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# Rotational Blended Learning (Rbl): Its Impact on Student's Academic Performance and Mental State

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## Abstract

The COVID-19 pandemic has affected people's lives all across the world. The education sector is one of the areas of our society that has been most affected by the global pandemic caused by the novel coronavirus SARS-CoV-2. Due to the pandemic and to avoid being crowded inside the school premises, Sultan Kudarat State University (SKSU) ACCESS Campus implemented Rotational Blended Learning (RBL). This study employed the quantitative research method of (Creswell, 2012). A checklist-style questionnaire was conducted with 136 respondents. In order to identify the impact of Rotational Blended Learning (RBL) on student's academic performance, the researchers compared the general point average (GPA) of the students before and after the implementation of RBL. The study reveals that students had a higher general point average (GPA) during online classes ($M = 1.95$, $SD = 0.24$) compared to when they experienced rotational blended learning ($M = 2.27$, $SD = 0.27$). In order to identify the impact of Rotational Blended Learning (RBL) on student's mental state, the researchers used the DASS-21, "Depression, Anxiety, and Stress Scale," by Lovibond & Lovibond (1995), as cited in Llanillo (2021). The study reveals that student's mental state after the implementation of RBL in terms of depression is moderate ($M = 16.88$, $SD = 8.01$), anxiety is severe ($M = 19.01$, $SD = 5.14$), and stress is mild ($M = 23.97$, $SD = 8.13$). The efficiency of online distance learning in terms of GPA against rotational blended

learning has been proven. Therefore, it is recommended that online distance learning should be employed instead of rotational blended learning if another pandemic strikes our country again.

**Keywords:** Academic performance; Covid-19; Mental state; Online distance learning; Rotational blended learning (RBL).

## 1. Introduction

The COVID-19 pandemic has affected people's lives all across the world. People have been impacted regardless of their nationalities, educational levels, socioeconomic statuses, and genders (Schleicher, 2020). Several institutions had to find ways to continue the education of their students without risking their own lives or the lives of their students. One solution they found is using rotational blended learning (RBL). The lack of knowledge about new technologies among teachers, the information gap, the complexity of the home environment, and other issues were difficulties that both students and educators had to deal with Ali (2020).

The education sector is one of the areas of our society that has been most affected by the global pandemic caused by the novel coronavirus SARS-CoV-2. Since March, the COVID-19 pandemic has impacted all Filipino students' lives (Uy, 2020). As schools across the country were shuttered due to the deadly virus, there have been numerous fascinating stories of students who were upset. In the Philippines and worldwide, this is the first pandemic to have had a profound impact on education (Uy, 2020). With this challenging situation, students' academic performances, as well as their mental state, were affected.

The COVID-19 pandemic has caused an overall increase in stress, anxiety, and depression in society. Academic delay and dropout could be avoided if students could manage their emotional stress while studying (Storrie *et al.*, 2010). Academic success and good mental health are strongly correlated with one another. The performance of pupils at school is positively impacted by good mental health, well-being, and resiliency. For these students, unrecognized or untreated mental health problems or learning disabilities may have negative implications (Houri, 2021).

Due to the pandemic and to avoid being crowded inside the school premises, Sultan Kudarat State University (SKSU) ACCESS Campus implemented Rotational Blended Learning (RBL). On August 24, 2022, with Memorandum Order No. 076, Series of 2022, the university implemented RBL to ensure the safety of its employees and students. As a result, students alternate attending face-to-face classes one week and online classes the following week. With this, the students did practice their knowledge of technology while learning and collaborating with their peers online and offline alternately. However, they must have a stable internet connection during online classes.

This study aimed to ascertain the impact of Rotational Blended Learning (RBL) on the academic performance and mental state of Bachelor of Elementary Education (BEED) students during the first-semester grade of the academic year 2022 - 2023. The impact of Rotational Blended Learning (RBL) on the student's level of academic performance before and after the implementation of Rotational Blended Learning (RBL) and their mental state in terms of depression, anxiety, and stress are what the researchers are interested in learning about. Further, this research aided SKSU in understanding the effects of Rotational Blended Learning (RBL) on students' academic performance and mental state.

## 2. Statement of the Problem

The purpose of this study was to determine the impact of Rotational Blended Learning (RBL) on the academic performance and mental state of the Bachelor of Elementary Education (BEED) second-year students of Sultan Kudarat State University (SKSU) Access Campus during the first semester of the academic year 2022-2023.

Specifically, it sought to answer the following questions:

1. What is the level of the student's academic performance before and after the implementation of Rotational Blended Learning (RBL)?

2. To what extent does Rotational Blended Learning (RBL) impact the student's mental state in terms of:

2.1 depression;

2.2 anxiety; and

2.3 stress?

3. Is there a significant effect between Rotational Blended Learning (RBL) and students' academic performance before and after its implementation?

4. Is there a significant relationship between Rotational Blended Learning (RBL) and a student's mental state?

## 3. Method

This chapter covers the research design, the locale of the study, the respondents of the study, data gathering instrument, data gathering procedures, and statistical treatment for the data analysis.

## 4. Research Design

This study employed the quantitative research method of Creswell (2012). The researchers measured the data using mathematical techniques and identified the current status of the identified variables. The questionnaire used in this study was the DASS-21, "Depression, Anxiety, and Stress Scale," by Lovibond & Lovibond (1995), as cited in Llanillo (2021). The researchers also used a researcher-made checklist questionnaire regarding the students' before and after RBL academic grades and their perception of the Rotational Blended Learning. Meanwhile, the BEED program chairperson validated the student's academic grade checklist.

## 5. Respondents of the Study

The respondents of the study were the second-year Bachelor of Elementary Education (BEED) students of the College of Teacher Education (CTE) at Sultan Kudarat State University (SKSU) ACCESS Campus in the first semester of the academic year 2022-2023 who were under the rotational blended learning model. The students were selected using stratified random sampling. In stratified random sampling, the researchers divided the population first into smaller subgroups, or strata, based on the shared characteristics of the members. Then they randomly selected among these groups to form the final sample. The researchers selected this group because they are the most available students who were under the rotational blended learning during the first semester of the academic year 2022-2023.

**Table-1.** Distribution of the Respondents

| Respondents | Total |
|---|---|
| Section A | 35 |
| Section B | 34 |
| Section C | 34 |
| Section D | 33 |
| **Total** 136 | |

## 6. Locale of the Study

The study was conducted at Sultan Kudarat State University (SKSU)—ACCESS Campus, College of Teacher Education (CTE), Barangay EJC Montilla 9800, Tacurong City, Sultan Kudarat, Philippines. The Sultan Kudarat State University (SKSU), formerly Sultan Kudarat Polytechnic State College, was established on December 5, 1990, under a bill authored in Congress by then-Cong. Estanislao V. Valdez and sponsored in the Senate by Sen. Edgardo J. Angara.

## 7. Data Gathering Instrument

The primary tool the researchers used in this study is a standardized questionnaire adapted from the DASS-21, "Depression, Anxiety, and Stress Scale," by Lovibond & Lovibond (1995), as cited in Llanillo (2021), and a researcher-made checklist style questionnaire regarding their before and after RBL academic grades and their perception of the Rotational Blended Learning.

The questionnaire DASS-21 is composed of questions about mental well-being issues, which are very timely given students' experiences with depression, anxiety, and stress during the implementation of RBL. At the same time, the researcher made checklist-style questionnaire composed of questions regarding their academic grades, particularly their general point average (GPA), before and after the implementation of RBL and their perception of the Rotational Blended Learning. In the questionnaire regarding the academic performance of the respondents, their GPA was gathered by letting them calculate their GPA before the implementation of RBL, which was during the online distance learning in the second semester of S.Y. 2021-2022, and their GPA after the implementation of RBL in the first semester of S.Y. 2022-2023. Their GPA is calculated by multiplying their grades in each subject depending on its unit first, then adding the sum of their grades, and then dividing it by the sum of units. The respondents were instructed to be honest in answering the questions in the questionnaire, considering that their responses, particularly about their GPA, will be validated by the BEED Program Chairperson. The respondents must rest assured that all the information they provide will be treated with the utmost confidentiality.

## 8. Data Gathering Procedures

The following procedures are followed in the conduct of the study.

### 8.1. Stage 1: Preparation Phase

### 8.1.1. (Communication, Obtain Participants' Consent)

The researchers secured a letter requesting permission from the Dean, Research Coordinator, and BEED Chairperson of the College of Teacher Education (CTE) of Sultan Kudarat State University (SKSU) ACCESS Campus to conduct the study. Before the data gathering and after explaining the purpose of their study, the researchers let the respondents sign the consent form without forcing them. The researchers also clarified some terms and catered the questions of the respondents so that they could answer the questionnaires with their full knowledge. The researchers made sure to protect their respondents' privacy and confidentiality.

### 8.2. Stage 2: Identification of Participants

The respondents were selected using stratified random sampling. The respondents of this study are the second-year Bachelor of Elementary Education (BEED) students at the College of Teacher Education (CTE) at Sultan Kudarat State University (SKSU) ACCESS Campus in the first semester of the academic year 2022-2023 who were under the rotational blended learning. The researchers selected this group because they are the most available students who were under the rotational blended learning during the first semester of the academic year 2022-2023.

### 8.3. Stage 3: Data Consolidation and Analysis

The data was consolidated using a standardized questionnaire adapted from the DASS-21, "Depression, Anxiety, and Stress Scale," by Lovibond & Lovibond (1995), as cited in Llanillo (2021), and a researcher-made checklist-style questionnaire regarding their before and after RBL academic grades and their perception of the RBL. The researchers got the demographic profile of their respondents in terms of name, age, section, and gender to validate the respondents' GPA. The respondents were instructed to be honest in answering the questions in the questionnaire, considering that their responses, particularly about their GPA, will be validated by the BEED Program Chairperson. The respondents must rest assured that all the information they provide will be treated with the utmost confidentiality.

In administering the questionnaire, the researchers used the allotted break time to avoid distractions from class discussions. The respondents were given enough time to answer the questions. After answering the questionnaire, the researchers collected it to tally the scores and applied the statistical treatment they will use in this study. The researchers also asked their statistician to guide them in tallying and interpreting the data.

## 9. Statistical Treatment

To give a clear understanding of the focus and the result of the study, the following appropriate statistical treatments were applied:

Mean and standard deviation was used to determine the student's academic performance level before the implementation of rotational blended learning during the second semester of the school year 2021-2022 and after the implementation of rotational blended learning during the first semester of the school year 2022-2023.

Mean and standard deviation was also used to determine the impact of rotational blended learning on the student's mental state regarding depression, anxiety, and stress. Mean and standard deviation were used to determine the student's perception of rotational blended learning.

The t-test was used to determine the significant effect of rotational blended learning on student's academic performance before and after its implementation. Lastly, a correlation analysis was used to determine the significant relationship between rotational blended learning and student's mental state.

## 10. Results and Discussion

This chapter presents statistical data relative to the problems posted in the Statement of the Problem. The corresponding analysis and interpretation of data are incorporated in this portion of the study.

**Table-6.** Level of Student's Academic Performance

| Academic Performance | N | M | SD | Description |
|---|---|---|---|---|
| Before | | 1.95 | 0.24 | Above Average |
| After | 136 | 2.27 | 0.27 | Average |

Table 6 presents that students had a higher general point average (GPA) during online classes (M = 1.95, SD= 0.24) compared to when they experienced rotational blended learning (M = 2.27, SD = 0.27).

Based on the results, Rotational Blended Learning (RBL) has negatively impacted the student's academic performance. In a similar study by Hussain *et al.* (2020), it was revealed that online learning was an effective and modern way of learning during COVID-19 to meet the educational needs of the students. It has been found that the adoption of an online learning system would be advantageous during any pandemic like COVID-19 fulfilling the educational needs of the students staying at home.

**Table-7.** Levels of Student's Mental State

| Students Mental State | N | M | SD | Description |
|---|---|---|---|---|
| Depression | | 16.88 | 8.01 | Moderate |
| Anxiety | | 19.01 | 5.14 | Severe |
| Stress | 136 | 23.97 | 8.13 | Moderate |

The Table 7 presents that students' mental state after the implementation of RBL in terms of depression is moderate (M = 16.88, SD = 8.01), anxiety is severe (M = 19.01, SD = 5.14), and stress is moderate (M = 23.97, SD = 8.13).

Based on the results, student's mental state after the implementation of RBL was slightly affected. Williamson *et al.* (2005), reported that stressful life events are significantly elevated in anxious and depressed youths, thus could lead to low performance in academic achievement. A study by Yasin and Dzulkifli (2010) also indicated the same results. They found that depression, anxiety, and stress negatively correlate with academic achievement. The higher the depression, anxiety, and stress, the lower the academic achievement among students.

According to McCraty (2007) and McCraty *et al.* (2000), academic performance is significantly influenced by anxiety when studying. Researchers have been looking at the relationship between anxiety and its effect on the academic performance of students. They discovered that high school students with higher levels of anxiety have

lower academic performance (McCraty, 2007) and that higher levels of anxiety would be linked to lower academic achievement (Mazzone *et al.*, 2007).

**Table-8.** Students' Perception of Rotational Blended Learning

| Statement | N | mean | Verbal Description |
|---|---|---|---|
| I prefer online distance learning more than the rotational blended learning model. | 136 | 3.42 | Agree |
| The workload during the implementation of the rotational blended learning model is too heavy. | 136 | 2.63 | Neutral |
| The rotational blended learning model didn't help me better understand our lessons. | 136 | 2.63 | Neutral |
| I find it hard to stay engaged and motivated during the implementation of the rotational blended learning model. | 136 | 2.61 | Neutral |
| I find rotational blended learning more stressful than online distance learning. | 136 | 2.62 | Neutral |
| Participating in the rotational blended learning model didn't improve my ICT skills. | 136 | 2.11 | Disagree |
| The rotational blended learning model didn't improve my ability to collaborate with my peers. | 136 | 2.61 | Neutral |
| The rotational blended learning model didn't improve the communication and interaction between me and my teachers. | 136 | 2.63 | Neutral |
| The rotational blended learning model didn't help me manage my time better. | 136 | 2.63 | Neutral |
| I have better grades during online distance learning than during the implementation of rotational blended learning. | 136 | 3.43 | Agree |

Table 8 presents the students' perception of rotational blended learning. Based on the results, the respondents prefer online distance learning more than rotational blended learning, and the respondents agreed that they have better grades during online distance learning than during the implementation of rotational blended learning.

The respondents neither agree nor disagree that the workload during the implementation of the rotational blended model is heavier than during online distance learning. The respondents neither agree nor disagree that the rotational blended learning model didn't help them better understand their lessons. The respondents neither agree nor disagree that they find it hard to stay engaged and motivated during the implementation of the rotational blended learning model. The respondents neither agree nor disagree that they find rotational blended learning more stressful than online distance learning.

The respondents neither agree nor disagree that the rotational blended learning model didn't improve their ability to collaborate with their peers. The respondents neither agree nor disagree that the rotational blended learning model didn't improve the communication and interaction between them and their teachers. The respondents neither agree nor disagree that the rotational blended learning model didn't help them manage their time better. And lastly, the respondents disagree that participating in the rotational blended learning model didn't improve their ICT skills.

Similarly, some research indicates that students' perspectives on distant learning are different. While some research (Avsheniuk *et al.*, 2021; Mathew and Chung, 2020) claim that students have positive views, others (Bozavlı, 2021; Yurdal *et al.*, 2021) make it very evident that their opinions are negative. Additionally, some studies have revealed that students' attitudes are at a moderate level (Akcil and Bastas, 2021). Some students have expressed that transition to distance learning has been the source of their anxiety (Unger and Meiran, 2020).

**Table-9.** Mean Comparison of Student's Academic Performance

| Academic Performance | n | Mean | SD | T | Df | p | Verbal Interpretation |
|---|---|---|---|---|---|---|---|
| First semester | | 1.95 | 0.24 | | | | |
| Second Semester | 136 | 2.27 | 0.27 | 10.36 | 265 | 0.000 | Significant* |
| *Note: at a .05 level of significance* | | | | | | | |

Table 9 presents that students had a higher general point average (GPA) during online classes (M = 1.95, SD = 0.24) compared to when they experienced rotational blended learning (RBL) (M = 2.27, SD= 0.27).

The results show a significant effect between rotational blended learning and student's academic performance before and after its implementation with a .05 significance level. This is because it can be seen that the student's general point average (GPA) became low when RBL was implemented compared to when they were still in online classes.

Similar findings were made by Calafiore and Damianov (2011), who discovered that students who have a higher GPA and who spend more time doing their online coursework have better performance in online formats. The study by Zheng *et al.* (2021), on the other hand, showed that students' impressions of online learning were generally positive during the pandemic and that most of them desired to continue with some online learning after the pandemic. Overall, their findings supported a number of earlier research in the fields of dental (Rad *et al.*, 2021;

Sadid-Zadeh *et al.*, 2020), medical (Agarwal and Kaushik, 2020; Khalil *et al.*, 2020), and nursing (Riley *et al.*, 2021) education that had previously reported on students' favorable opinions regarding online learning throughout the period of the pandemic. Students mentioned greater flexibility as one of the advantages of online learning in their written responses to the poll. Some students also mentioned that they found it less intimidating to type queries in the chat box during live online classes than speaking in front of the class. Others also mentioned that having less time spent commuting to and from school gave them more time to sleep, which benefited their mental and physical well-being.

**Table-10.** Relationship between Rotational Blended Learning and Student's Mental State

| | R | P | Verbal Interpretation |
|---|---|---|---|
| After the Implementation of RBL x Depression | 0.204 | 0.017 | Significant* |
| After the Implementation of RBL x Anxiety | 0.246 | 0.004 | Significant* |
| After the Implementation of RBL x Stress | 0.264 | 0.002 | Significant* |
| *Note: at a .05 level of significance* | | | |

Table 10 presents that there is a significant relationship between rotational blended learning and student's mental state in terms of depression (r–value = 0.204, p-value = 0.017), anxiety (r-value= 0.246, p-value = 0.004), and stress (r-value = 0.264, p-value = 0.002). This implies that although rotational blended learning impacted the student's mental state in terms of depression, anxiety, and stress, it was just minimal, and the student's low grades were totally not because of the stress brought by the RBL.

Similar to this, a study by Sumarsono *et al.* (2021) found that the majority of learners' anxiety levels were assessed to be at a high level throughout the implementation of blended learning. When speaking with others, the students were anxious. Their anxiety was primarily brought on by things like lack of confidence and the fear of making mistakes.

## 10. Conclusion

Given the findings of the study, the following conclusions were made:

1. The respondents had a higher general point average (GPA) during online classes compared to when they experienced rotational blended learning, and they also prefer online distance learning more than rotational blended learning.

2. The respondents' mental state after the implementation of RBL in terms of depression is moderate, anxiety is severe, and stress is mild. The rotational blended learning made the respondents anxious as this was their first time attending face-to-face classes during college.

3. The researchers also found that there is a significant effect between rotational blended learning and student's academic performance before and after its implementation because the respondents' had a higher general point average (GPA) during online classes compared to when they experienced rotational blended learning. The researchers conclude that online learning may offer students distinct advantages and benefits when interacting with educational content through digital platforms.

4. The researchers conclude that there is a significant relationship between rotational blended learning and students' mental state in terms of depression, anxiety, and stress.

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