

The Development and Assessment of a Flipped Classroom Instructional Plan and Its Effect on Students' Motivation and Engagement

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Abstract

This study intended to build a flipped classroom instructional plan for four Management Accounting subjects in matriculation institutions and test its effect on students' motivation and engagement. The instructional plan's content and learning activities were based on the Malaysian Ministry of Education's Matriculation Curriculum Specifications and the First Principle of Instruction. In the first phase, three experts verified the instructional plan draught. The Percentage Calculation Method indicated overall content validity was 93.3%. Based on comments and ideas from experts, several changes and improvements were made to build the most acceptable and appropriate instructional plan for matriculation college. In the second phase, a quasi-experiment was conducted with 80 accounting students enrolled in the Management Accounting course. Students were divided into experimental and control groups. The experimental group was taught using a flipped classroom technique, whereas the control group was taught using a traditional method. According to the t-test result, flipped classroom students demonstrated a significantly higher motivation and engagement than traditional group students. The findings suggest a flipped classroom instructional plan may increase student motivation and engagement.

Keywords:

Instructional Plan, Flipped Classroom, First Principle of Instruction, Matriculation College, Management Accounting

INTRODUCTION

The education system forms the backbone of a nation's development. The growth of the Industrial Revolution 4.0, which is dynamic and futuristic, should form a catalyst for educational change in Malaysia. Focus on the educational sector is vital so that the workforce developed can fulfill the needs of a technology-based job market. This ensures that the workforce is competitive and could provide a new generation of competent workers. As such, educators should be creative and innovative in the delivery of teaching and learning by connecting existing methods and strategies with current technology. The strategy and processes utilized should improve students' engagement and motivation to study continuously and explore each subject. In addition, the learning approach should align with the development of automation and generation to stay relevant.

Accounting is a systematic process to identify, record, classify, validate, summarise, interpret, and disseminate management information to the consumer. It involves function and numbers, which would require individuals to master mathematical skills. Anis and Hanafi (2015) found that the accounting field is often associated with mathematics involving numbers; it can be considered a tedious activity as preparing the financial statement takes a long time and must be done in detail. These factors cause students at educational institutions, especially matriculation colleges, to feel that the subject is difficult to be studied. Due to this negative assumption about the issue, students feel anxious to learn it in depth (Carcello & Hermanson, 2011). As such, further improvement should be taken in terms of the teaching approach and method selected to enable students' learning and attract their attention to this subject. Furthermore, the teaching and learning method utilised must suit the needs of the current generation.

LITERATURE REVIEW

Educators are essential in preparing students for a significant and effective learning experience. They are also among the determining factors of learning success (Nidzam, Shaharim, & Asmayati, 2016). However, the current Higher Education Institutions (HEIs) system that entirely relies on lecturers teaching using the whiteboard is unsuitable for modern education (Mohd. Yusof & Tahir, 2017). Nonetheless, this teaching approach has been the practice of lecturers in matriculation colleges, and this causes the teaching and learning to be teacher- and exam-based. This situation has also created an external learning environment where the students can become easily bored. As such, educators should utilize a student-based teaching strategy so that students can learn directly through the materials provided and the experience of being actively involved during the teaching and learning process.

The flipped classroom

The flipped classroom improves success, motivation, participation, higher-order thinking abilities, and experiential learning (Cakiroglu & Ozturk, 2017). It is a student-centered strategy that encourages classroom participation. Sams and Bergmann (2013) said the instructor motivates, guides, and gives students feedback. Students may view videos on their own using flipped classroom. This improves remote learning collaboration, and students can concentrate more on problem-solving throughout the learning process than on lectures or explanations. The flipped classroom improves lecturer and student technological abilities as lecturers might use numerous media technologies in their lessons (Kurt, 2017).

Students watch web-based lectures before face-to-face instruction in a flipped classroom. Many researchers proposed that flipped classrooms improve student learning compared to traditional methods (Albert & Beatty, 2014; He, Holton & Farkas, 2016; Roach, 2014). Studies suggest students are better prepared for face-to-face activities like problem-solving, discussion, and debate (Gaughan, 2014). Fauzan and Ngabut (2018) highlighted that instructors might offer fast reactions when students engage in higher Bloom taxonomy tasks during face-to-face sessions.

Matriculation college

Matriculation college students are part of the tech-savvy Z generation. Z generation's environment has molded their thinking differently from earlier eras (Rothman, 2016). Their cognitive style makes them more open to visual and practical learning, such as interactive

games, collaborative projects, and challenging assignments, than class mode (lectures) and discussion (Rothman, 2016; Cilliers, 2017). Therefore, the current educational trend and model are needed to meet 21st-century students' learning demands.

Matriculation college prepares students for university courses where they must adjust to a changed learning system in a year. Students must obtain a good matriculation grade to choose the desired study program. The university and instructors have a big task to accomplish this. They must guarantee early on that students may explore, mingle, and engage with individuals from diverse backgrounds. In addition, the instructor also affects students' learning success or failure (Nidzam et al., 2016). Finally, instructors must equip students with 21st-century skills and talents that can handle global issues.

Accounting at the matriculation level still focuses on traditional curriculum and test success. This exam- and textbook-based approach has been criticized for not producing the finest accountants (Che Ku Kassim, 2014). Students' desire and motivation to learn decrease. Students did not prepare for the Accounting class and did not turn in the homework (Anis & Hanafi, 2015). Lizawati, Hamisah, Haslina, and Taufiq (2017) observed that matriculation students' motivation was poor since the lecturer's teaching technique failed to enhance their interest in the topic. Many low-performing students lacked learning enthusiasm and class participation (Jian, 2019). In contrast, students with good grades and textbook knowledge may find classroom learning too simple.

Educators should adapt their approach to pushing students to be more engaged and productive. Ahmad Raflis (2014) found that the traditional teaching of Financial Statement Analysis is inadequate. Traditional, non-student-centered education stressed-out students since they had to sit silently without activities. This scenario happened in a matriculation college accounting class. The students struggled to answer the lecturers' questions and were passive and bored throughout the lesson. Osman and Jamaludin (2014) recommended flipped classroom learning to assist the learning process and increase students' problem-solving skills. The method might boost students' cognitive and emotional engagement.

Motivation and engagement

Motivation, participation, self-directed learning, and social contact affect student success. For example, educator-student contact leads students to study self-directed learning, boosting learning output (Sun, Xie & Anderman, 2018). Accounting requires comprehending principles and proving effort at the matriculation level, leaving little time for other tasks. McNally (2017) said there wasn't enough time to cover teaching, learning, and course material, causing poor achievement. Accounting demands students to comprehend ideas and have a suitable learning method. Some pupils perform well in Accounting without fundamental understanding or early experience (Fadzillah & Bahari, 2019). Others still have trouble comprehending and are not familiar with Management Accounting concepts.

These difficulties suggest a teaching strategy that might boost accounting students' motivation, engagement, and success in matriculation college. The flipped classroom may assist students in comprehending the teaching environment, provide a student-centered learning environment, and promote study motivation (Jian, 2019). This study is needed because there haven't been many studies at the matriculation level, particularly in the accounting field. Thus, the study objectives are to develop and determine the content validity of a flipped classroom lesson plan

for Management Accounting utilizing the First Principle of Instruction and compare students' motivation and engagement between flipped and traditional classroom instruction.

The development of the instructional plan

The instructional plan, also known as the *Rancangan Pengajaran Harian (RPH)*, is an exceptional record prepared by the teacher before teaching and learning. It guides the teacher to teach systematically and achieve the stated objectives in the teaching and learning session. This is because the instructional plan consists of activities to assist students in changing their attitudes, habits, skills, and knowledge toward the desired output. This plan is essential and beneficial so that teachers can deliver the teaching input to the students directly. The teacher could use the teaching period to the optimum and limit the scope of teaching in the stipulated time. Additionally, the instructional plan is evidence of the teacher's detailed preparation before class.

The development of the instructional plan in this study was based on the approach put forward in the First Principle of Instruction (Merrill, 2002). The techniques that form the basis for this study consist of integration, activation, application, and demonstration. In this research, students learn outside the classroom through a video presentation that activates, demonstrates, and applies. Students view videos or mini-lectures at home during the activation stage. After each video, the speaker would assign homework. This phase's video presentation helps pupils retain previously learned topics or information. In the demonstration phase, the lecturer will display the accounting problem-solving video. Students may watch these videos and short lectures to grasp the subject better. After watching the videos, students might test their knowledge by completing online quizzes and questions. The online quiz and questions might assist the lecturer in verifying the students' knowledge before classroom learning.

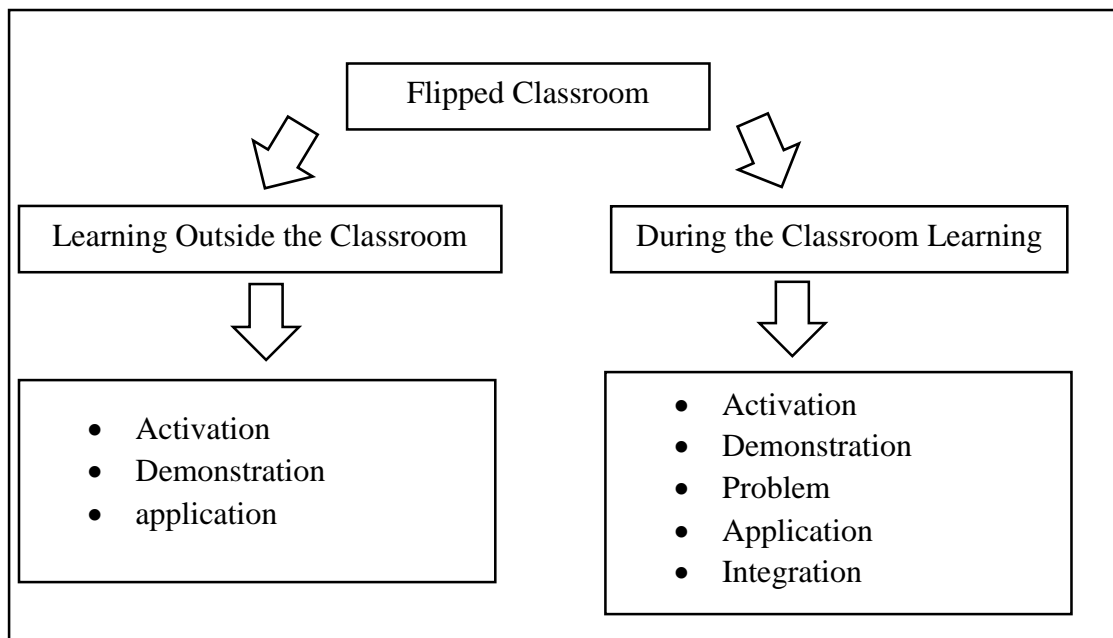


Figure 1. The approach in the First Principle of Instruction (Merrill, 2002) for the flipped classroom

METHODOLOGY

The topics covered in the instructional plan are Manufacturing Overhead, Job Order Costing, Process Costing, Absorption Costing, and Marginal Costing. Curriculum Specifications and the First Principle of Instruction (Merrill, 2002) were used to construct the flipped classroom plan. Experts gave input on the instructional plan using the Content Validity Index (CVI) questionnaire. Sidek and Jamaluddin’s (2005) content validity questionnaire was adapted. Subject Matter Experts (SME) included an accounting professor from the matriculation college, an e-learning lecturer, and a State Education Department counselor. Experts evaluated the educational plan’s capacity to meet goals. The Percentage Calculation Method (PCM) was used to analyze instructional plan content validity.

In the second phase, quasi-experimental research was performed to compare the motivation and engagement of control and experimental students in the Management Accounting course. This research included 80 students enrolled in the Management Accounting course. Students were divided into two groups: 40 in the flipped class and 40 in the traditional class. The flipped classroom was an experiment, and the traditional classroom was a control group. Experimental and control groups were exposed to nine weeks of flipped and traditional approaches.

Data was collected using adapted instruments to measure motivation and engagement. Two instruments were utilized: Classroom Engagement Inventory (Wang & Bergin,2014) and the Intrinsic Motivation Inventory (Plant & Ryan, 1985; Ryan & Deci, 1982). The scales ranged from 1(strongly disagree) to 5 (strongly agree). Table 1 shows the Cronbach’s Alpha of the scales. It shows that the scale has high internal reliability

Table 1. The Cronbach’s alpha of the study variable

	Items	Alpha Value
Motivation		
	Competence	0.89
	Choice	0.83
	Relatedness	0.85
Engagement		
	Affective	0.76
	Behavioural	0.85
	Cognitive	0.81

FINDINGS AND ANALYSIS

Phase 1

Expert assessors analyzed the educational plan using the Content Validity Index (CVI) questionnaire. The experts were provided with a copy of the instructional plan’s introduction, goals, general content, and appendices. According to Russell (1974), a module or, in the context of this study, an instructional plan has validity when it meets these five conditions: target population, method of implementation, sufficient time for implementation, successful increment of desired variables, and positive attitude transformation. Table 2 provides the fit validity percentage of each item.

Table 2. Total percentage of fit for the instructional plan validity by item

No	Statement	Percentage of fit
1	The contents of the Instructional Plan meet the target population	100%
2	The contents of the Instructional Plan could be fully implemented	93%
3	The contents of the Instructional Plan were implemented in sufficient time	87%
4	The contents of the Instructional Plan could increase students' motivation and involvement	87%
5	The contents of the Instructional Plan could increase students' achievement	100%

The evaluation scale was a 5-point scale from 1 = very much disagree to 5 = very much agree. The calculation of the PCM is as the following:

$$\frac{\text{Total experts' scores (x)}}{\text{Total actual scores (y)}} \times 100\% = \text{Content validity level}$$

According to the assessment results, the Instructional Plan for the Management Accounting subject was compatible with the Flipped Classroom methodology. However, the experts had also provided a few comments and recommendations for the Instructional Plan to guarantee its proper implementation. The content validity was computed using the values provided by all of the experts. The result shows that one expert gives 96%, while the other two give 92%. Therefore, the validity value for the Instructional Plan was 93.33%. According to Tuckman (1981) and Sidek Mohd Noah (2005), 70% and above content validity was considered a high level of achievement. Therefore, the Instructional Plan developed is acceptable as its content validity value exceeded 70%.

The experts had evaluated and agreed that the instructional plan was suitable for utilization and implementation. However, the experts had also provided two suggestions for improving the plan. Table 3 shows the comments and suggestions given by the experts:

Table 3. Comments and suggestions for the instructional plan

No.	Experts' Comments and Suggestions	Improvement
1	There should be a guide provided to the students on what to be observed and techniques on how to note down details from the video shown. This helps to prevent the students from watching the video passively.	The researcher provided the guide in the google classroom and WhatsApp applications. This guide was given to the students along with the materials for learning outside the classroom.
2	The main details and objectives to be achieved should be focused on for each activity conducted so that the lecturer would be more aware of them.	Each activity conducted was thoroughly scrutinized, and the video links were also labeled with the objectives to be achieved.

Phase 2

We analyzed pre-test and post-test results to compare students’ motivation and engagement between flipped and traditional instruction. Pre-test and post-test scores were analyzed using the t-test. Using Shapiro-Wilk, data were checked for normal distribution. The data for this research was determined acceptable for parametric testing (p-values>0.05) based on the normality test findings.

Table 4. Result of the independent t-test (motivation) for the experimental and control group after treatment

	Experimental (n=40)		Control (n=40)		Mean Diff	t	df	pvalue
	Mean	SD	Mean	SD				
Post-test total	4.01	0.49	3.11	0.83	0.90**	5.9	78	0.000

Table 4 demonstrates a significant difference in the mean post-test between the experimental group (M=4.01; SD=0.49) and the control group (M=3.11; SD=0.83); t (78)=5.9, p<0.001. Experimental group post-test scores are 0.90 points higher than control group results. Cohen’s effect size (d=1.32) revealed a high practical significance. The result confirmed that the flipped classroom group’s motivation score is higher than their traditional counterpart.

Table 5. Result of the independent t-test (engagement) for the experimental and control group after treatment

	Experimental (n=40)		Control (n=40)		Mean Diff	t	df	pvalue
	Mean	SD	Mean	SD				
Post-test total	4.04	0.48	3.18	0.78	0.85**	5.9	78	0.000

Table 5 demonstrates a significant difference between the experimental group’s post-test means (M=4.04; SD=0.48) and the control group’s (M=3.18; SD=0.78); t (78)=5.9, p<0.001. Experimental group post-test scores are 0.85 points higher than control group results. Cohen’s effect size (d=1.32) revealed a high practical significance, which tells us the difference is large. The result confirmed that the flipped classroom group engagement score is higher than its traditional counterpart.

DISCUSSION

The researcher did a comprehensive literature analysis on the flipped classroom technique and Management Accounting teaching activities to build the instructional plan based on the First Principle of Instruction. The flipped classroom technique was implemented at the matriculation college using the appropriate learning theory and practice. Before implementing the learning process, the instructional plan’s quality was also assessed. Experts evaluated output and results before implementation (Lynn, 1986). According to Sidek and Jamaludin (2005), the module or instructional plan’s content validity, dependability, and usability are crucial to its success.

The study developed a flipped classroom instructional plan for four Management Accounting subjects for matriculation students. The instructional plan's content validity was excellent (93.3%). The experts' opinions and ideas on the teaching strategy were positive. It may improve students' motivation, engagement, and success when utilised regularly because a learning environment produced from this technique has been approved as an instructional strategy (Harahap et. al, 2019). Many educators throughout the globe use this learning method. Many research studies have shown this strategy's usefulness in learning output and students (Kong & Song, 2015; Thai, Wever & Valcke, 2017; Lo, Lie & Hew, 2018).

According to the research, the flipped classroom group is more motivated and engaged. The study shows that flipped classrooms may boost student enthusiasm and engagement. The flipped classroom method increased motivation and engagement in the experimental group. This is due to the interaction model, which improves student involvement, organizational skills, and classroom expression. In this study, students feel confident in finding and exploring information and knowledge during learning outside the classroom because students' learning is self-directed. These findings suggest that students are more intrinsically motivated when they experience feelings of competence. The result of this study is aligned with that of prior literature (Sailer et al., 2017; Thai et al., 2017; Lo et al., 2018). The findings of this study also concluded that the level of student engagement using the flipped classroom approach was better than traditional methods in terms of emotional, cognitive, and behavioral. This means that students are more emotionally involved with the material provided during learning outside the classroom, and students feel interested in learning in the classroom because it is fun to learn new things. This active learning involves watching videos and seeking information by combining seeing and listening skills to build one's understanding. The result of this study is aligned with that of prior studies (Fatimah Abd Rahman et al., 2019; Singay, 2020).

CONCLUSION

Overall, the teaching plan for Management Accounting employing the flipped classroom technique (Merrill, 2002) is suited for use at the matriculation level. This lesson plan helps matriculation instructors teach Management accounting and accounting in general. It might also help instructors apply the flipped classroom method to other disciplines. In addition, the use of flipped instructional plans has a positive effect on increasing the level of motivation and engagement of students. This research hopes to provide the ministry with relevant information on the flipped classroom method that other educators may utilize. This strategy might also allow students to collaborate and organize their knowledge with classmates. This research may assist all teaching and learning parties.

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