

# Student's Motivation and Perceived Usefulness of Instagram Integrated Visualization Project-Based Learning in Foodservice Operations Education

Salmalina Salleh, Nornazira Suhairom & Sharifah Maryam Syed Azman

Department of Advance Technical and Vocational Education and Training, Universiti Teknologi Malaysia

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## ABSTRACT

In order to meet the needs of millennial students, the integration of social media, specifically Instagram, into teaching and learning has emerged as a growing trend. This integration of project-based learning and Instagram known as visualization project-based learning (VPjBL), enables students to enhance their creativity and constructive abilities in their projects. Therefore, the objectives of this study are to examine how integrating Instagram into Visualization Project-Based Learning (VPjBL) affects students' motivation and to evaluate students' perceived usefulness of this integration in the context of Foodservice Operations education. Mixed-method research (MMR) was conducted in which this study employed a questionnaire (n= 69) and semi-structured interviews (n=6) as research tools. Descriptive statistical analysis using Statistical Package for Social Sciences (SPSS) was applied to analyze the quantitative research data, while the qualitative data from interviews were analyzed employing thematic analysis. The findings revealed a positive motivation among students regarding visualization project-based learning using Instagram. Moreover, this study also found some advantages of VPjBL such as meaningful learning experiences and enhanced engagement and creativity. Therefore, it is recommended to incorporate visualization project-based learning through Instagram to promote better understanding and create a positive learning environment for students.

**Keywords:** foodservice operations, Instagram, motivation, perceived usefulness, visualization project-based learning

## INTRODUCTION

Project-Based Learning (PjBL) is a teaching method where students acquire critical knowledge and skills by working on realistic and complex projects. This teaching method is often carried out in teams and under the supervision of the teacher for an extended period [1]. Krajcik and Shin [2] outlined six key elements of PjBL: a central problem or question, a focus on learning objectives, involvement in educational activities, collaboration among students, scaffolding support, and the creation of tangible results. This approach enables students to communicate and find solutions to pressing issues, enhances their sense of competence using digital tools, and leads to the production of tangible outcomes. PjBL has become a widely used and innovative teaching strategy in technical and vocational education (TVET), particularly in foodservice education [3]. Given the nature of foodservice operations, PjBL is well-suited to the educations that future foodservice professionals need to learn and cultivates the necessary skills and abilities needed in their profession, through projects that encompass areas such as consultation, marketing, and operation, among others.

However, the integration of PjBL with online learning platforms is not widely adopted due to the challenges of combining traditional PjBL, which often requires the production of tangible products, with online education [4]. Many educators and students find it difficult to adapt PjBL to the virtual world, especially in hands-on classes. Previously, hands-on classes were not typically taught online due to the belief that online platforms

were not the best method for teaching these educations. However, the current pandemic has led to a shift towards online education, even for hands-on educations. For instance, foodservice operations education usually involves hands-on activities, have been adapted to the virtual world through a combination of video and simulation [5]. Oh, Chan, and Kim [6] proposed that technology, such as social media, can enhance student engagement in PjBL and serve as a modern teaching and learning medium.

As we move further into the 21st century, technology and higher education are becoming increasingly intertwined. As a result, online and mobile learning tools, which incorporate electronic and blended learning approaches, are gaining popularity in colleges and universities [7]. One such tool being utilized by institutions that have embraced online education are social media platforms and applications. Social media provides a wealth of opportunities to individuals from all walks of life in various forms. These platforms are not only used for socializing and instant messaging but also offer virtual spaces for building and expanding social and professional networks with stakeholders both locally and globally, utilizing a range of modes [8]. The impact and influence of this new social media technology on society are unparalleled and are transforming nearly every aspect of life, including education. The significance of social media platforms in education is undeniable due to the tremendous growth of user-generated online content and the ability to interact, communicate, collaborate, cooperate, and share information in real-time with others. Thus, the convenience of these platforms makes them valuable tools for educational purposes.

Incorporating social media into Project-Based Learning (PjBL) enhances students' self-learning opportunities and fosters a sense of accomplishment. As a solution, the integration of Instagram into PjBL has resulted in the creation of Visualization Project-Based Learning (VPjBL). The prominence of Facebook and Twitter as social media platforms has overshadowed the educational benefits of other social media sites, including Instagram. Instagram, which is a smartphone application that allows users to share images and videos, has been found to be more popular among younger people than larger platforms like Twitter [9]. As a result, it is seen as a valuable tool for educational institutions to create a relevant learning environment and enhance the student experience. Furthermore, VPjBL that incorporates Instagram also prepares students for real-world businesses, as Instagram is commonly used as a digital medium to expand market reach globally. Therefore, it is crucial to develop a deeper understanding of the most effective ways to incorporate Instagram into visualization project-based learning in higher education to maximize student learning outcomes.

Given the widespread availability of affordable technology, there is growing pressure on educators to effectively incorporate online and mobile learning into their teaching and learning strategies. Among various technology-based resources, Instagram has gained recognition for its potential to improve students' learning outcomes in educational settings. The objective of this study is to conduct an exploratory analysis of the use of Instagram in foodservice operations education. The study intends to investigate student's level of motivation to use Instagram in VPjBL and the perceived usefulness of VPjBL using Instagram in enhancing student learning.

## LITERATURE REVIEW

### A. Instagram Usage in Higher Education

Instagram is a social networking service that was introduced in October 2010, which primarily focuses on sharing photos and videos. Instagram, with its focus on image uploads, has become the leading platform for photo sharing on the internet. Research has shown that the platform predominantly attracts younger users, with an estimated 90% of its 150 million users being under the age of 35 [10]. The design and functionality of Instagram may result in educators using the platform differently from Facebook, Twitter, or Pinterest [11].

The interconnectivity between cognitive constructivism and social constructivism is a notable feature in education. Instagram provides a medium for students and teachers to co-create knowledge and enhance their communication skills [12], [13]. Instagram also fosters social interaction by promoting mutual care, responsibility, and response, which are essential elements in the teaching-learning process. Through

Instagram, students can engage with a diverse range of academic participants, including educators, and benefit from increased interactions. Using Instagram as a platform for project assignments enhances teamwork and collaboration between students and lecturers, as well as the potential to share information and outputs globally [14], [15]. This represents a valuable educational experience for educational institutions, as it facilitates the development of a relevant and engaging learning environment. Utilizing Instagram as a platform for group work, peer teaching, document sharing, and collaborative editing in constructivist learning theory can be applied to visualization project-based learning, creating a relevant and engaging learning environment with opportunities for interpersonal construction of knowledge and shared meaning.

In conclusion, Instagram presents a distinctive opportunity for educational contexts due to its emphasis on visual content. The integration of Instagram aligns well with cognitive constructivist and social constructivist approaches, allowing students to actively construct knowledge, create meaning, and broaden their perspectives. Research studies examining the use of Instagram as a teaching and learning platform have shown that its incorporation into educational activities relies on the learners' imagination [16]. Nevertheless, Instagram serves as a valuable medium for connecting educators and students in the exploration of various learning concepts. However, careful consideration of potential challenges and ongoing evaluation of the approach are necessary to ensure its effectiveness and alignment with educational goals.

## **B. Visualization project-based learning (VPjBL)**

Project-Based Learning (PjBL) is a teaching approach that traces its origins to the work of John Dewey, an American philosopher, psychologist, and educational reformer who emphasized the importance of hands-on experience and learning by doing [15]. In accordance with other researchers, PjBL can be defined as a learning method that shifts from teacher-driven activities in the classroom to student-centered activities that address real-world issues and tasks. In general, PjBL is an approach to teaching and learning that requires students to apply their knowledge and skills by engaging in authentic and complex tasks that necessitate collaborative work on a project that may take a considerable amount of time to complete. The focus of PjBL is on the end product, and students are required to produce a product that drives their learning process [25,26].

Juuti et al., [1] describe Project-Based Learning (PjBL) as a learning environment where students work in teams, under the supervision of their educators, to complete complex and realistic tasks that are integral to their education for a prolonged period. Krajcik and Shin [2] identified six critical components of PjBL, which include a driving question or problem that requires solving, the concentration on educational objectives, participation in educational activities, student collaboration, the implementation of scaffolding, and the creation of tangible end products [29, 30]. PjBL has become one of the most extensively used creative and innovative teaching approaches in technical and vocational education researchers [17, 27, 28]. Previous studies have offered limited discussion regarding the application of Project-Based Learning (PjBL) within the online setting. This is likely due to the challenge of combining traditional PjBL, which involves producing tangible products, with online learning environments [18], [4], [19]. Some educators argue that hands-on classes should not be taught through online platforms, as they are not the best method for teaching and learning approaches. However, due to the pandemic, hands-on classes have shifted to online teaching and learning, using video and simulation to transfer foodservice operations educations to the virtual world [5]. Oh, Chan, and Kim [6] suggest that technology, such as social media, can serve as a modern teaching and learning medium, enhancing student engagement in PjBL. The integration of Instagram in PjBL has led to the development of Visualization Project-Based Learning (VPjBL), which allows students to experience self-learning and provides a sense of achievement.

Therefore, integrating Visualization Project-Based Learning (VPjBL) via Instagram presents a promising approach to provide students with the opportunity to apply their knowledge and skills in real-world scenarios, collaborate with peers, and create tangible end products to improve learning outcomes. Despite the challenges of implementing PjBL in online environments, integrating technology, such as social media platforms like Instagram, has shown potential to enhance student engagement and promote a sense of achievement. Thus, incorporating Visualization Project-Based Learning through Instagram is recommended for the Foodservice

Operations education, as it can facilitate better comprehension and foster a positive learning experience for students.

### **C. Integration of VPjBL in foodservice operations education**

The foodservice operations education encompasses a broad range of skills, including basic knowledge and specific skills application, such as cooking, planning, organizing, directing, controlling, delegating, operating, serving, and entrepreneurship, which are essential for a strong understanding of the education. However, conventional teaching methods for this education may not be the most effective approach to develop these competencies in students.

To narrow the skills gap in the food service industry, engaging students in authentic problem-solving within food service industry settings. Research has shown that practical application of knowledge can enhance material retention, social reinforcement, and employability [9]. By immersing themselves in a practical context, students are more likely to be engaged, make quick decisions, and encounter real-life situations that are difficult to simulate in a traditional food service operations education. Project-based learning (PjBL) is a pedagogical approach that has been shown to be effective in achieving this goal. PjBL is a systematic teaching and learning method that involves students in the building of knowledge by requiring them to complete meaningful projects and generate real-world products [17], [2]. Unlike traditional learning, which is teacher-centered, PjBL is student-centered learning, where students investigate the problem through research and then work together in a group, with the final project being the result of their work. The teacher's role is to guide the students with feedback.

The concept of incorporating visual components from Instagram into problem-based learning is rooted in constructivist approach [18]. Rather than using traditional problem-based learning techniques like case studies, this approach can spark students' interest and creativity. Previous studies have suggested that by integrating visual elements and social media, the learning process can increase students' motivation, as it employs a fun, engaging, and contextualized approach that piques learners' interest and enhances their creativity skills [19], [14], [9]. Furthermore, visual problem-based learning through social media platforms like Instagram provides students with the opportunity to showcase their work to a broader audience. By exploring students' motivation and the perceived usefulness of Instagram for Visualization project-based Learning, this research contributes to the broader understanding of how technology, specifically social media platforms like Instagram, can be leveraged to enhance teaching and learning practices.

## **RESEARCH METHODOLOGY**

This research employed mixed-method research design, which comprises two phases: quantitative and qualitative. The objective of this study was not only to identify but also to understand the students' motivation and perceived usefulness of Instagram-Integrated Visualization Project-based learning in Foodservice Operations. Both quantitative and qualitative data were given equal weight in this study to achieve this goal. The quantitative data assisted in determining the level of motivation and perceived usefulness of VPjBL among students. Meanwhile, the qualitative data helped to find out the students' perceptions on the integration of Instagram in VPjBL. Therefore, collecting and integrating both types of data can enhance the credibility and reliability of the research findings.

The study involved undergraduate students taking a Foodservice Operations class and completing assignments using Instagram for Visualization Project-Based Learning. Three sections of the class consisting of 69 students were invited to participate in the questionnaire. To gather additional insights and consolidate the questionnaire data, interviews were conducted with six students in which two from each section, to get a variety of perspectives. The coding reference was utilized for the interview data, with R standing for the respondent, followed by the class section and pseudonym names.

A total of 25 questions were employed. The survey consisted of two parts, which covered the following topics: Instagram and students' motivation, and the perceived usefulness of Instagram for Visualization project-based

Learning. These questions were measured using a five-point scale ranging from 1 representing “strongly disagree” to 5 representing “strongly agree.” This five-point scale is utilized in Section B and C. Section B, Instagram and students' motivation included seven items. Section C, perceived usefulness of Instagram for Visualization Project-Based Learning consisted of eight items. While the semi-structured interview focused on the students’ perception of the integration of Instagram in PjBL.

To ensure content validity, all items were evaluated by experts in Project-Based Learning (PjBL) and lecturers who actively use Instagram in their teaching. These experts provided valuable insights, leveraging their experience with PjBL and Instagram to enhance the quality of the items. Based on expert recommendations and suggestions, further adjustments were made to ensure content validity. Next, a reliability test was conducted as part of the pilot study to assess measurement precision. The test involved 20 graduates who had previously taken the course and were specifically chosen as the pilot sample. The reliability analysis yielded a value of 0.954-0.912.

The questionnaires were distributed in class during the final three weeks of the semester. To eliminate potential conflicts of interest, a colleague who was not teaching the education agreed to administer the surveys toward the end of the class. To prevent any possible bias, the data were reviewed and analyzed after the final grades for the education had been posted. The 25th version of SPSS was used for data analysis. Descriptive statistics were used to identify general trends and potential correlations among the survey questions. The analysis used the overall mean scores of each response from all students. Thematic analysis was used to analyze the qualitative data and identify recurring themes and patterns within the responses.

## **FINDINGS**

The target population of this study consisted of undergraduate students who actively used Instagram as a platform for Visualization Project-Based Learning. Given the small size of the population, this study employed total population sampling. This approach involves examining the entire population that meets the study criteria, ensuring comprehensive data collection and analysis [31]. Therefore, a total of 72 students who were enrolled in the Foodservice operations education was being selected as the respondent. Out of the 72 graduate students invited to participate, 69 responded, resulting in a response rate of 95%. The sample included 23 male and 45 female students, with ages ranging from 23 to 28 years old. Background information analyzed from the respondents included the frequency of checking Instagram accounts and the length of time participants had been using Instagram. According to Table 4.1, 39 students had been using Instagram for more than 7 years, 18 students had been using Instagram for 4 to 6 years, and 12 students had been using Instagram for 1 to 3 years.

**TABLE 1 DEMOGRAPHIC INFORMATION**

	n	%
Gender		
Male	24	35
Female	45	65
Age		
20-22 years old	0	0
23-25 years old	59	85
26-28 years old	10	15
29-31 years old	0	0
Years of Using Instagram		
Less than 1 year	0	0
1 to 3 years	12	17
4 to 6 years	18	26
More than 7 years	39	57

The student's perception towards the implementation of visualization project-based learning through Instagram in Foodservice Operations education is illustrated in Table 2. Section B of the survey included a series of statements pertaining to students' motivation to use Instagram as a platform for visualization project-based learning. The mean statistics for the motivation statements ranged from M=3.52 to M=4.57, which in terms of the scale is closer to “Strongly Agree” than “Strongly Disagree” on the scale (Table 2). The three highest average scores were “Using Instagram as a platform for VPjBL assignments motivates me to actively participate in the learning process” (M=4.57), two statements had M=4.42 “The use of Instagram in VPjBL assignments provides me with a sense of connection to real-world applications” and “I am highly motivated to use Instagram as a platform for VPjBL assignments in the Foodservice Operations education”. The lowest-rated statement was, “Instagram's user-friendly interface and functionality make it enjoyable to engage in VPjBL assignments” (M=3.52).

Meanwhile section C of the survey focused on assessing the perceived usefulness of Instagram for Visualization Project-Based Learning. The statements in this section aim to gauge students' perceptions of how Instagram contributes to their learning experiences. The mean statistics for the perceived usefulness statements range from 3.39 to 4.74, indicating that, on the scale, the responses were closer to agreement and strongly agree. The lowest rated statement was "Instagram promotes collaboration among students in VPjBL" (M=3.39). This suggests that students did not perceive Instagram primarily as a platform for social connection with friends in the context of assignments.

TABLE 2 STUDENT'S MOTIVATION AND PERCEIVED USEFULNESS

Dimension	Items	Mean
Motivation	Using Instagram as a platform for VPjBL assignments motivates me to actively participate in the learning process	4.57
	Instagram's user-friendly interface and functionality make it enjoyable to engage in VPjBL assignments	3.52
	The inclusion of Instagram in VPjBL assignments sparks my interest and enthusiasm for completing the tasks	4.37
	The use of Instagram in VPjBL assignments provides me with a sense of connection to real-world applications	4.42
	Instagram’s features inspire me to showcase my creativity and skills in VPjBL assignments	3.96
	Receiving feedback on Instagram during VPjBL assignments motivates me to improve and strive for excellence	4.27
	Perceived usefulness	Instagram helps me connect the course material to real-world applications in Visualization project-based Learning.
Instagram enhances my engagement in the VPjBL activities		4.12
Instagram helps me showcase my work and accomplishments effectively in VPjBL		4.00
Using Instagram in VPjBL improves my understanding of the Foodservice operations concepts		4.12
The visual elements on Instagram make the VPjBL projects more interesting and enjoyable		4.05
Instagram promotes collaboration among students in VPjBL		3.39
Integrating Instagram in VPjBL provides a realistic and practical learning experience		4.74
Instagram allows me to receive valuable feedback and recognition from peers and educators in VPjBL	4.74	
	Overall, I find Instagram to be a useful platform for VPjBL in the foodservice operations education.	4.56

All participants in the interview agreed that the VPjBL create meaningful learning experiences. These findings are consistent with Salehudin et al., [9] study, which discovered that Instagram serves as a convenient platform for students to showcase their projects, share ideas worldwide, and receive feedback not only from teachers and peers but also from industry professionals, thus fostering engagement. Another aspect of the students' response was related to creativity. The participants perceived that using Instagram in Project-Based Learning (PjBL) enhances learners' critical and creative thinking abilities. This response is in line with studies by [19] and Mahzum et al., [14] which found that integrating visual elements and social media, the learning process can increase students' motivation, as it employs a fun, engaging, and contextualized approach that piques learners' interest and enhances their creativity skills. The following represents the participants' feedback on the VPjBL using Instagram as the platform.

### **A. Fun Learning and Develop Creativity**

The feedback indicates that most students found VPjBL using Instagram enhanced their creativity in presenting the project ideas. Moreover, due to the Instagram features which allowed to include video, picture, and reels, makes the learning process fun.

*Using Instagram for the project-based learning for this education create new experiences. It makes the learning fun, .... meaningful .... also exciting. Sharing our project on Instagram, we received so many feedbacks not only from the lecturers, friends but also from the foodservice industry. Hmmm...not only that, Instagram developed our creativity in presenting our mock restaurant (R02Siti).*

*I personally found Using Instagram for our class project is the best. This project makes us more creative when we promote our mock restaurant. It makes learning so fun and exciting, you know? Sharing our stuff there, we get feedback from everyone..I show you here.....see..... even people in the food business give us comment! (R03Ali).*

### **B. Developing Entrepreneurship Skills**

The second emerging theme, relating to branding and engaging with potential customers, corresponds with the motivation expressed by three students regarding VPjBL offering real-world applications. Specifically, the practical nature of VPjBL in simulating real-world scenarios in Foodservice Operations encourages students to actively take part in Instagram-Integrated VPjBL, as they recognize the importance of effectively engaging with customers and establishing a brand presence, skills critical for success in the foodservice industry.

*From the assignment provided, I learned how to build product branding through Instagram. It is essential for a brand to engage with and effectively communicate with people (R01Abu).*

*This assignment is great, and I'm excited to do it because I feel like I'm running a real restaurant business. Yes, I take orders through this platform, share posters of the food items we sell, and we plan to ensure that we can sell the food we produce (R02Mat).*

## **RESULTS AND DISCUSSIONS**

The findings from this study help reinforce previous findings [21], [20], [14], [16], [22], [9] about the motivation and perceived usefulness of Instagram and Visualization project-based learning. This study provides evidence that using Instagram can be an effective tool for enhancing visualization project-based learning in Foodservice Operations education. One of the key findings was that students perceived a strong connection between the use of Instagram in VPjBL assignments and real-world applications. They could engage with customers and promote their brand and product that they sell which develops their entrepreneurship skills. This suggests that Instagram provided a meaningful and relevant platform for students to engage with the education matter and apply their learning in practical contexts. Additionally, students reported a high level of motivation to use Instagram for VPjBL assignments in the Foodservice Operations

education, indicating that the platform effectively captured their interest and enthusiasm. However, it is worth noting that students had a slightly lower perception of Instagram's user-friendly interface and functionality when it came to engaging in VPjBL assignments. This suggests that there may be room for improvement in terms of optimizing the user experience and ensuring that the platform is intuitive and enjoyable for students to use.

Moreover, this study indicated that students generally perceived Instagram as a valuable tool for their learning experiences. Students recognized Instagram's potential to enhance their learning outcomes and contribute to a deeper understanding of the education matter. Once the students understand the task given, it has a good impact on their academic achievement [23, 24]. However, it is interesting to note that students did not primarily view Instagram as a platform for social connection and collaboration among peers in the context of VPjBL assignments. This suggests that while Instagram may have facilitated individual learning and self-expression, it may not have been perceived as the primary means of fostering collaborative work and interaction among students.

In conclusion, the findings suggest that incorporating Instagram into VPjBL assignments can have several positive implications for students' motivation, engagement, enhancing creativity and perception of real-world relevance, which creates meaningful learning experiences. However, there may be areas for improvement, particularly in terms of the user interface and fostering collaboration among students. By addressing these areas and further enhancing the user experience, educators can maximize the benefits of Instagram as a platform for VPjBL in the Foodservice Operations education.

## CONCLUSIONS

The study findings highlight the significant positive impact of Visualization Project-Based Learning (VPjBL) on students' learning processes, indicating that students can effectively master course material while experiencing enhanced learning achievement and perception through this approach. By integrating Instagram into VPjBL activities, educators could leverage a powerful tool that enriches students' learning experiences in numerous ways. Instagram not only fosters engagement and motivation but also facilitates real-world connections, promotes creativity and critical thinking, and ultimately improves learning outcomes. Moreover, by optimizing the user experience and fostering collaboration among students, educators can ensure that Instagram serves as a dynamic and interactive platform for VPjBL, empowering students to succeed academically and develop essential skills for the foodservice industry. Therefore, embracing Instagram as a tool for VPjBL represents a promising strategy for educators seeking to enhance student learning and foster a stimulating and supportive learning environment.

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