

Virtual Learning and Academic Performance among Master's Students at the University of Guyana

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Abstract - This study examined the relationship between virtual learning and academic performance among Master's students at the University of Guyana. A quantitative correlational design was employed with 189 postgraduate students. Data were collected using a structured questionnaire that measured access to technology, instructional quality, learner engagement, and self-regulation, while academic performance was operationalized as Grade Point Average (GPA). Descriptive statistics, Pearson correlation, and multiple regression analyses were used. Results revealed a statistically significant moderate positive relationship between virtual learning and academic performance ($r = .42, p < .01$). Regression results indicated that learner engagement ($\beta = .34, p = .001$) and self-regulation ($\beta = .29, p = .003$) were the strongest predictors, with the overall model explaining 31% of the variance in academic performance. The findings suggest that virtual learning can contribute meaningfully to postgraduate academic success when supported by active engagement, self-directed learning, sound instructional design, and reliable digital access. The study contributes context-specific evidence from Guyana and offers practical implications for university leaders, program coordinators, and lecturers seeking to strengthen virtual and blended learning in postgraduate education.

Keywords: virtual learning, academic performance, postgraduate education, self-regulation, student engagement, Guyana

INTRODUCTION

The rapid expansion of digital technologies has altered the organization, delivery, and governance of higher education. Virtual learning, broadly understood as instruction mediated through digital platforms and online communication tools, has become a central part of university teaching rather than a temporary supplement. The COVID-19 pandemic accelerated this shift and compelled many universities to adopt remote or blended approaches at scale. However, the continued use of virtual learning after the emergency period requires more than technological availability; it requires evidence that the approach contributes to meaningful learning outcomes.

For postgraduate students, the relationship between virtual learning and academic performance is especially important. Master's students are expected to engage independently with scholarly material, manage time effectively, participate in seminars, and demonstrate advanced analytical competence. Virtual learning can support these expectations by increasing flexibility, widening access to resources, and enabling recorded or asynchronous engagement. At the same time, it can weaken academic performance when students experience poor connectivity, low interaction, limited feedback, digital fatigue, or weak self-regulated learning behaviours.

Within the Guyanese higher education context, the University of Guyana occupies a central role in preparing educators, leaders, researchers, and professionals. Evidence on how virtual learning affects academic performance among Master's students is therefore valuable for institutional planning, programme evaluation, and educational leadership. This study responds to that need by examining whether virtual learning is associated with academic performance and identifying which components of virtual learning best predict student success.

Problem Statement

Although virtual learning has become embedded in higher education, there remains limited empirical evidence on its effectiveness in Guyana, particularly at the postgraduate level. Universities may invest in learning management systems, video conferencing platforms, and online assessments without fully understanding how these provisions influence student performance.

This creates a planning gap for educational leaders who must decide how to allocate resources, train lecturers, support students, and design quality assurance mechanisms for digital learning.

The problem addressed in this study is the lack of local evidence on the effect of virtual learning on the academic performance of Master's students at the University of Guyana. Without such evidence, institutional decisions may rely on broad international assumptions rather than context-specific data.

Purpose of the Study

The purpose of this study was to assess the relationship between virtual learning and academic performance among Master's students at the University of Guyana. The study further sought to determine the extent to which access to technology, instructional quality, learner engagement, and self-regulation predict academic performance in a virtual learning environment.

Research Questions

1. What is the level of virtual learning experienced by Master's students at the University of Guyana?
2. What is the level of academic performance among Master's students at the University of Guyana?
3. Is there a statistically significant relationship between virtual learning and academic performance?
4. Which components of virtual learning significantly predict academic performance?

Hypotheses

H0: There is no statistically significant relationship between virtual learning and academic performance among Master's students at the University of Guyana.

H1: There is a statistically significant relationship between virtual learning and academic performance among Master's students at the University of Guyana.

LITERATURE REVIEW

Virtual Learning in Higher Education

Virtual learning in higher education has shifted from emergency remote teaching to a more sustained component of university delivery. Contemporary literature distinguishes between poorly planned emergency remote instruction and intentionally designed online learning. Quality virtual learning is not defined merely by the use of video conferencing or uploaded notes; rather, it involves clear learning outcomes, structured online interaction, timely feedback, accessible resources, and assessment practices aligned with course objectives.

Research on online and blended learning suggests that virtual delivery can produce outcomes comparable to or better than face-to-face instruction when supported by strong instructional design and active learning. However, the benefits are uneven because student readiness, lecturer competence, digital infrastructure, and institutional support vary across contexts. In developing and small-state contexts, access to devices and stable internet connectivity can influence whether students experience online learning as empowering or burdensome.

Academic Performance in Virtual Contexts

Academic performance is commonly measured through GPA, course grades, completion rates, and assessment scores. In online contexts, performance is influenced by both academic and non-academic factors. Students may benefit from the flexibility of recorded lectures and asynchronous materials, but they may also face distractions, weak study routines, and reduced immediacy in communication with lecturers. The literature, therefore, presents virtual learning as a conditional rather than automatic driver of academic achievement.

For Master's students, academic performance depends not only on content knowledge but also on scholarly writing, critical analysis, research competence, and sustained motivation. Virtual learning can support these outcomes when students have access to digital libraries, discussion forums, lecturer feedback, and peer collaboration. Conversely, low participation and limited feedback can reduce the depth of learning.

Student Engagement

Student engagement is one of the most frequently cited predictors of success in online learning. It includes behavioral engagement, such as attendance and assignment completion; emotional engagement, such as interest and belonging; and cognitive engagement, such as deep processing and persistence. In virtual classes, engagement is shaped by lecturer presence, peer interaction, multimedia resources, course organization, and opportunities for meaningful participation.

The present study treats learner engagement as a core predictor because postgraduate learning requires sustained participation in reading, discussion, independent inquiry, and assessment preparation. In a virtual environment, students who attend sessions, participate actively, communicate with lecturers, and use online resources are more likely to translate digital access into academic performance.

Self-Regulated Learning

Self-regulated learning refers to the learner's capacity to plan, monitor, control, and evaluate learning. It includes goal setting, time management, help seeking, metacognitive monitoring, and strategic use of resources. In virtual learning, self-regulation becomes especially important because students often work with less direct supervision and greater responsibility for pacing their learning.

Recent systematic and meta-analytic literature continues to show that self-regulation is associated with performance in online and blended environments. The effect is not simply motivational; it is practical. Students who set study schedules, monitor comprehension, review recorded lectures, and seek clarification when needed are better positioned to succeed academically. This study, therefore, includes self-regulation as a key predictor of GPA.

Instructional Quality and Lecturer Presence

Instructional quality remains central to virtual learning outcomes. Strong online instruction includes clarity of expectations, a coherent course structure, an active teaching presence, appropriate assessment, feedback, and accessible materials. Lecturer presence is particularly important because students may interpret silence or delayed responses as a lack of support. Where lecturers use discussion prompts, formative feedback, breakout rooms, quizzes, and multimedia resources, students are more likely to remain engaged.

For educational leadership, instructional quality is not solely the responsibility of individual lecturers. It reflects institutional policies, professional development, quality assurance standards, and programme-level planning. Virtual learning initiatives are more likely to succeed when lecturers are trained not only to use platforms but to design online pedagogy.

Technology Access and Digital Equity

Technology access includes device availability, internet reliability, platform usability, and digital literacy. The global move to online education highlighted persistent inequalities in digital access. Students with unstable internet connections or limited devices may struggle to attend synchronous sessions, submit assignments, access readings, or participate in collaborative work. For postgraduate students balancing employment and family responsibilities, technology barriers can intensify existing pressures.

In Guyana, digital access must be considered within broader geographical and socioeconomic realities. Students may experience different levels of connectivity depending on region, income, work schedule, and household responsibilities. Consequently, the influence of virtual learning on academic performance cannot be evaluated without considering the enabling or constraining role of infrastructure.

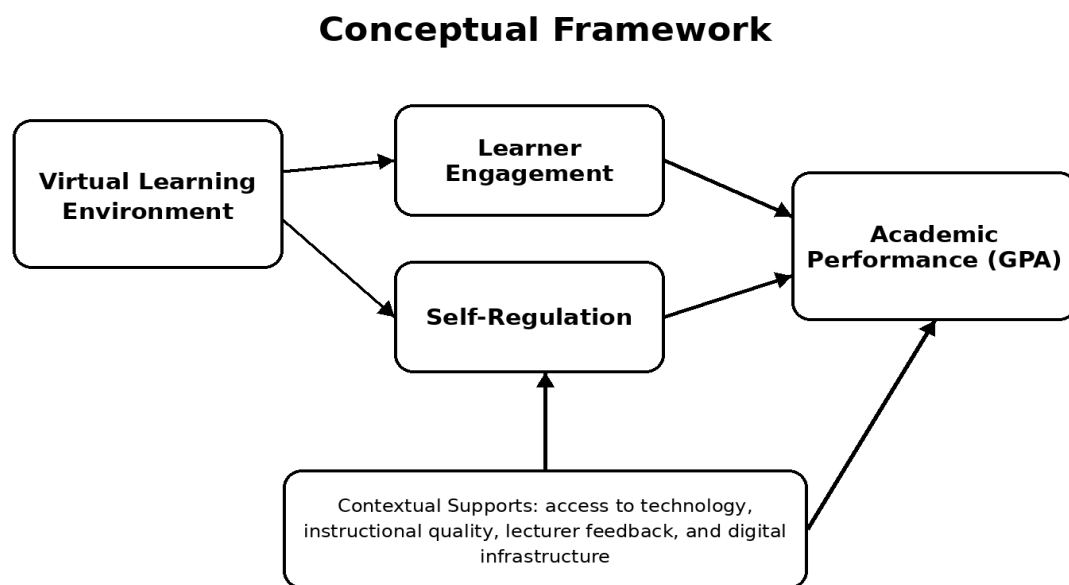
Synthesis and Literature Gap

The literature suggests that virtual learning can improve academic performance when mediated by engagement, self-regulation, instructional quality, and access to technology. However, much of the evidence comes from larger higher education systems, undergraduate populations, or general pandemic-era studies. Less attention has been paid to postgraduate students in Caribbean universities and still less to Guyana-specific evidence. This study addresses that gap by analyzing data from 189 Master's students at the University of Guyana and linking virtual learning variables to academic performance.

Theoretical and Conceptual Framework

The study is grounded in constructivist and self-regulated learning theories. Constructivist theory views learning as an active process in which students construct meaning through interaction, reflection, and application. In virtual learning environments, constructivist principles are reflected in discussion forums, collaborative tasks, problem-based learning, and interactive lectures. Self-regulated learning theory explains how students manage motivation, cognition, behavior, and time in order to achieve academic goals. Together, these theories support the assumption that virtual learning contributes most effectively to academic performance when students are engaged and self-directed.

The conceptual model proposes that virtual learning influences academic performance both directly and indirectly. Access to technology and instructional quality are enabling conditions, while learner engagement and self-regulation function as active learning mechanisms. The model, therefore, positions academic performance as an outcome shaped by the interaction between institutional provision and student learning behavior.



Virtual learning is expected to influence GPA directly and indirectly through engagement and self-regulated learning.

Figure 1. Conceptual framework linking virtual learning, learner engagement, self-regulation, and academic performance.

METHODOLOGY

Research Design

A quantitative correlational research design was used. This design was appropriate because the study sought to examine the strength and direction of relationships between virtual learning variables and academic performance without manipulating the learning environment.

Population and Sample

The study involved 189 Master's students at the University of Guyana. The sample size was adequate for correlation and multiple regression analysis involving four predictor variables. Participants were drawn from postgraduate programs and represented students with experience in virtual learning.

Instrumentation

Data were collected using a structured questionnaire. The instrument contained sections on demographic information, access to technology, instructional quality, learner engagement, self-regulation, and academic performance. Virtual learning items were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Academic performance was measured using self-reported GPA.

Validity and Reliability

Content validity was strengthened by aligning questionnaire items with the literature on online learning, engagement, self-regulated learning, and academic achievement. Internal consistency reliability for the virtual learning scale was strong, with Cronbach's alpha of .87.

Data Collection Procedure

Data were collected electronically. Participants were informed of the purpose of the study, the voluntary nature of participation, and confidentiality. No identifying information is reported in the article.

Data Analysis

Data were analysed using descriptive statistics, Pearson product-moment correlation, and multiple regression. Descriptive statistics summarised virtual learning experiences and GPA. The Pearson correlation was used to test the relationship between virtual learning and academic performance. Multiple regression assessed the predictive contribution of access to technology, instructional quality, learner engagement, and self-regulation.

Results

The results are presented according to the research questions. Descriptive statistics show the overall level of virtual learning and academic performance. Correlation analysis examines the relationship between virtual learning and GPA, while regression analysis identifies the strongest predictors of academic performance.

Table 1
Descriptive Statistics for Main Study Variables

Variable	N	Mean	SD
GPA	189	3.42	0.38
Virtual Learning Score	189	3.76	0.52

The descriptive results indicate that students reported a moderately high virtual learning experience ($M = 3.76$, $SD = 0.52$) and a strong level of academic performance based on GPA ($M = 3.42$, $SD = 0.38$).

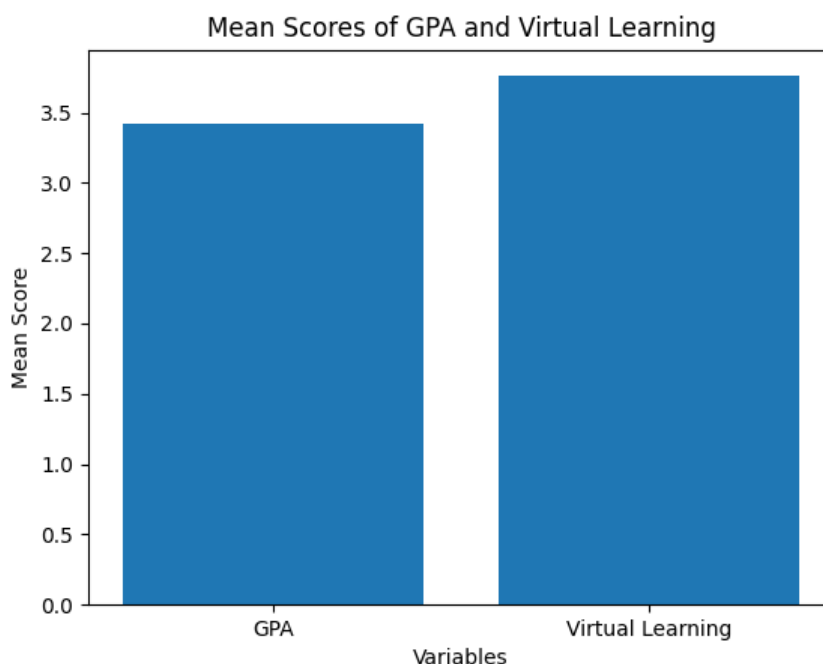


Figure 2. Mean scores of GPA and virtual learning based on data collected from 189 Master's students at the University of Guyana.

Table 2
Correlation Between Virtual Learning and GPA

Variables	r	p	Interpretation
Virtual Learning and GPA	.42	< .01	Moderate positive relationship

Pearson correlation analysis showed a statistically significant moderate positive relationship between virtual learning and academic performance, $r = .42$, $p < .01$. The null hypothesis was therefore rejected.

Relationship Between Virtual Learning and GPA

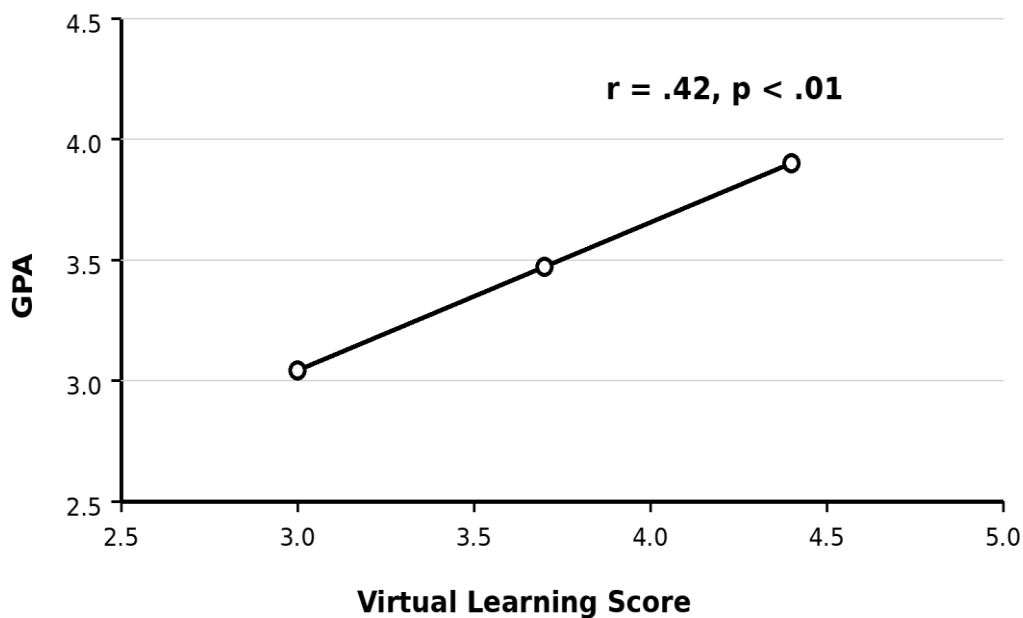


Figure 3. Results-based visualization of the positive relationship between virtual learning and GPA based on the reported correlation ($r = .42$, $N = 189$).

Table 3
Multiple Regression Predicting Academic Performance

Predictor	β	SE	t	p
Access to Technology	.18	.07	2.16	.032
Instructional Quality	.21	.08	2.45	.015
Learner Engagement	.34	.06	3.41	.001
Self-Regulation	.29	.07	3.02	.003

The regression model was statistically significant, $F(4, 184) = 20.65$, $p < .001$, and explained 31% of the variance in GPA ($R^2 = .31$). Learner engagement was the strongest predictor, followed by self-regulation, instructional quality, and access to technology.

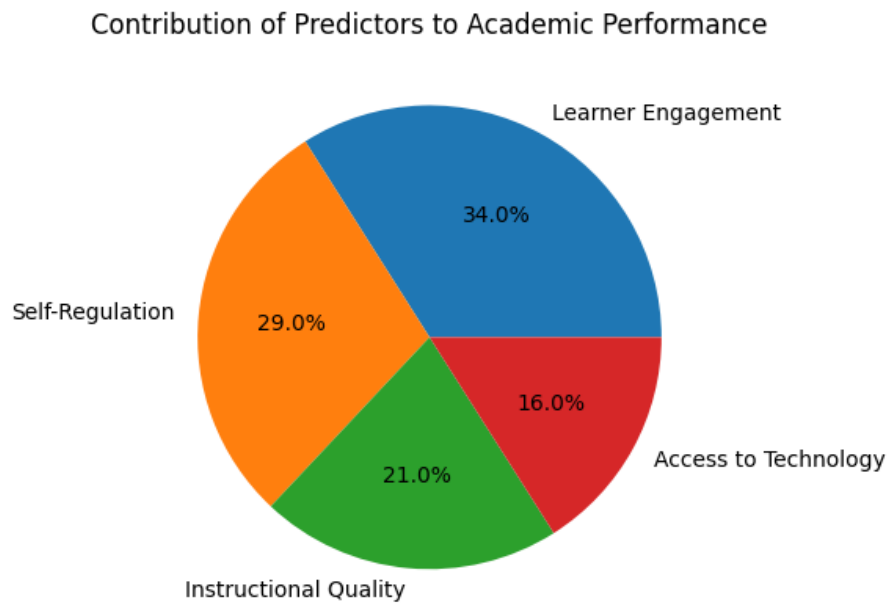


Figure 4. Relative contribution of virtual learning components to academic performance based on regression analysis results.

Note. Figures are derived from statistical analyses conducted on data collected from Master's students at the University of Guyana. Figure 3 is a results-based visualisation of the reported correlation and should not be interpreted as a raw case-by-case scatterplot.

DISCUSSION

The findings indicate that virtual learning is significantly and positively associated with academic performance among Master's students at the University of Guyana. The moderate correlation suggests that virtual learning contributes to academic outcomes but does not operate in isolation. Academic performance is shaped by multiple factors, including students' engagement, self-regulation, lecturer support, and access to technology.

Learner engagement emerged as the strongest predictor of GPA. This finding is consistent with the broader literature, which shows that online learning is most effective when students actively participate in discussions, access materials regularly, complete tasks on time, and communicate with lecturers and peers. For postgraduate students, engagement is particularly important because advanced academic work requires sustained reading, analysis, and scholarly interaction.

Self-regulation was also a strong predictor. This suggests that Master's students who manage their time, set goals, monitor progress, and seek academic support are more likely to benefit from virtual learning. The finding reinforces the relevance of self-regulated learning theory and highlights the need for universities to support students not only with digital platforms but also with learning strategies.

Instructional quality and access to technology were significant but comparatively weaker predictors. This does not mean that they are unimportant. Rather, they appear to function as enabling conditions. Reliable internet access, functional devices, clear course design, and timely lecturer feedback create the conditions in which engagement and self-regulation can translate into academic success.

Implications for Educational Leadership and Management

The findings have direct implications for university leadership. First, virtual learning should be treated as a strategic academic system rather than a temporary delivery method. Leaders should ensure that postgraduate programmes have minimum standards for online course design, student support, lecturer feedback, and assessment security.

Second, professional development should focus on online pedagogy rather than platform use alone. Lecturers need support in designing interactive activities, facilitating online discussions, using formative assessment, and maintaining teaching presence. Third, students should receive orientation in self-regulated learning, digital research skills, and online academic communication. Finally, digital equity should remain a policy priority because access barriers can reduce the effectiveness of otherwise well-designed virtual learning.

CONCLUSION

This study found a significant positive relationship between virtual learning and academic performance among Master's students at the University of Guyana. The findings show that virtual learning can support postgraduate academic success, especially when students are engaged and self-regulated. However, the results also demonstrate that virtual learning is not merely a technological issue; it is a leadership, pedagogical, and student-support issue. Effective virtual learning requires coordinated attention to infrastructure, course design, lecturer presence, student engagement, and independent learning skills.

RECOMMENDATIONS

1. Strengthen postgraduate virtual course design standards, including clear weekly structure, interactive activities, and transparent assessment criteria.
2. Provide continuous professional development for lecturers in online pedagogy, formative feedback, and student engagement strategies.
3. Introduce student workshops on time management, self-regulated learning, digital research, and online academic participation.
4. Expand digital infrastructure support for students who experience unreliable internet access or limited device availability.
5. Adopt a blended learning model where appropriate, combining the flexibility of virtual learning with the relational benefits of face-to-face interaction.

LIMITATIONS

The study was limited to one institution, and findings should be interpreted within the context of the University of Guyana. The use of self-reported GPA may introduce reporting bias, although self-reported academic performance is commonly used in educational research when official records are not accessible. The cross-sectional design also limits causal interpretation. Future studies could use longitudinal designs and official academic records to strengthen causal claims.

Data Availability and Ethics Statement

The data supporting the reported analyses are available from the researcher upon reasonable request, subject to confidentiality requirements. Participation was voluntary, and responses were handled confidentially. The article reports aggregate data only and does not identify individual participants.

Target Journal Fit

The recommended target journal is the International Journal of Educational Leadership and Management. The manuscript fits the journal because it addresses leadership and management issues in higher education, particularly the governance of virtual learning, student support, and quality improvement. DOAJ lists the journal as open access, double-anonymous peer reviewed, and without article processing charges.

A suitable backup journal is the Journal of Higher Education Policy and Leadership Studies, particularly if the manuscript is revised to foreground higher education policy, digital transformation, and institutional leadership more strongly.

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