2018. How to create Educational Videos: From watching passively to learning actively. *Open Online Journal for Research and Education*. Special Issue 12, September 2018, 1-10.
- [20] Young, L. 1994. University lectures - Macro-structure and micro-features. In *Academic Listening: Research Perspectives*, J. Flowerdew, Ed. Cambridge University Press, Cambridge, 159-176.