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THE EFFECTS OF POMODORO TECHNIQUE ON ACADEMIC-RELATED TASKS, PROCRASTINATION BEHAVIOR, AND ACADEMIC MOTIVATION AMONG COLLEGE STUDENTS IN A MIXED ONLINE LEARNING ENVIRONMENT

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Abstract

Background and Objectives: The accomplishment of academic tasks among college students is challenging during online learning. Time management strategies particularly Pomodoro and Flowtime Technique were utilized to test its effects on the procrastination behavior and academic motivation of college students.

Methods and Findings: This study utilized a True Experimental research pretest-posttest randomized experimental design to measure and explore the relationship between the variables of the study. The two questionnaires used as research instruments were the Irrational Procrastination Scale and the Motivational Diagnostic Test. The Experimental group applied the Pomodoro Technique while the Control group used the Flowtime Technique. The study resulted to a decrease in the procrastination behavior from 29.60 to 27.60 mean, and academic motivation, from 86.70 to 84.10 mean in the experimental group. The control group has a slight decreased in the procrastination behavior, with a mean from 26.69 to 27.38, and academic motivation mean from 83.46 to 82.62.

Conclusion: The application of Pomodoro technique resulted in a slight improvement on the respondents' procrastination behavior. Both techniques reduced the academic motivation of respondents. However, its application has no significant difference in procrastination behavior and academic motivation of the respondents.

Keywords: Pomodoro Technique, Procrastination Behavior, Academic Motivation.

Introduction

Amidst the ongoing COVID-19 pandemic, interactions between individuals are lessened to control the transmission of the virus. Globally, this pandemic had abruptly implemented the distance learning modality specifically the Mixed Online Learning to mitigate the spread of infections by lessening the face-to-face interaction and close contact of students and the instructors and conduct online classes.

Given the challenges of prioritization and lack of time management, wherein students were most likely to fail or drop out of an online course due to absence of time in doing academic works, time management is critical in academic achievement in general must be given importance to defeat the declination of finishing projects and assignment. On of time management strategy is referred to as Pomodoro Technique which can be beneficial in accomplishing tasks. The idea behind this technique is to achieve a focused, timed-work session to accomplish a series of tasks that can be done in short intervals, with short breaks in between sessions (Gobbo & Vaccari, 2008).

This study proposes an intervention, which is the Pomodoro Technique. It aims to know as well the procrastination behavior and academic motivation of the respondents, and be able to address the sudden change from face-to-face learning modality into mixed online learning wherein the students develop procrastination behavior in doing online activities.

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Methods

Study Design

The study utilized the Quantitative - True Experimental research specifically utilizing pretest-posttest randomized experimental design. This design is used to determine the effects of Pomodoro and Flowtime technique on the respondent's academic related tasks, procrastination behavior, and academic motivation. The intervention protocol includes the conduct of orientation of activities among the respondents utilizing either Pomodoro or Flowtime technique, both are time management strategies. Pretest was conducted before the orientation. The study was conducted based on the created schedule for the respondents which were composed of two testing days (Tuesdays and Fridays) for two weeks. At the end of the last session of the experiment sessions, a post-test was conducted. The two activities in the intervention which were case analyses were taken from the modules of Nursing Care Management 114, Care of Older Persons.

Ethical Procedures

This was approved in compliance with the ethical principles on the conduct of the study by the FEU Ethics Review Committee (ERC). In addition, a digital informed consent form was obtained from the respondents before the conduct of the study. The respondents were also informed regarding the purpose, benefits, and risks of the study, and consent was obtained after stating all the information and rights of all the respondents.

Participants and Sampling

This study utilized a Systematic Random Sampling to determine the prospective respondents for the study. With the consent of level III nursing students of Far Eastern University, the study identified 26 respondents and are consequently randomized using the fishbowl method to group according to the experimental and control group.

Research Instruments

The research study utilized two types of questionnaires. The first questionnaire is the Irrational Procrastination Scale (IPS) which was used to determine the procrastination behavior of the respondents. The IPS consists of 9 items which focuses on implemental attributes of procrastination with an emphasis on "irrational" delay which refers to the voluntary delay of behavior despite knowing it will have disadvantages. The second questionnaire is the Motivational Diagnostic Test (MDT) which was used to determine the academic motivation of the respondents. The MDT consists of 24 items to find the motivational mechanisms that contribute to the procrastination of the respondents. This diagnostic measure is based on the Temporal Motivational Theory, which according to this theory, the likelihood of procrastination will increase with these 3 factors: expectancy, value, and impulsivity.

Statistical Treatment of Data

The study was centered on the effects of Pomodoro technique in academic-related task completion, procrastination behavior, and academic motivation. Frequency distribution is utilized to present the profile characteristics of the respondents. To know if there is a significant difference in the procrastination behavior among the respondents in the experimental and control group during pretest and posttests, Wilcoxon Signed Rank test was utilized to reveal the significant difference within groups. On the other hand, to determine the significant difference between groups, Mann-Whitney U-test was utilized. To evaluate for significance, a confidence level of 95% is selected ($\alpha = 0.05$). Microsoft Excel 365 was used to manage the data and SPSS Statistics for statistical testing.

Results

Profile Characteristics

In terms of the gender, out of 23 respondents, there is an equal number of males and females. However, in the control group, 76.92% of the respondents are female; therefore, the majority of the respondents were females.

Most of the respondents are 21-year-olds consisting of 50% from the experimental group and 69.24% for the control group. 20% of the experimental and 15.38% of the control group belong to the 20-year-olds, and another 20% of the experimental and 15.38% of the control group belong to the 22-year-olds, while the remaining 10% of the experimental group belong to the 23-year-old profile. Majority of the respondents are included in the 21-year-old profile.

In the General Weighted Average profile of the respondents, 70% of the experimental group and 53.85% of the control group has a GWA of 3.01 - 3.50. 30% and 30.77% of both groups had a GWA of 3.51 - 4.00, and the remaining 15.38% of the control group has a GWA of 2.51 - 3.00. The majority of the respondents have a GWA of 3.01 - 3.50.

The results show that majority of the respondents from both experimental and control groups are female students with a percentage of 65.22. Most of the respondents are also in the 21-year-old age group with a percentage of 56.52, and 60.90% or majority of the respondents has a General Weighted Average of 3.01 - 3.50.

Academic Related Tasks

The results on the table below indicate that majority of the respondents in the experimental group show higher status of incomplete tasks in terms of accomplishing academic-related tasks, as shown by high percentages of incomplete status on the first and second activities. (Table 1.1)

Table 1.1: The Status of Accomplishing Academic-related Tasks Among the Respondents in Experimental Group

Activity Period	COMPLETE		INCOMPLETE		Total	
	f	%	f	%	N	%
Activity 1						
Day 1	0	0.0%	5	50%	5	50%
Day 2	1	10%	4	40%	5	50%
Total	1	10%	9	90%	10	100%
Activity 2						
Day 1	1	10%	4	40%	5	50%
Day 2	2	20%	3	30%	5	50%
Total	3	30%	7	70%	10	100%

The results on the table below indicate that majority of the respondents in the control group show higher status of incomplete tasks in terms of accomplishing academic-related tasks, as shown by high percentages of incomplete status on the first and second activities. (Table 1.2)

Table 1.2: The Status of Accomplishing Academic-related Tasks Among the Respondents in Control Group

Activity Period	COMPLETE		INCOMPLETE		Total	
	f	%	f	%	N	%
Activity 1						
Day 1	2	15.38%	7	53.85%	9	69.23%
Day 2	2	15.38%	2	15.38%	4	30.77%
Total	4	30.77%	9	69.23%	13	100%
Activity 2						
Day 1	3	23.08%	6	46.15%	9	69.23%
Day 2	0	0.0%	4	30.77%	4	30.77%
Total	3	23.08%	10	76.92%	13	100%

Procrastination Behavior

On the experimental group, respondent's level of procrastination behavior improved slightly from high procrastination behavior during pretests to average procrastination behavior and least procrastination behavior during posttest, after introducing the Pomodoro technique. On the control group, the procrastination behavior slightly increased after the introduction of Flowtime technique (Table 2).

Table 2: The Procrastination Behavior Among Respondents in Experimental and Control Groups During Pre and Post Tests

Procrastination Behavior	Experimental Group (n=10)		Control Group (n=13)		Total (n=23)	
	Mean	SD	Mean	SD	Mean	SD
Pre-test	29.60	4.971	26.69	4.171	27.96	4.666
Post-test	27.80	4.131	27.38	5.910	27.57	5.106

*Legend: 19 or less and 20 - 23 = Your mantra is "first-things-first";
24 - 31 =Average procrastinator; 32 - 36 and 37 or more = "Tomorrow" is yourmiddle name.

As can be gleaned from the result, it indicates that there is no significant difference in the procrastination behavior among the respondents within experimental group during pre and post-tests. Therefore, the null hypothesis (H0) was rejected. Moreover, for the pretest and posttest of the control group, it shows that there is no significant difference in the procrastination behavior among the respondents within control group during pre and post-tests. Therefore, the null hypothesis (H0) was failed to reject. (Table 3.1).

Table 3.1: The Significant Difference in Procrastination Behavior Among The Respondents Within Experimental and Control Group During Pre and Post-Tests

Procrastination Behavior	Mean	SD	p-value	Decision	Interpretation
Experimental					
Pre-test	29.60	4.971		Retain the null hypothesis	No significant difference
Post-test	27.80	4.131	.206		
Control					
Pre-test	26.69	4.171		Retain the null hypothesis	No significant difference
Post-test	27.38	5.910	.349		

*Note: p-value > 0.05 = No significant difference, p-value < 0.05 = There is a significant difference

Table 3.1 shows that there is no significant difference in the procrastination behavior among the respondents between experimental and control group during pre-tests. Therefore, the null hypothesis (H0) was rejected. Moreover, there is no significant difference in the procrastination behavior among the respondents between experimental and control group during post-tests. Therefore, the null hypothesis (H0) was rejected (Table 3.2).

Table 3.2: The Significant Difference in Procrastination Behavior Among The Respondents Between Experimental and Control Group During Pre and Post-Tests

Procrastination Behavior	n	Mean	SD	p-value	Decision	Interpretation
Pretest						
Experimental	10	29.60	4.971		Retain the null hypothesis	No significant difference
Control	13	26.69	4.171	.148		
Posttest						
Experimental	10	27.80	4.131		Retain the null hypothesis	No significant difference
Control	13	27.38	5.910	.879		

*Note: p-value > 0.05 = No significant difference, p-value < 0.05 = There is a significantdifference

Academic Motivation

The result shows that the respondents under the experimental group had a higher academic motivation prior to the utilization of the intervention, which is the Pomodoro technique. In addition, it shows that the respondents under the control group had experienced a slight decrease in their academic motivation after the application of the intervention, which is the Flowtime technique (Table 4).

Table 4: The Academic Motivation Among Respondents in Experimental and Control Group During Pre and Post-Test

Academic Motivation Behavior	Experimental Group (n=10)		Control Group (n=13)		Total (n=23)	
	Mean	SD	Mean	SD	Mean	SD
Pre-test	86.70	10.100	83.46	8.724	84.87	9.270

Post-test	84.100	8.373	82.62	9.483	83.26	8.848

*Legend: 97 - 120 = Very High Motivation; 73 - 96 = High Motivation; 49 - 72 = Average Motivation; 25 - 48 = Low Motivation; 0 - 24 = Very Low Motivation

The result shows that there is no significant difference among the respondents' academic motivation within the experimental group. As for the control group, it shows that there is no significant difference in the academic motivation within the pre-test and the posttest of the control group. Therefore, the significance level fails to reject the null hypothesis (Table 5.1).

Table 5.1: The Significant Difference in Academic Motivation Among The Respondents Within Experimental and Control Group During Pre and Posttests

Academic Motivation	Mean	SD	p-value	Decision	Interpretation
Experimental					
Pre-test	86.70	10.100		Retain the null hypothesis	No significant difference
Post-test	84.100	8.373	.286		
Control					
Pre-test	83.46	8.724		Retain the null hypothesis	No significant difference
Post-test	82.62	9.483	.823		

*Note: p-value > 0.05 = No significant difference, p-value < 0.05 = There is asignificant difference

The results indicates that there is no significant difference in the academic motivation among the respondents between experimental group and the control group. Furthermore, it shows that there is no significant difference in the academic motivation among the respondents between the experimental group and the control group during pre- test and posttest. Therefore, the significance level fails to reject the null hypothesis (Table 5.2).

Table 5.2: The Significant Difference in Academic Motivation Among The Respondents Between Experimental and Control Group During Pre and Posttests

Academic Motivation	n	Mean	SD	p-value	Decision	Interpretation
Pretest						
Experimental	10	86.70	10.100		Retain the null hypothesis	No significant difference
Control	13	83.46	8.724	.522		
Posttest						
Experimental	10	84.100	8.373		Retain the null hypothesis	No significant difference
Control	13	82.62	9.483	.605		

*Note: p-value > 0.05 = No significant difference, p-value < 0.05 = There is asignificant difference

Discussion

The study results show that most of respondents were female students, and majority of them were 21 years old with General Weighted Average (GWA) of 3.01 - 3.50. San Buenaventura (2019) stated that in the Academic Year 2017-2018, the enrollees in the Higher Education Institutions (HEIs) reached 2.99 million where 55.6% of the enrollees were females, while 44.4% of the remaining was males. Therefore, there are more female students that are currently enrolled in college. Accordingly, the study respondents were level three students, ages between 20 to 23 years old. Moreover, given that this was the results of the gathered GWA from last first semester, AY 2020-2021, this then may reflect that students in the mixed online learning are already adjusted and it has given them the chance to have a flexible schedule to have a self-paced studying (Mobo & Sabado, 2019). Table 1 findings shows that in accomplishing academic-related task, most of respondents completed their task during application of Flowtime technique compared to utilization of Pomodoro technique. Moreover, majority of the respondents in the experimental group show higher

status of incomplete tasks, probably because of lack of determination in accomplishing the task. According to the study of Yilmaz (2017), students who are in the mixed online learning shows unsuccessful time management behaviors in the activities given to them. In table 2, it can be found that the procrastination behavior of the experimental group during the posttest had slightly decreased compared to during pretest. In line with this finding, a study from Golovkova (2016) found that the application of the Pomodoro technique can help users to be more focused on complex activities. On the other note, the procrastination behavior of the control group almost remained unchanged during pre and posttest. Some respondents notably determined the effects of the Flowtime technique, and some were not able to achieve productivity during the intervention.

Consequently, table 3 findings in application of time management intervention did not provide any significant difference in procrastination behavior level among the respondents of experimental and control group during pretest and posttest. In line with the findings collected, Steel (2007) stated that procrastination behavior of students is correlated with low attentiveness to one's performance and that impulsive individuals have increased risk in procrastinating since they are distracted easily (Steel, 2007). Table 4 findings show that there is a decrease in the motivation level of the respondents among the experimental and control group. The study by Usman (2020) suggests that although the Pomodoro technique is successful in time management on undergraduate students' motivation, students still need time to adjust to the technique to optimize its benefits. In addition, table 5 findings indicate that there is no significant difference between the academic motivation of the experimental group and the control group during pretest and posttest. Motivation is one of the most essential aspects of the learning process in a variety of learning environments (Firat, Yuzer & Kilinc, 2018).

Conclusion

It can be inferred, in line with the study findings, that there is a higher percentage of academic-task completion when Flowtime Technique is utilized. On the other hand, the application of Pomodoro technique is more effective in reducing procrastination behavior among nursing students. When it comes to academic motivation, the Pomodoro technique and the Flowtime technique had slightly decreased the academic motivation of the respondents. Overall, both time management interventions did not provide a significant difference in the academic motivation and procrastination of the respondents during pre and posttests.

Conflict of Interest

There is no conflict of interest between the authors in this manuscript.

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