Correlation of Technology Integration on Students Engagement Towards Learning Outcomes: Basis for an Action Plan

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Abstract

This quantitative research paper investigates the correlation between the integration of technology in educational settings and its impact on students' engagement and learning outcomes. The study employs a rigorous methodology, utilizing surveys, assessments, and statistical analyses to gather and analyze data from a diverse sample of students across various educational levels. The research aims to identify the extent to which technology integration influences students' active participation and its subsequent effect on academic achievements.

Keywords: Correlation, Students' Engagement, Learning Outcomes

INTRODUCTION

In the ever-evolving landscape of education, the integration of technology has emerged as a transformative force, shaping the way students learn and teachers instruct. The 21st century has witnessed a remarkable shift in the dynamics of the classroom, with digital tools and resources becoming integral components of the educational experience. The National Teachers College, as an institution dedicated to the pursuit of excellence in education, recognizes the significance of this paradigm shift and its potential impact on student engagement.

The amalgamation of technology and education has been a subject of profound interest and debate. The question arises: How can technology be effectively harnessed to engage students and create a dynamic, interactive, and more effective learning environment? This research aims to explore the various facets of this complex relationship, with a focus on its impact
within the unique academic setting of the National Teachers College.

In this introductory section, we will provide an overview of the rationale behind the research, elucidate its significance within the broader educational context, and present the objectives and structure of the study. By the end of this research, we hope to not only gain a deeper understanding of the implications of technology integration on student engagement but also to offer insights and recommendations that can inform instructional practices at the National Teachers College and beyond. As we embark on this exploration, we acknowledge the pivotal role technology plays in shaping the future of education and the imperative to harness its potential effectively.

OBJECTIVES OF THE STUDY

The research objectives for "Correlation of Technology Integration on Students engagement towards Learning Outcomes: Basis for an Action Plan" could include:

- To Correlate the Impact of Technology Integration on Student Engagement: Investigate how the incorporation of technology, such as online platforms, multimedia resources, and interactive tools, influences student engagement in various educational activities.
- To Analyze Student Perceptions: Gather students' opinions and feedback regarding their experiences with technology integration and its impact on their engagement in the learning process.
- To Evaluate the Impact of Different Technology Tools: Analyze the effectiveness of specific technology tools and platforms in promoting student engagement, considering factors like interactivity, accessibility, and user-friendliness.
- To Provide Recommendations for Improvement: Based on the research findings, offer recommendations for enhancing technology integration in the College of Education to maximize student engagement and learning outcomes.

MATERIALS AND METHODS

This research entitled "Correlation of Technology Integration on Students Engagement towards Learning Outcomes: Basis for an Action Plan" is a quantitative research that is focused on collecting numerical data from the survey questionnaire and academic records. Gathered numerical data will be used for statistical analysis. The goal is to uncover the truth whether there is a significant relationship between the variables or none.

The researchers utilizes random sampling to ensure an unbiased representation of the population, with 67 students from The National Teachers College chosen as respondents based on Slovin's formula. The research instrument, an online survey questionnaire developed by the researchers, includes demographic profiles, Likert scale, and close-ended questions. The data gathering procedure involves unbiased selection of respondents, survey distribution, and accessing academic records for comprehensive analysis. The gathered data will be subjected to descriptive statistics to summarize technology usage, engagement levels, and academic performance, followed by correlational analysis to examine relationships. Results will be presented in a table, providing a clear and concise basis for developing an effective action plan based on the research findings.

Quantitative Design allows the comparison of the variables. The variables described as the usage of technology, the student engagement, and the learning outcomes. In addition, the study was conducted in an uncontrolled real-life environment which is the natural setting.

Respondents are selected in an unbiased method. The researchers float the survey questionnaire to random students of The National Teachers College. The academic records will also be accessed to collect the students' academic performance for a more thorough analysis of the relationship between the variables.

Data gathered from the research instrument were computed for the interpretation of technology usage, student engagement levels, and the learning outcomes. The collected data will provide understanding that can result to a more effective action plan.

The data gathered from the questionnaire will serve as the baseline for the research study. A descriptive statistics will be used to give a summary of the technology usage, engagement levels, and the academic performance of the students. This will identify the mean and how clustered the data around the mean.

In addition, a correlational analysis will also be used to examine the relationship between technology integration, student's engagement, and the learning outcomes. This will done by encoding the gathered data, wherein numerical values will be assigned to specific responses, facilitating a quantitative analysis.

Both tools are used to study the patterns, relationships, and trends within the collected data. After all the process, the gathered data will be transcribed in a table to present the detailed results clearly and concisely.

RESULT AND DISCUSSION

This chapter presents the data, with analysis and interpretation, gathered to discuss the answers to the research problems of the study. The discussion followed the statements of the problem which were presented in the first chapter.

Table 1
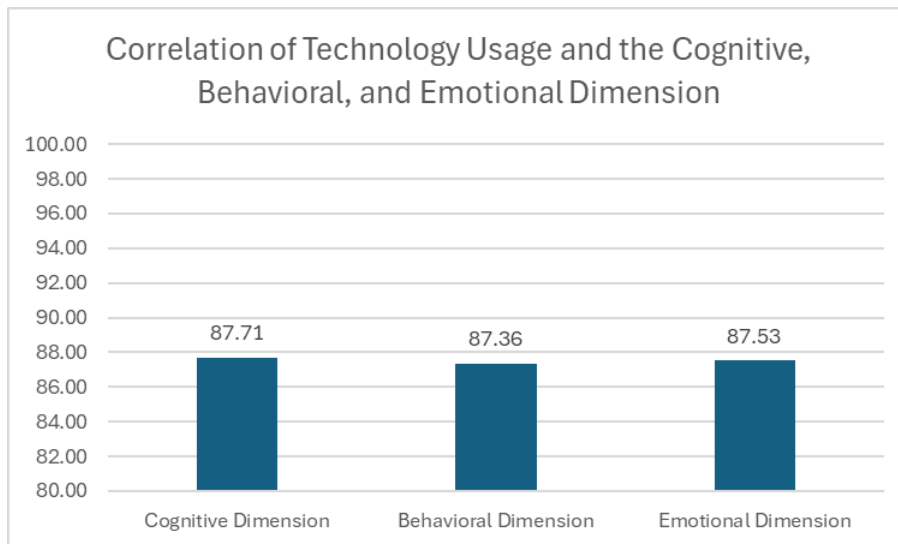
Examining the correlation percentages of Technology Usage on Cognitive, Behavioral, and Emotional Dimensions in the provided table, it becomes evident that the Cognitive Dimension exhibits the highest impact, with a mean of 87.71. In contrast, the Behavioral Dimension lags slightly behind, recording a mean of 87.36. This implies that technology usage has a more pronounced influence on students' cognitive aspects, while the impact on behavioral aspects is comparatively lesser.

Contrastingly, when examining the standard deviation for each dimension, it becomes apparent that the Emotional Dimension displays greater consistency, evident in its standard deviation of 7.00. In comparison, the Cognitive Dimension exhibits less uniformity, as indicated by its higher standard deviation of 7.78. This suggests a greater variability in the impact of technology usage on the cognitive dimension, while the emotional dimension shows a more stable pattern.

Table 2.0. Correlation of Technology integration and Students engagement in terms of General Average.

	General Average	Technology Usage
General Average	1	
Technology Usage	-0.19649398	1

Table 2.1 Correlation of Technology integration and Students engagement in terms of General Average.

Pearson r value:	-0.2
Interpretation of r:	negative perfect relationship
Representation of the variable:	ρ = correlation coefficient
Null Hypothesis (Ho):	ρ = 0 (there is no significant relationship)
Alternative Hypothesis (Ha):	ρ ≠ 0 (there is significant relationship)
alpha =	0.05	
tail test =	two-tailed	
degree of freedom =	66	Decision Rule:
number of pairs =	67	
Tabular Value =	±0.250	Reject Ho if the computed t value is greater than 0.250 and less than -0.250 otherwise accept Ho.
Computed t value =	±1.6281	

The table reveals a mean of 90.90 for the General Average and 87.52 for technology usage. This indicates that, on average, students score higher in the General Average compared to their reported technology usage.

In Table 2, the correlation coefficient between the general average and technology usage is -0.2, and while interpreted through the Pearson r, it's crucial to clarify that -0.2 does not indicate a perfect relationship. Rather, it suggests a moderate negative correlation. This implies that as technology usage increases, there is a discernible but not strong tendency for the general average to decrease.

Regarding standard deviation, the table illustrates that the General Average is more consistent, reflected in its lower standard deviation of 1.91. In contrast, technology usage shows less consistency, as evidenced by its higher standard deviation despite having a mean of 7.43. This suggests that there is more variability in reported technology usage compared to the General Average.

According to the table, the researcher rejected the null hypothesis (Ho) as the computed T value of 1.6281 exceeded the critical value of 0.250. Rejecting Ho implies a significant relationship between the two variables at the 5% level of significance.

Table 3.0 Factors affecting the relationship between technology integration, student engagement, and eventual learning outcomes (Availability of Information)

	Availability of Information	General Average
Availability of Information	1	
General Average	-0.045347006	1

Table 3.1

Pearson r value:	-0.05
Interpretation of r:	negative negligible relationship
Representation of the variable:	ρ = correlation coefficient
Null Hypothesis (Ho):	ρ = 0 (there is no significant relationship)
Alternative Hypothesis (Ha):	ρ ≠ 0 (there is significant relationship)
alpha =	0.05	
tail test =	two-tailed	
degree of freedom =	66	Decision Rule:
number of pairs =	67	Reject Ho if the computed t value is greater than 0.250 and less than -0.250 otherwise accept Ho.
Tabular Value =	±0.250	
Computed t value =	±0.3688	

The researchers have identified a few factors that may affect the relationship between the variables. One is the availability of information and the lack of resources. For the first one, on the table we can see the relationship between the general average and availability of information is -0.05 which is interpreted as a negative negligible relationship.

The table reveals a mean of 89.26 for information availability, contrasting with the general average's mean of 90.90. This indicates a slight difference, suggesting that, on average, information availability tends to be slightly lower than the general average.

The table highlights the general average's consistency, evident in its lower standard deviation of 1.91 compared to the higher standard deviation of 2.13 for information availability. This suggests a more stable trend in the general average compared to the variability in information availability.

The researchers reject the null hypothesis (Ho) as the computed t-value of -0.3688 falls below the critical value of -0.250. This rejection signifies a statistically significant relationship between the variables at the 5% level of significance.

Table 3.2 Factors affecting the relationship between technology integration, student engagement, and eventual learning outcomes (Availability of Resources)

	General Average	Lack of Resources
General Average	1	
Lack of Resources	0.051601241	1

Table 3.3

Pearson r value:	0.05	
Interpretation of r:	positive negligible relationship	
Representation of the variable:	ρ = correlation coefficient	
Null Hypothesis (Ho):	$\rho = 0$ (there is no significant relationship)	
Alternative Hypothesis (Ha):	$\rho \neq 0$ (there is significant relationship)	
alpha =	0.05	Decision Rule:
tail test =	two-tailed	
degree of freedom =	66	
number of pairs =	67	Reject Ho if the computed t value is greater than 0.250 and less than -0.250 otherwise accept Ho.
Tabular Value =	± 0.250	
Computed t value =	± 0.4192	

The table indicates a mean of 90.90 for the general average and 89.13 for the lack of resources. This suggests a marginal difference, implying that, on average, the general average tends to be slightly higher than scores associated with a lack of resources.

Results on standard deviation reveal that the general average is more consistent, with a standard deviation of 1.91, contrasting with the higher standard deviation of 2.20 for the lack of resources. This indicates a greater variability in scores for lack of resources, emphasizing the relative stability of the general average.

Based on the table, the relationship between the general average and the lack of resources is 0.05 that means it has a positive negligible relationship based on the pearson r interpretation.

The null hypothesis (Ho) is dismissed by the researchers due to the computed t-value of 0.4192 exceeding the critical value of 0.250. This indicates a statistically significant relationship between the variables at a confidence level of 5%, emphasizing the robustness of the identified association.

CONCLUSION AND RECOMMENDATION

Based on the finding, the researchers concluded the following about the Correlation of Technology Integration on Students engagement towards Learning Outcomes. As the results were tallied, different conclusions were drawn.

1. Among those three (3) dimensions; cognitive, emotional, and behavioral. Technology affects the cognitive dimension more which has 87.71 percent, followed by the Emotional dimension which has 87.53 percent and the least dimension is the Behavioral which has 87.36 percent.
2. The use of technology has an significant relationship to the grades of the students.
3. The availability of the information appears to be overwhelming for the students and should have limitations. In addition lacking of resources for the students has a great impact on their learning performance.

Based on the findings and the conclusion of this study, the following are recommended:

1. Revisit the curriculum to identify the Factors that can cater the behavioral dimension in technology integration. Moreover, incorporating emotionally engaging content in the curriculum, fostering a supportive classroom environment, and using technology for interactive and personalized learning can positively influence students' emotional connection to the material, enhancing overall engagement.
2. Enhance the technology integration on classroom discussions since the based on the data gathered the students learns more through the use of technology.
3. Make the availability of the computers in the school more accessible for the students. The school should consider the schedule of the students to make sure that there is a proper scheduling on the use of computers.

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