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*Original Research*

## **Assessment of Pomodoro Technique in the Context of Student Nurses' Performance in Hybrid Learning**

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### **ABSTRACT**

The Pomodoro technique as a study strategy is an essential supportive learning tool for students to adapt during the paradigm shift of learning from traditional to hybrid modality as an offshoot of the COVID-19 pandemic. The present study aimed to assess the pomodoro technique in the context of student nurses' performance in hybrid learning. The study utilized a quantitative experimental research design with a single group pre and post test design. Twenty-five (25) Level 3 student nurses were selected by simple random sampling via lottery method through online roulette. Six sessions of the pomodoro technique were implemented and divided into face-to-face and online modalities to suffice its hybrid learning environment. The study highlighted that the pomodoro technique is beneficial for student nurses' performance by improving time management and motivation. Notably, 15 (60%) of the 25 participants in the Community Health Nursing (NCM 113) course achieved midterm grade assessment described as good, while 10 (40%) of the participants received a very good performance rating. Furthermore, using paired sample t-tests, the data showed a significant difference between the student performance in terms of grades before and after using the pomodoro technique, indicating that this method is an effective memory-enhancing tool. This is supported by a p-value of 0.0002. To promote the positive impact of this study, a learning strategy was developed to help improve students' time management and memory power through T.I.M.E (To-do list creation, Identifying priorities, Minimizing distractions, and Evaluating progress). This memory-boosting technique is geared to effectively improve memory, enhance recall, and increase retention to support learning immensely. Future studies need to explore themes akin to Pomodoro Technique and other variables that may impact learning performance along with larger samples and more rigorous protocol to support greater generalizability.

Keywords: Pomodoro technique, Hybrid learning, Student nurses, T.I.M.E

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### **INTRODUCTION**

The COVID-19 pandemic significantly impacted the education system, resulting in the paradigm shift of learning from traditional to hybrid modality. This has led to countless learning

challenges. The use of varied online platforms like Google Meet, Zoom, Moodle and many more soared to address the learning barrier brought about by the global lockdowns. This hybrid learning demands self-discipline and a systematic way of completing

tasks. However, this modality also overwhelmed students causing incomplete submission of tasks, distractions, and short attention spans resulting in unremarkable academic performance according to Pelikan et al.,(2021). One productivity tool found to effectively manage time, foster motivation, and promote engagement is the Pomodoro technique (Costales, et.al.,(2021). It involves a series of study breaks into manageable intervals, known as "pomodoros," to ensure sufficient rests, preventing significant delays and encouraging efficient study hours. This study is grounded on the Goal Setting Theory, advanced by Locke and Latham (2019) asserting that a person will be motivated to perform a task if he has clear and specific goals to pursue. It posits that high performance can only come from clear expectations.

### ***Theoretical Background***

Goals are sometimes described as the object or aim of an action; they can also be characterized as something that one attempts to accomplish, acquire, or gain (Locke & Latham, 2002; Locke, Shaw, Saari, & Latham, 1981). According to the goal-setting hypothesis developed by Locke and Latham (1990), people are more likely to perform at a higher level when they set clear, challenging goals. (Weintraub and others, 2021). In line with the theory are the five goal-setting concepts of clarity, challenge, commitment, feedback, and task complexity. (Indeed, 2022). Because of its connection with task completion, this theory is ideally suited to be associated with the idea of the pomodoro technique. In the Goal Setting Theory, it is emphasized that goals should be specific and clear. This concept is supported by the Pomodoro Technique, which divides work into manageable chunks known as "pomodoros," which are 25-minute intervals that are

dedicated to a single job or objective. Each pomodoro encourages attention and a sense of accomplishment. The second principle challenge highlights the significance of establishing goals that are difficult yet attainable because doing so boosts motivation and productivity. Pomodoro technique divides large assignments into smaller, easier-to-complete tasks. Each pomodoro represents a focused effort to overcome a specific task, contributing to the overall challenge of completing a larger goal. Breaking down goals into smaller, achievable tasks is a strategy to enhance motivation and performance. The Pomodoro Technique supports the challenge principle by providing a structured approach to tackling incremental challenges within a larger goal. The third principle, commitment, is connected to the pomodoro approach since it demands academic performance according to Pelikan et al.,(2021). One productivity tool found to effectively manage time, foster motivation, and promote engagement is the Pomodoro technique (Costales, et.al.,(2021). It involves a series of study breaks into manageable intervals, known as "pomodoros," to ensure sufficient rests, preventing significant delays and encouraging efficient study hours. This study is grounded on the Goal Setting Theory, advanced by Locke and Latham (2019) asserting that a person will be motivated to perform a task if he has clear and specific goals to pursue dedicating a specific amount of time—25 minutes for each pomodoro. People are given a realistic and reasonable timeline by this brief but focused time commitment, which facilitates their commitment to the activity at hand. Feedback is the fourth principle. In the same way, the Pomodoro Technique encourages frequent review sessions in between the brief pomodoros to evaluate tasks that are completed or unfinished. This enables people to assess their development, adapt as needed, and

schedule the following concentrated period. Lastly, the necessity of managing task complexity is acknowledged by both the goal setting theory and the pomodoro technique. A crucial component of both is segmenting enormous activities into smaller, more manageable chunks. This strategy increases the likelihood of successful completion and enhances challenging tasks.

Figure 1. Theoretical Framing of the Research Process

## **METHODOLOGY**

This study used a quantitative quasi-experimental research design with a single group consisting of 25 participants to evaluate their performance on the preliminary and midterm grade performance. The participants' consent was secured and coordinated with the Nursing Academic Coordinator for access to grades in Community Health Nursing 2. The study protocol and mechanics of the pomodoro technique were explained. The experiment intervention during a span of four weeks. The mean grade matrix from the preliminaries and midterm grades was analyzed using T-test and measured the impact of the pomodoro technique on student performance.

### **Study Site and Subjects**

The research was conducted in Emilio Aguinaldo College- School of Nursing located at bldg. 5 Ext. 3. Room 406 was utilized to facilitate face to face learning. The room has solid walls surrounding them with a whiteboard in front. The room has a capacity of enough for 40 students. The room has a single air-conditioner with wooden chairs and adequate lighting. Meanwhile, google meet is used for online modality. The participants of the

study were students from Emilio Aguinaldo College-Manila third year nursing students presently enrolled for the academic year 2022-2023 and in the subject NCM 113. The researchers secured the official list of the participants who are enrolled in NCM 113 via Google Classroom. The researchers selected the participants through online roulette and enrolled 25 participants for this study.

### **Data measures**

The study measures are the grades obtained pre and post the Pomodoro Technique implementation. The grade matrix comprises the prelim and midterm grades of the participants in the Community Health Nursing 2 subject. It measured the effect of pomodoro technique based on the students' performance. This grade matrix was tabulated in Microsoft Excel and coded to the specific participants to foster anonymity. These were accessed through the assistance of the Academic Coordinator upon consent of the participants. The data was processed with strict confidentiality and was utilized only for scientific inquiry.

### **Data Collection Procedure and Ethical consideration**

The study utilized quantitative quasi-experimental research with a single group pre and post test design. The participants are twenty five (25) Level 3 student nurses selected through simple random sampling via lottery online roulette. The pomodoro technique was implemented in six sessions conducted both face-to-face and online modalities to satisfy the hybrid learning environment. Student performance was assessed during the pre - implementation phase, followed by the conduct of the Pomodoro Technique with strict adherence to the experiment protocol and mechanics and student

performance was measured again after the intervention phase. Data analysis involves descriptive methods through frequency distribution and percentage and inferential statistics in the form of paired t-tests to evaluate difference in means between the pre- and post intervention grades, uphold privacy and confidentiality rights, protect subjects from harm, and ensure their well-being. Belmont's principles, respect for a person, involves informed consent, benefit in potential harm situations, and justice in fair treatment and allocation of risks and benefits were observed. Participants had the option to withdraw anytime or fully participate, while maintaining anonymity.

### **Data Analysis**

Descriptive statistics were used to analyze the demographic profile of the participant, such as frequency and percentages. Paired sample t-test was used to analyze the significant difference in students' performance before and after the pomodoro technique. A p-value of 0.05 level of significance was used as the reference. Meanwhile, the Colaizzi method was utilized to analyze the narrative response.

## **RESULTS AND DISCUSSION**

### *Pre-test and Post-test Scores*

The study highlights the pre and post intervention results in terms of grades. After the administration of pomodoro technique, the performance yield remarkably changed particularly in the number of students who obtained a GPE of 1.5 described as very good academic performance. Pre-intervention percentage within the dimension of very good rating soared from 12% (3) to 40% (10) reflecting the beneficial impact of pomodoro technique on student nurses' performance. Two (2) of

the students who garnered a fair rating improved to higher ranks after implementation of the pomodoro technique. This is supported by the study of Santiago and Gurat (2023) where seventeen ( $f=17$ , 74%) of the Pomodoro Class obtained a mean percentage score of 66-85% compared with only three ( $f=3$ , 13%) from the Regular Lecture Class who garnered the same score equivalent.

### *Test of Difference in Students' Performance Before and After the Pomodoro Technique*

Furthermore, using paired sample t-tests, the table indicates a significant difference between the student performance in terms of grades before and after using the pomodoro technique at a p-value of 0.0002. The grade matrix emphasized a remarkable increase in the mean grade to 87.36 from the pre-intervention mean grade of 83.71. This clearly shows the causal link of pomodoro technique as an effective productivity tool that influences learning performance of students. It is corroborated by the study of Costales (2021), where a significant connection between pomodoro technique and academic performance of students was established.

## **DISCUSSIONS**

1. The study reveals that academic performance before the Pomodoro technique indicates that only a low percentage of students excel, while over half are in the good category.
2. The Pomodoro method significantly improved student performance, increasing from good to very good rating during the midterm and attracting more participants to the excellent category.

3. The study found significant differences in students' performance before and after the Pomodoro Technique, rejecting the null hypothesis.

4. The study found that the Pomodoro Technique enhances students' motivation, participation, and time management by dividing tasks into manageable segments, reducing fatigue, and reducing distractions, thereby promoting strict adherence to learning time management and maintaining memory.

5. A T.I.M.E learning strategy was developed to enhance time management and memory, improving students' overall education experience and efficiency in daily tasks, in line with the results.

## CONCLUSIONS

The Pomodoro technique significantly improved students' academic performance in terms of grade. The narrative comments also highlighted improvements in motivation, engagement, and time management of students along with reduced distractions while being focused on the task at hand. To promote data translation and utilization, a learning strategy was coined called TIME, to help nursing students to boost their thinking power and time management towards study effectiveness and efficiency. The T.I.M.E. stands for To-do lists, Identifying priorities, Minimizing distractions, and Evaluating progress.

### *Practical Implications*

Research on Pomodoro Technique in nursing is quite few. The data provides insights and understanding on the complexities of memory enhancement techniques by paving the way to more avenues of memory boosting strategies. In education, Pomodoro technique in gamified format is suited to the learning styles of Gen Z students, hence,

promoting immense learning engagement for optimal learning performance. It is also seen to benefit nursing practice by promoting time management, decreasing burnout through focused work sessions and active breaks, and preventing mental fatigue while actively fostering work efficiency and productivity.

### *Limitations and Future Research Direction*

The study aimed to minimize bias through a single-group design and the exclusion of other memory enhancement techniques. The integration of the pomodoro technique in the classroom, whether online or face-to-face, should be adapted as a pedagogical approach to improve student motivation, engagement, and time management that will ultimately influence students' overall learning engagement and productivity. To inform policy, school administrators should develop guidelines to standardize the framework of focused study and efficient break intervals. Furthermore, pomodoro technique should be implemented over an extended period, using both formative and summative performance measures to reflect and yield a more convincing evidence for causal links. Also, future studies need to explore themes akin to Pomodoro Technique and other variables that may impact learning performance along with larger samples and more rigorous protocol to support generalizability. Lastly, the T.I.M.E technique should be implemented across programs and disciplines to evaluate applicability.

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