



JOJAPS

eISSN 2504-8457



Journal Online Jaringan Pengajian Seni Bina (JOJAPS)

Instructional Elements Using Mayer's Learning Principles towards Developing Gastronomy Video

Ts. Juniza binti Zamri¹ & Zulaikha Ab Rahman²

¹ Faculty of Creative Multimedia, Multimedia University, Cyberjaya, Malaysia

² Faculty of Built Environment & Surveying, University Teknologi Malaysia, Malaysia

Abstract

The objective of this development was to create an induction video for Eastern Cuisine Class for Diploma in Halal Practise in Malaysian Polytechnic while promoting an instructional strategy that attract student's attention before proceed with the whole class lesson with better learning experience. During the pandemic outbreak, most of the educational institutions were closed down, the medium of learning had transformed from offline to an online medium. This new normal had affected student learning style especially for the practical class for culinary and hospitality students. Some lecturers put their initiative to create a live streaming video, however, this medium is not the best solution as a mistake might be occurred during the session. The possibility for students to get confused and misinterpret are very high compared to a recorded version where the mistake can be amended through reshoot and editing techniques. Therefore, this gastronomy video was developed based on Mayer's Multimedia Learning Principle that includes - visual, audio, text title and subtitle - as effective learning design elements and this 3 minutes' video are expected to be preferable as being more engaging, efficiency at achieving learning objectives as well as the ease at enabling the student to replicate the content. The usage of this educational video may also help students to learn at their own pace as personalising learning material. As such, this educational video can be expanded as one of the teachings and learning tools in the school of culinary and hospitality that offers Eastern or Asian Cuisine Course either in Malaysian Polytechnics or in other institutions as well as a reference for self-direct learning to the public.

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Key-word: - Gastronomy Video, e-Learning, Digital Media, Culinary

1. Introduction

Since the enormous growth in digital technologies, video and streaming services have been widely used around the world. The growth of YouTube users on the internet has brought today's culture a new phenomenon. Youtube has 2 billion users worldwide, according to Oberlo.com (Statista, 2019), which provides this site with a Youtube account as the second most popular social media platform with 79% of internet users (Datareportal, 2019). This figure will briefly illustrate that the user's increase also raises the sum of the platform's content creator. In 2017, 86 percent of US viewers said they mostly use Youtube to learn new things, 7 in 10 audiences said they use the site to seek help with the issue they are having with studies, jobs or hobbies and the fact that compared to the books in the Library of Congress, there are more learning-related videos on Youtube.

The question is how can videos be a convincing learning tool for the audience? This article would also describe the educational elements that have been taken into account in the creation of educational videos. Two videos will be chosen based on the number of viewers between 1 million and 3 million viewers and listed as the top 13 cooking channel on YouTube (Gilbert, 2018). The research will concentrate on the multimedia elements and teaching concepts used in the film.

2. Literature Review

According to Gannes (2009), Youtube has changed a lot about how video is produced and absorbs, particularly with the widespread existence of video recording capabilities on mobile phones coupled with video platforms such as Youtube. Youtube's clarification has made some students start using Youtube as the starting point for some subjects (Helft, 2009).

Although for some teachers and educators, video can be such useful ways of transmitting educational content that not only facilitates the transmission of information, but also promotes interaction and greater accessibility. In their Digital Video and Teaching post, Bell and Bull (2010) describe the key reasons for using teaching videos as follows:

- Isolating segment into shorts between 30 seconds to 3 minutes with the most relevant information.
- Features on the user controller assist teachers and students to easily slow down, move forward, reverse, replay at their desired timeline.
- The application now developed to have compatibility neither with a desktop computer or mobile phone make it easier to record and rearrange it as the educational content.
- Most of the application developed now comes with the set of graphical assets that can be paired with recordable narration and music.

The use of this technology allows teachers and educators to transfer information through a video created to be used directly in the classroom or by other unique audiences outside the classroom. In the case of a specific type of learner in such children, the transfer of knowledge by educational video should be attended by teachers in order to prevent cognitive overload of too much information that may be provided simultaneously in the video. The production of educational videos should therefore be driven by educational policies, values and guidelines to maximize learning experience for students. Brame (2016) proposed three elements for the creation of instructional video that could enable teachers to provide a tangible basis for growth as a useful tool in the classroom that is cognitive, student involvement and active learning.

Mayer's Cognitive Theory of Multimedia Learning

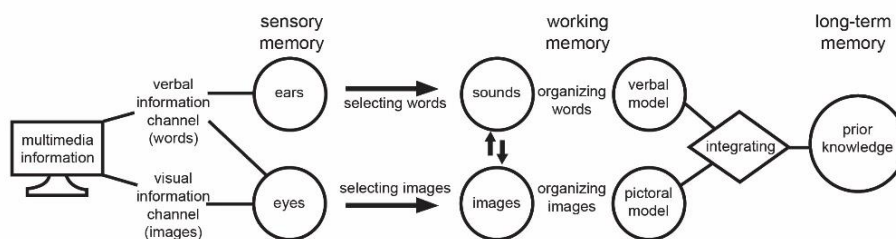


Figure 1: Adapted from Multimedia Learning, 2nd edition, Mayer (2009)

Another well-known guideline is the cognitive theory of multimedia learning (Mayer, 2009), which discusses the concepts of multimedia learning. According to Mayer's cognitive theory of multimedia learning, students learn more from various sources of content, such as text, pictures, video and audio. Good educational content should also be produced on the basis of the 12 principles. This paper will therefore discuss in detail the basic concepts of digital learning introduced by Mayer in educational videos posted to Youtube. Mayer (2009) has developed a multimedia learning system that is shown in the table below.

TABLE 2
Mayer's Principles for Effective Multimedia Design³

Multimedia Design Principle	Description
1. Coherence	No irrelevant or extraneous words, pictures, sounds.
2. Signaling	Provide cues such as highlighting, circles, arrows, etc. to signal essential words or organization of concepts.
3. Temporal Contiguity	Present corresponding narration and animation simultaneously not successively.
4. Redundancy	Avoid redundancies (images + narration + text). Go for (images + narration or images + text) to reduce extraneous processing.
5. Spatial Contiguity	Place corresponding words and graphics, as well as feedback and responses, close together (i.e., not on opposite sides of the screen).
6. Segmenting	Present learning materials in learner-paced segments that are broken down into smaller chunks.
7. Pre-training	Provide explanations of key concepts in a lesson for beginners.
8. Modality	Consider types of words and images that pair well (e.g., text and graph vs. on-screen text and video). Students learn better with narration and graphics than with on-screen text and animation.
9. Multimedia	Words and pictures are more effective than words alone.
10. Image Principle	The speaker's image on-screen does not enhance learning.
11. Voice Principle	Superimposed voice presentation enhances learning.
12. Personalization	Use a conversational/personal tone (first person: "We are going to..." vs. "Today's lesson is...").

Source: <https://journal.opted.org/article/interactive-multimedia-learning-vs-traditional-learning-in-optometry-a-randomized-trial-b-scan-example/>

3. Methodology

The research approach of this report will concentrate on the priority study of instructional videos intended for viewers to learn how to cook. Two videos will be chosen based on the number of viewers among 1-3 million viewers and will be listed as the top 13 cooking channel on YouTube (Gilbert, 2018). The research would look deeper at the instructional elements that have been incorporated in the videos.

Case Study 1



Image 1: Description of sample 1 of the case study.

Duration	: 5 minutes 8 sec
Video Title	: Butter Chicken Recipe Jamie & Maunika
Audience	: People who want to learn how to cook an Indian dish.
Video Link	: https://www.youtube.com/watch?v=JKs-cRneTyE

YT Channel	: Jamie Oliver
Viewers	: 3,648,672 views
Description	: In this video, Maunika was invited to teach Jamie how to master the most delicious and tender Indian butter chicken recipe.
Elements	: Title, subtitle and the written recipe was provided in the description link for the audience to refer. Background music is playing at the first 0:35 time before it stops to focus on the host conversation. The video is using the demonstration concept where Maunika is teaching Jamie how to cook the recipe.

Screenshot



Screenshot 1: Host explaining introduction of the video content.



Screenshot 2: Explanation comes along with the demonstration and subtitles.



Screenshot 3: Demonstration is capture closely in the zoom shot.

Case Study 2



Image 2: Screenshot of sample 2 of the study

Duration	: 10 minutes 45 secs
Video Title	: 10 Mouthwatering Recipes for Potato Lovers
Audience	: People who are looking to cook potato-based cooking
Video Link	: https://www.youtube.com/watch?v=fLNWeEen35Y
YT Channel	: Tasty Channel
Viewers	: 3,187,156 views (be specific on the demographic and where u get the view)
Description	: Speed mode video is used in this content. The content is transfer to the audience through the visual presentation without narration.
Elements	: The video title appears at the beginning of the video. The content demonstrated from the top angle and simple, quick caption placed on the top corner of the video to give a brief understanding of the cooking ingredient. No conversation or narration appear in this video. However, background music is used throughout the whole video.

Screenshot



Screenshot 4: Text use in the video



Screenshot 5: Text alone to explain information



Screenshot 6: Explaining with text and visual to audience.

4. Results

Figure 3 below shows the multimedia elements that have been used to build the learning content of the film.

		Video	Visual	Audio	Text Title	Subtitle	Animation
Figure	Case Study 1		Yes	Yes	Yes	Yes	No
	Case Study 2		Yes	Yes	Yes	No	No

3: Multimedia elements in content for cooking recipe video.

These innovations emphasize the elements of multimedia in visual, text and audio as an efficient learning design. However, the thorough description of the theory of multimedia learning is detailed in Table 4.

Table 4: Multimedia elements in content for cooking recipe video.

Case Study 1	
Butter Chicken Recipe Jamie & Maunika	
Multimedia Design Principle	Description
1. Coherence	No irrelevant words, pictures or sounds.
2. Pre-Training	Provide explanation and concept in the content.
3. Multimedia	Text (Subtitle) provided along with the explanation by the host.
4. Personalisation	Explanation is using personal tone.
Case Study 2	
10 Mouthwatering Recipes for Potato Lovers	
1. Coherence	The text used only to give quick description on the ingredient used in the cooking.
2. Spatial Contiguity	The text place closed to the visual in the same screen.
3. Segmenting	The learning recipe segmented according to the menu of the 10 recipes.
4. Pre-training	No further explanation was provided for the key concept of learning in the lesson. The video comes with no narration.

These two examples of videos used in this case study have a different video style than the first case study video is host-based content where there is a narration, an explanation by the host for digging in-depth details to be given to the viewer. The second case study, on the other hand, is more suitable for the user looking for fast learning material to learn about the content that the content is generated in the speed mode version.

Development of Gastronomy Video

Upon completion of this research, a gastronomy video was created based on the concepts that have been studied. The production is in the video form, which focuses on cooking videos and recipes. The video is 4-5 minutes in length and will be uploaded to the Youtube.

Storyboard

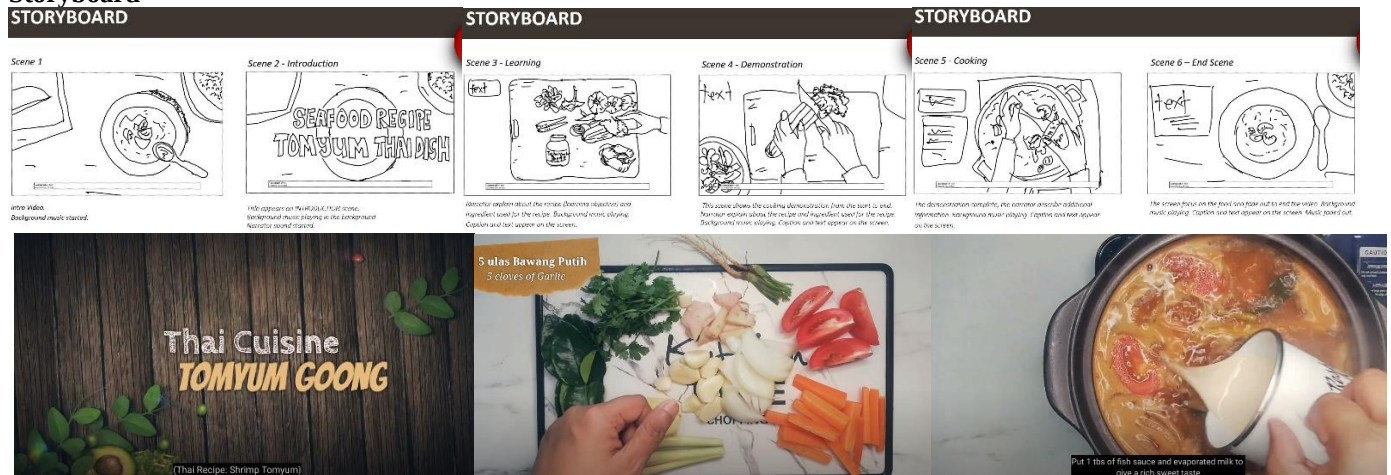


Figure 2: The development was based on the storyboard as a guideline.

Objective of the project

This eLearning project is proposed to be used as:

1. An induction video for the Eastern Cuisine Class Diploma in Halal Practice from the Department of Tourism and Hospitality in Politeknik.
2. Part of the educational technique to draw students' attention before proceeding with the whole class successfully with a better learning experience either in class or during personalise learning.

5. Conclusion

Pedagogical Theories

On the basis of the case study that has been performed, the effective concepts that make up the content are nice to be one of the learning materials as a reinforcing tool. As an example, the second case study video (10 Mouthwatering Recipes for Potato Lovers) can be used in the Culinary Student Class as an introduction video before the teacher takes the subject of the day to depth. In addition, the video can also be used as a simple guide to get an idea of what to prepare for most home cooks.

However, another case study of Jamie and Maunika's Butter Chicken Recipe would be more fitting for the audience to spend their 5 minutes listening to the clarification of how to prepare the recipe. This video is more useful to use as an example of learning and teaching content in a classroom or at a student's speed. According to research on the length of video content, finding shows that shorter videos are superior to longer videos. The shorter video described to be more engaging (Doolittle et al., 2015) improves learning objectives (Pi & Hong, 2016) and enables students to reuse material for potential reference purposes (Giannakos et al., 2016).

With the rapid growth of the use of video in various areas, including teaching and learning, over the last decade, the effect seems to continue to give positive importance to bringing teaching and learning to a new level as good as other resources on the market. The transformation of the global environment routine and the growth of digital media and information on the effect of video use in education will inevitably lead to a higher level of empowerment for students to learn in a versatile, autonomous yet knowledge-based manner.

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