



# Application of Digital Menu Design and Student's Cognitive Level in Food Plating Technique

Adibah Aishah Md Sahak<sup>1\*</sup>, Abdul Wafi Abdul Rahman<sup>1</sup>, Nurul Falah Hashim<sup>2</sup>, Nur Amirah Hassan Basri<sup>3</sup>, Mohd Salihuddin Al-Hafiz Md Noor<sup>4</sup>

<sup>1</sup>Universiti Tun Hussein Onn Malaysia,  
Parit Raja, Batu Pahat, 86400, MALAYSIA

<sup>2</sup>Universiti Teknologi MARA,  
Puncak Alam, Selangor, 42300, MALAYSIA

<sup>3</sup>Tunku Abdul Rahman University College,  
Kampar, Perak, 31900, MALAYSIA

<sup>4</sup>Kolej Yayasan Pelajaran Johor,  
Jalan Kulai-Kota Tinggi, Kota Tinggi 81000, MALAYSIA

\*Corresponding Author

DOI: <https://doi.org/10.30880/ojtp.2022.07.02.010>

Received 24 August 2022; Accepted 18 September 2022; Available online 30 Sept 2022

**Abstract:** The cognitive level of students in practical subjects is influenced by various external and internal factors. Cognitive is one of the important elements for students towards the achievement of better skills. The need to strengthen the cognitive level among TVET students has become a priority in the field of education. Effective pedagogical approach should focus on increasing culinary students' understanding of plating technique. Therefore, the objective of this study is to identify culinary student's experience using digital platform for plating technique activities, to identify cognitive level of students to understand plating techniques through digital menu design and identify the suitability of culinary students to learn plating techniques digitally. The 63 students from the culinary program who enrolled in practical course. The survey design applied to conduct the research and set of questionnaires as instrument for data collection. The dimension measures are student's experience, student's cognitive level and suitability of learning with digital platform. The results of this study show that teaching using digital design for practical classes is an effective teaching that is expected to improve students' cognitive levels and indirectly improve student achievement. Hence, the digital menu design concept perhaps could be applied in other learning content and alternative teaching method in culinary program.

**Keywords:** Digital menu design, culinary, cognitive level, plating food

## 1. Introduction

Technical and Vocational Education and Training (TVET) is related to the teaching of knowledge and skills for the world of work. Align with their meaning, TVET is "aspects of the educational process involving additional skills to general education, related technology and science studies and the acquisition of practical skills, attitudes, understandings and knowledge related to positions in various sectors of economic life" (UNESCO, 2014). In this era of

globalization, meaning of the TVET is a wide range of curriculum and innovation developments have been made in the efforts to improve the quality of teaching and learning. In other side, the preparation of the method of presentation and use of teaching materials must be appropriate, interesting, and creative based on the needs of the students in order to interest them. Affero et al (2021), argues that teacher should be adequately prepared, supported and empowered to cope with the changes and transition processes involved to select an appropriate teaching strategy to attract students in a particular field. Other than that, to enhance student focus and to balance students' technical knowledge, skills and abilities. This statement was supported by Aina & Ogegbo (2021), TVET policy maker should designed the inevitability of technological change in education to interest teacher involved in finding appropriate teaching strategies will be influenced by the ever-changing, societal, environmental, student situations and teacher responses that apply them. The technology, pedagogy and content knowledge model is the basis for effective teaching using technology for pedagogical techniques to convey the content of knowledge in teaching to students (Hashim & Phang, 2013). According to a study by Hashim & Phang (2013), PTPK is the basis for effective teaching using technology and requires an understanding of concept representation through the use of technology, pedagogical techniques that use technology constructively to deliver content as well as knowledge of students' existing knowledge

Institutions of professional (vocational-technical) education (hereinafter – IP(VT)E) have new challenges related to improving human resources, technical equipment, tools and methods of training, development of digital content to ensure the quality training of specialists, implementation of online hybrid learning. Such trends exacerbate several inconsistencies and require a powerful, coordinated effort to identify and resolve them (Cedeño et al., 2018). Digital learning content today is a necessity, in moving towards a completely digital era digital mastery among educators and students is compulsory. Affero et al (2021), stated that lecturer must be willing to experiment with any digital learning platform, such as Blackboard, Edmodo, or Google Classroom, and be versatile in their approach. In this area of research, Digital learning platform is including the application for sketching the menu and design for food plating.

In TVET, basically students need to use good psychomotor and cognitive elements to perform the tasks given more competently. However, today's digital development needs to be aligned with the concept of TVET so that skills can be applied effectively. For culinary program students this is no exception. Selection of effective teaching methods by ensuring students remain competent. Hwa Ko & Ming Chun (2015) stated that educators of culinary must integrate the needs and expectation of the culinary profession into the culinary curriculum. Based on the research Nornazira et al (2014), culinary arts are one important niche area in education towards tourism and hospitality industry in Malaysia as an important role in drawing tourists to the country. Thus, part of culinary curriculum contains plating activities which is to create a framework of the menu, start with drawings and sketches to visualise the plate, keep it simple. And select one ingredient to focus on and use space to simplify the presentation, balance the dish, get the right portion size, and highlight the key ingredient. In addition, there are several educational goals. The plating technique is the process of arranging and decorating food on a plate to enhance its presentation.

According to Velasco, Michel, Woods, and Spence (2016), the plating food activities refers to the arrangement of food on the plate in an interesting way. In addition, this technique is an art form, and the presentation of a good arrangement of food from careful attention to detail will more produce good quality. According to him, the plating technique which has elements of creativity and interest will involve the ability to please the guests while ensuring that the visual enhancement also complements the taste of the dish. Presentation is very important because usually customers will feast their eyes first and finally their mouths. Based on the past research, Hajar et al (2021), the study results found that learning new methods in using smartphone applications in food plating has a very positive effect on students. This learning effect has given various benefits to the students and facilitated them to perform the assignments that their lecturers have given.

## **1.1 Food Plating Using Digital Platform**

Lecturer must understand the idea of change perfectly and organize an effective strategy to ensure it is implemented successfully. In order to deal with changes in innovation in teaching and learning, lecturer need to master the ever-changing technology in addition to improving their knowledge (Omar & Saifullizam, 2019). Culinary teachers need to use effective technology to help their students achieve high academic achievement and students need the technology literacy and information skills so that students can master and keep up with technological advances. Therefore, according to Yahya (2005) statement that educators for careers and technicalities are expected for learning, they must use technology to be able to support teaching and enable students to use technology as an important tool for their information and learning needs. As educators of the 21st century, a variety of current technology-based learning patterns need to be integrated into learning sessions to ensure that the quality of education at the HEIs can produce students who are academically and proficient (Ahmad Jelani, 2011). Technology and education are now inseparable, where 21st century learning is cross-cultural or synonymous with ICT.

Learning to use technology is especially recommended for students at institutions of higher learning to make learning more interactive while students will be more competitive in finding the latest information. The most popular technology that plays an important role for most IPTs is digital platform. Digital platform not only serve as a means of communication for Institutions of Higher Learning (Saad 2014), but also as a means of accessing information related to education. In culinary area, the presentation of visual food plating can affect our appetite and leads to characteristic

(Daniela et al 2021). This prove that the important to teach well about plating food must start in the beginning of their study in culinary subject in practical class. Deutsch 2009 stated that Culinary Arts students are expected to be able to identify problems and produce creative solution at the workplace. Culinary is involves with creatives solution including food presentation. Ko and Chung (2015) also stated training in culinary must be centered on the realities of their employment according to the needs and expectations of the culinary industry by the culinary instructors.

The preparation of students and instructors in exploring digital teaching and learning methods is very necessary. Therefore, this research aims to know the application of digital menu design and student's cognitive level focus on food plating technique. Research objectives are:

- a) To identify culinary student's experience using digital platform for plating technique activities
- b) To identify cognitive level of students to understand plating techniques through digital menu design
- c) To identify the suitability of culinary students to learn art of food plating using digital platform

## 2. Methodology

In this study, the researcher used a quantitative method in the form of a survey because this method can measure a wide range of research subjects based on the prepared questionnaire. Referring to the suggestion by Krejcie and Morgan (1970), the population consists of student's respondents with a sample size of 63 out of a population size of 75 student who enroll in year 2 in UTHM. The survey research design applied and set of questionnaires used for collecting data. There were 62 respondents from Culinary Program involved in this research. The items developed based on literature and focus on three dimensions; student's experience, student's cognitive level and suitability used digital platform in food plating. The likert scale represent respondents' feedback; Value of 1 refer to (strongly disagree) the most disagree attitude in the scale, 2 (disagree), 3 (neutral), 4 (agree) and 5 (strongly agree) the most strongly attitude in the scale.

## 3. Results and Discussion

### 3.1 Student Experience Using Digital Platform for Plating Technique Activities

The findings in Table 1 show that Item (3), student frequently sketch the arrangement of food using digital platform with a high mean score of 4.838 and standard deviation of .734. Overall, Table 4 indicates that there is an item of mean total score above which provides a very high interpretation of mean 4.41 and standard deviation .639. This result shows the students experience during learning in the class by using digital platform application as a new platform to learn their food plating knowledge mostly through sketching application is effective. Based on past research by Hunglin, Cheng Chen and Sheng Liu (2017), they reveal that, the learning time for students with digital learning relatively enhances the learning performance. Students also sketching using platform digital by using Instagram to search a new technique of plating. Students have been exposed to learned food plating using a digital platform while learning intermediate culinary subjects and previously in basic culinary. In addition, students can identify applications that are suitable for use in food plating activities. Accordingly, practical teaching by lecturer could be developed by combining with current teaching trend and extracting the benefit of digital learning to achieve the teaching effectiveness. (Lai et al. 2012). Students stated that they can use digital platform with basic knowledge while learning food plating. Based on finding by Sousa, Cruz and Martin (2017), Digital learning works to strengthen the student's learning experience with a mix of tools, practices and applications of technology in the course curricula. In conclusion, this objective analysis shows that students have a good experience of the use of digital platform in food plating activities.

**Table 1 - Student experience using digital platform for plating technique**

Item	Description	Mean	S.D	Interpretation
1	Student know how to using platform digital in "plating technique" activity	4.676	.475	High
2	Student frequently using digital platform in plating activity before practical class	4.816	.393	High
3	Student frequently sketch the arrangement of food using digital platform	4.838	.734	High
4	Student use variation of digital platform to sketch the arrangement of food before make it real plating food	4.737	.503	High
5	Student experienced using the digital platform in theory class	4.658	.582	high
6	Student frequently using digital platform to generate idea about food plating	4.816	.393	high

### 3.2 Cognitive Level Of Students To Understand Plating Techniques Through Digital Menu

Table 1.2 shows the response for student's cognitive level. The highest response from item (6), 4.737 mean with standard deviation .446 which students mostly agree student can differentiate focal point to sketch their food plating design by using digital platform. Overall, of response show that students know how to choose a focal point on a plate that is important in food plating activities through a digital platform application such as Instagram and sketching tools. The findings of the study also show that students stated that they can identify garnishing materials that are suitable for use in food plating activities. Students be able to apply garnishing techniques well in learning food plating using digital platform. Based on Table 1.4 shows that the average mean score for this section item was 4.34 with the standard deviation value representing the data dispersion being 0.669 and high. Finally, students state that they can apply basic plating techniques using digital platform. The findings aligned with Hunglin, Cheng Chen and Sheng Liu (2017), stated that, new innovation in teaching and learning may help students understand, so that learners could easily operate to learn and break through the restriction on time for thorough learning and successful learning. It is supported by Mbanga and Mtembu (2020), mentioned that the digital learning in TVET nowadays is really important to facilitate student learning. The concept of digital application in culinary industry also derives the academic program to plan the pedagogical content align with the industry. Razali et al (2012) mentioned educational technologies should be introduced into the culinary classroom and studios, as it could help better learning to take place. In conclusion, the objectives analysis shows that the plating techniques that need to be learned are already known to students and students have a good knowledge of those techniques.

**Table 2 - Cognitive level of students to understand plating techniques through digital platform**

Item	Description	Mean	S.D	Interpretation
1	Using digital platform can refresh my basic knowledge about food plating	4.684	.525	High
2	Using digital platform in food plating make student understand the purpose of garnishing	4.474	.797	High
3	Using digital platform student can visualize the color, size and shape during plating activities	4.632	.541	High
4	Using digital platform before practical class can refresh my idea to design the food arrangement	4.684	.471	High
5	Using digital platform student can explain their idea to another student	3.895	.924	high
6	Student can differentiate focal point to sketch their food plating design by using digital platform	4.737	.446	high

### 3.3 Suitability of Culinary Students to Learn Art of Food Plating Using Digital Platform

Table 1.3 shows the Suitability of culinary students to learn art of food plating using digital platform. The highest response from item (6), 4.816 mean with standard deviation .393 which students mostly agree digital platform increase students' understanding in food plating technique in choosing colour, shape, arrange food on plate. Overall, Table 1.4 shows that the average mean score for this section item was 4.32 with the standard deviation value representing the data dispersion being 0.712 and high. The results of the study proved that students can sketch faster using platform digital applications in food plating. The findings of the study also show that students can improve their technical skills using color variations in food plating activities using a digital application. Students can also improve their creativity skills with food colors. Wishart (2016) stated that visualization is relevant in understanding key concepts, and the visual nature and audible content of digital platform serves as a substantial learning tool. The findings of the study also show that students stated that they can save time when using applications to make sketch up plating. Sugenor et al (2017), is clear that learning by using digital technology has a place in supporting some people to cook from scratch and improve in part of element in cooking. Using digital technology, due to its flexibility and the ability to utilize at one's own selectivity, further served to reassure and reinforce the key cooking skills required to achieve a successful meal outcome. Students are also more effective in learning food plating after using the digital application. Students are becoming more adept at trying new applications in food-related digitally. Finally, students stated that they can share with others the knowledge gained from digital applications related to food. Align with that, Prensky (2010) stated that digital natives are used to receiving information and increased emphasis on the use of digital technology to promote skills development across the social media platforms and smart phone Apps (Comiskey, 2010; Whitley and Ahmed, 2007).

**Table 3 - Suitability of culinary students to learn art of food plating using digital platform**

Item	Description	Mean	S.D	Interpretation
1	Digital platform suitable for my digital technology in learning	3.895	.831	High
2	Digital platform increases student's confident level during present my idea in class	3.816	.896	High
3	Digital platform able to make students sketching faster to propose the idea of plating food	4.026	.788	High
4	Digital platform suitable for my brainstorm skills in generate idea	3.895	.831	High
5	Using digital platform increase student's intention to discuss the idea art in plating food	4.737	.503	high
6	Digital platform increases my understanding in food plating technique in choosing colour, shape, arrange food on plate	4.816	.393	high

**Table 4 - Overall Analyses of Average Mean Score and Standard Deviation**

Aspect	Mean	Standard deviation
Culinary student's experience using digital platform for plating technique activities.	4.41	0.639
Cognitive level of students to understand plating techniques through digital menu design	4.34	0.669
Suitability of culinary students to learn art of food plating using digital platform	4.32	0.712

#### 4. Conclusion

From this study, it was revealed the teaching and learning of food plating activities through digital platform have a positive effect. The findings also showed culinary students be able to enhance their knowledge and skills in the use of digital platform especially in using application, video demonstration, and media social to brainstorm their idea in food plating learning and to disseminate the knowledge to potential students and the surrounding community so that existing knowledge is not wasted. For the recommendation, researchers suggest that lecturers integrate student-centered and material-centered approaches when applying Digital platform via tools during theory and practical class. Lecturers also need to change their teaching style from conventional teaching to interactive learning that is aided by today's technology. With an effective and innovative learning style, Culinary students can improve their skills in food plating learning using the digital platform application

#### References

- Aina, A.Y., & Ogegbo, A. (2021). Change Management: Experiences of Private TVET College Educators Regarding Virtual Learning During Covid-19. Retrieved from <http://end-educationconference.org/wp-content/uploads/2021/07/2021end054.pdf>
- Cedeno, E. A.L, Hoyos, J. C. R., Zurita, D. B. P., Gomez, J. M. & Ortega, S.C. (2018). Project-Based Learning Case Of Study Education In Automotive Mechanical Engineering. *Espacios*, 39, 10
- Deutsch, J. B., S. (2009). *Culinary Improvisation* (1st ed.): Pearson Learning Solutions.
- Ko, W.-H. (2012). A study of the relationships among effective learning, professional competence, and learning performance in culinary field. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 11(1), 12-20. doi: <http://dx.doi.org/10.1016/j.jhlste.2012.02.010>
- Ko, W., & Chung, F. (2015). Learning satisfaction for culinary students: The effect of teaching quality and professional experience. *International Journal of Vocational and Technical Education*, 7(1), 1-13. doi:10.5897/IJVTE2014.015

- Hashim, Z & Phang, F.A (2013). Amalan Pengetahuan Teknologi Pedagogi Kandungan Guru Fizik Tingkatan Enam, Dicapai pada November 3 2017. from <http://educ.utm.my/wp-content/uploads/2013/11/310.pdf>
- Ismail. A., Syakir.A.H.A., Bahrudin. I. A., Samsudin. N.A. & Shafieek. M.S.M. (2022). Implementation of Distance and Digital Learning During Pandemic Covid-19 in Malaysia. *Online Journal for TVET Practitioners*, 7(1), 8-19
- Lai, Y. H., Huang, F. F., & Yang, H. H. (2012). The Effect of Nutrition Education System for Elementary School Students in Nutrition Knowledge. *Journal of Oriental Institute of Technology*, 32, 115-123.
- Lin, M.-H., Chen, H.-G., & Liu, K.-S. (2017). A Study of the Effects of Digital Learning on Learning Motivation and Learning Outcome. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(7), 3553-3564. <https://doi.org/10.12973/eurasia.2017.00744a>
- Maizam Alias, & Hassan, R. (2012). TVET agency-industry collaborations: addressing diversity. Paper presented at the Proceedings of the 2nd UP1 International Conference on Technical and Vocational Education and Training, Bandung, Indonesia
- Ministry of Education (MOE) (2015). Malaysia Education Blueprint 2015-2025.
- M.J. Sousa, R. Cruz, J.M. Martins (2017) Digital Learning Methodologies and Tools – A Literature Review, *Edulearn 17 Proceedings*.5185-5192.
- N. Mbanga V. N. Mtembu (2020) Digital learning: perceptions of lecturers at a technical vocational education and training college. *South African Journal of Higher Education*.34(4).155-173. <https://journals.co.za/journal/high>
- Omar, M. R., & Puteh, S. (2019). Penguasaan Pengetahuan Teknologi Dan Inovasi Pengajar Di Pusat Latihan Teknikal Dalam Pengajaran Dan Pembelajaran. *Online Journal for TVET Practitioners*, 4(2), 114–119. Retrieved from <https://publisher.uthm.edu.my/ojs/index.php/oj-tp/article/view/5100>
- Prensky, M. (2001) Digital natives, digital immigrants' part 1. *On the Horizon*, 9(5), 1-6.
- Razali, M.A., Tazijan, F.N., Rahim, S. A., Zulkifli, F.A., Isa, N.F & Hemdi, M.A. (2012). Perfecting the Culinary Arts via the YouTube way. *International Journal of e-Education, e-Business, e-Management and e-Learning*, Vol. 2, No. 3, June 2012
- Suhairom. N., Musta'amal. A. H., Amin. N. F.M & Johari. N.K.A. (2014). The Development of Competency Model and Instrument for Competency Measurement: The Research Methods. *Procedia - Social and Behavioral Sciences*, 152(0), 1300-1308. doi: <http://dx.doi.org/10.1016/j.sbspro.2014.09.367>
- Surgenor, D., Hollywood, L., Furey, S., Lavelle, F., McGowan, L., Spence, M., Raats, M., McCloat, A., Mooney,E., Caraher, M., & Dean, M. (2017). The impact of video technology on learning: A cooking skills experiment. *Appetite*, 114, 306-312. <https://doi.org/10.1016/j.appet.2017.03.037>
- United Nations Educational Scientific and Cultural Organization (2014). *Education for the 21<sup>st</sup> Century*, 21.
- Velasco. C., Woods. A. T., Petit. O., & Spences. C. (2016) Crossmodal correspondences between taste and shape, and their implications for product packaging: A review. *Food Quality and Preference*. 52.17-26
- Whately, J. and Ahmad, A (2007). Using video to record summary lectures to aid students' revision. *Interdisciplinary Journal of Knowledge and Learning Objects*, 3(1), 185-196
- Wishart, J. (2016). Using the Cameras on Mobile Phones, iPads and Digital Cameras to Create Animations in Science Teaching and Learning Mobile Learning and STEM: Case Studies in Practice, 17(1), 18-26
- Yahya. A., Hashim, S., Ramli, J., Boon, Y., & Hamdan, A. R. (2005). *Menguasai Penyelidikan Dalam Pendidikan: Teori, Analisis & Interpretasi Data*, Kuala Lumpur: PTS Profesional & Publishing Sdn Bhd.
- Zakariah.S.H., Md Sahak, A. A., Anuar, N. A., & Rahman, A. W. A (2021). Catering Students Acceptance Towards the Use of Smartphone Application in Food Presentation. *Research and Innovation in Technical and Vocational Education*

and *Training, 1*(1), 232–238. Retrieved from  
<https://publisher.uthm.edu.my/periodicals/index.php/ritvet/article/view/270>