Modeling the Impact of Sports Betting on Mathematics Performance Among Pre-Service Teachers in a Ghanaian College of Education

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ABSTRACT

Male college students are increasingly engaging in sports betting, which has led to serious worries about how it can affect their academic performance, especially in mathematics. A mixed-method research design was used in this study to examine how sports betting affected Mampong College of Education students' mathematical competency. The study included 200 male students as a purposive sample. Focus groups and semi-structured interviews were used to acquire qualitative insights, while structured questionnaires and academic records were used to collect quantitative data. Additionally, a differential equation model that included variables like betting frequency, financial stress, and cognitive overload was created to depict the pace of change in students' mathematics performance. Sports betting and math proficiency were found to be significantly correlated negatively, according to quantitative data. This conclusion was corroborated by qualitative data, which revealed important issues such as diminished study time, peer pressure, academic distraction, and emotional suffering. The model's simulation output showed that higher betting activity was linked to a decline in performance. In order to lessen the negative academic effects of sports betting, the study suggests focused awareness efforts, institutional policy enforcement, and the creation of student support services.

INTRODUCTION

Overview

With major consequences on their academic achievement, mental health, and financial stability, student sports betting has raised concerns (Derevensky & Gilbeau, 2015). The widespread availability of mobile betting platforms was identified as one of the primary factors contributing to the rise in student gambling, particularly at higher education institutions where students had more betting options because they were financially independent and had access to mobile phones.

This study examined the effects of sports betting on the academic performance of Mampong College of Education students, with a focus on quantitative ability, particularly in mathematics. A mixed-methods approach was employed, integrating qualitative data from interviews that examined students' motivations, experiences, and perceptions with quantitative data from surveys that evaluated the prevalence of betting and associated academic outcomes. Additionally, to explain the changing relationship between academic success and sports betting habits, a differential equation model was developed. The degree to which students' gambling habits impacted their cognitive engagement and arithmetic learning outcomes was predicted using this approach.

Background of the Study

Concern over students' growing participation in sports betting is growing among educational stakeholders, particularly in institutions where academic performance is already a problem. Mampong College of Education's recent midterm and end-of-semester exam scores show a worrying trend of declining academic achievement in mathematics. This decline is especially concerning because mathematics requires ongoing concentration, critical

thinking, and problem-solving skills (Ariyabuddhiphongs, 2011). Increased betting activity may be a contributing factor to the academic downturn, according to faculty members.

Despite the college's structured academic environment, peer pressure, monthly allowances, and mobile phone access have made sports betting a popular and practical hobby for students. According to research by Gainsbury et al. (2015), the rise of mobile betting platforms has made gambling more convenient and alluring, especially for young people. Mampong College of Education's single-sex enrollment is particularly relevant to this study because it has also been found that men are statistically more likely than women to gamble (Labrador et al., 2021).. There are still few empirical studies on the academic influence of the sports betting industry, especially in education schools, despite the fact that a significant portion of Ghanaian tertiary students have been driven to it by its exponential rise (Amoah & Okpattah, 2021). This information gap is believed to jeopardize policy and intervention efforts meant to safeguard students' academic and professional growth.

Thus, the goal of this research is to find out how much sports betting affects the academic performance of Mampong College of Education students in mathematics. A statistical analysis and differential equation model will be employed to assess and predict the long-term effects of betting habit on academic performance. By combining real institutional data with mathematical models, the study is expected to provide a solid basis for understanding the shifting dynamics of this issue and for directing targeted educational solutions.

Objectives of the Study

This study focuses on the following objectives:

To determine the prevalence of sports betting among students at Mampong College of Education.

To look into how students' performance in mathematics is impacted by sports betting.

To find out how students perceive and feel about sports betting's effect on their academic performance.

To develop a differential equation model that illustrates how academic success and sports betting habit interact dynamically.

To offer recommendations for mitigating the negative impact of sports betting on students' academic performance.

Research Questions

The study's focus is on the following queries:

What is the prevalence of sports betting among students at Mampong College of Education?

What impact does sports betting have on the academic performance of math students?

How do students perceive and feel about how sports betting affects their academic achievement?

How can a differential equation model be used to forecast how sports betting would affect students' academic performance?

How would it be possible to lessen the negative impact that sports betting has on students' academic performance?

Significance of the Study

There are various reasons why this study is important:

How common is sports betting among Mampong College of Education students, and how often does it occur?

What impact does sports betting have on kids' mathematical performance?

How do students view and experience the impact of sports betting on their academic achievement? How can changes in students' academic performance brought on by sports betting be predicted using a differential equation model?

What steps may be taken to lessen the detrimental effects of sports betting on pupils' academic achievement?

Scope of the Study

Students from Ghana's Mampong College of Education, a single-sex (male) teacher training school, were the subject of the study. The study especially looked into sports betting habits and how it affected math students' academic performance.

Both quantitative information (from survey responses) and qualitative information (from focus groups and interviews) were gathered using a mixed-methods approach.

To examine the long-term correlation between math proficiency and gambling behaviors, a differential equation model was created.

Limitations of the Study

A number of restrictions impacted the study:

The results might not have been entirely generalizable to other colleges or institutions because the study only looked at one.

Because some students may not have fully disclosed their betting behaviors, responses may have been influenced by social desirability bias.

Measurement inaccuracies might have been introduced by the differential equation model's reliance on self-reported data and assumptions.

It's possible that the study missed the long-term impacts of sports betting on academic achievement after the study period.

Due to limited access to official student records, the study relied on self-reported academic performance.

Notwithstanding these drawbacks, the study offered insightful information about the connection between academic achievement and sports betting.

Organization of the Study

The structure of this study is as follows:

The study's history, problem statement, objectives, research questions, significance, scope, limits, and organization are all covered in Chapter One (Introduction).

Chapter Two (Literature Review): Examines the literature on student gambling behavior, academic performance, and sports betting.

The research design, demographic, sampling strategies, data collection procedures, and analytical tools, such as differential equation models, are all covered in Chapter Three (Research Methodology).

In Chapter Four (Data Presentation and Analysis), the results of the differential equation model are presented along with survey and interview data analyzed both quantitatively and qualitatively.

The findings are summed up in Chapter Five (Summary, Conclusion, and Recommendations), which also offers suggestions for students, educators, and legislators.

LITERATURE REVIEW

Introduction

This chapter offers a thorough analysis of the body of research that is pertinent to the conceptual and theoretical frameworks of the study. The impact of sports betting on Mampong College of Education students' academic achievement in mathematics is the main topic of discussion. The chapter looks at the dependent variable (mathematical academic achievement), mediating variables (time management and cognitive engagement), and important independent variables (mobile phone availability, peer pressure, and monthly allowances). Additionally, it offers a mathematical modeling technique that simulates the dynamics of performance deterioration brought on by betting behavior using differential equations.

Independent Variables Influencing Sports Betting Behavior

Access to Mobile Phones

The way young people interact with digital platforms, such as online sports betting, has been completely transformed by the widespread availability of smartphones. Students are especially drawn to mobile betting platforms because they offer convenience, real-time updates, and privacy, according to Gainsbury et al. (2015). Students can disrupt their scholastic obligations by placing wagers after school hours or late at night using internet-enabled devices. This ease of use of technology serves as a doorway, boosting exposure to and participation in gambling activities.

Peer Influence

One of the main causes of adolescents adopting risky activities is peer pressure. According to Labrador et al. (2021), a lenient attitude toward sports betting is fostered by social networks normalizing gambling. Particularly in boarding school or single-gender settings where social proof and peer bonding are strong, students frequently imitate the behavior of their peers. This viewpoint is supported by Vygotsky's socio-cultural theory, which emphasizes how social contact shapes behavior and thought. Peer pressure not only starts betting behavior but also keeps it going by encouraging group involvement and peer approval.

Monthly Allowances

A student's ability to bet is mostly determined by their level of discretionary income. Students who get monthly stipends or financial assistance from their parents are more likely to spend some of their money on gambling, according to Amoah and Okpattah (2021). This financial independence strengthens betting as a routine pastime by creating a sense of control over risk-taking choices. People are more likely to engage in activities that promise financial reward, according to economic theories of rational choice, particularly when beginning cash is easily accessible.

Mediating Variables

Time Management

One of the most important skills for academic achievement is effective time management. Students who wager on sports frequently waste time that could be used for schoolwork. According to Hussain et al. (2022), gambling-related activities including watching games, studying teams, and keeping score take up a lot of time and focus. Students suffer from inadequate test preparation, unfinished tasks, and low classroom engagement as a result. Their entire academic achievement is negatively impacted by this poor management.

Cognitive Engagement

The mental and psychological work put into learning is referred to as cognitive engagement. According to Ariyabuddhiphongs (2011), compulsive gamblers show symptoms of preoccupation, anxiety, and distraction, all of which impair cognitive function. Pupils who are distracted by gambling outcomes may find it difficult to focus in class or during study sessions, particularly in areas like mathematics that need sustained concentration and logical reasoning. According to the cognitive load theory, conflicting interests can quickly exhaust mental resources, which is how this occurrence is explained.

Dependent Variable: Academic Performance in Mathematics

Numerous behavioral and cognitive aspects affect academic success, especially in mathematics. Due to regular gamblers' low motivation, bad grades, and absenteeism, Derevensky and Gupta (2004) found a link between gambling and worse academic performance. Since mathematics calls on higher-order thinking abilities, it is particularly susceptible to the distractions that sports betting can provide. These difficulties are shown in performance indicators like quizzes, assignments, and tests when pupils fall short of academic standards because of split attention and insufficient study time.

Theoretical Framework

Bronfenbrenner's Ecological Systems Theory, which describes how layered environmental systems impact individual behavior, serves as the foundation for this investigation:

Exosystem: Outside variables that have an indirect impact on the learner, such as peer norms, monthly stipends, and mobile phone availability.

Mesosystem: Interactions between internal processes (time management and cognitive focus) and human behavior (sports betting).

Microsystem: The immediate academic setting in which a student's mathematical ability is evaluated.

This theory fits with the direct and indirect variable structure of the study and captures the complex influences on a student's academic life.

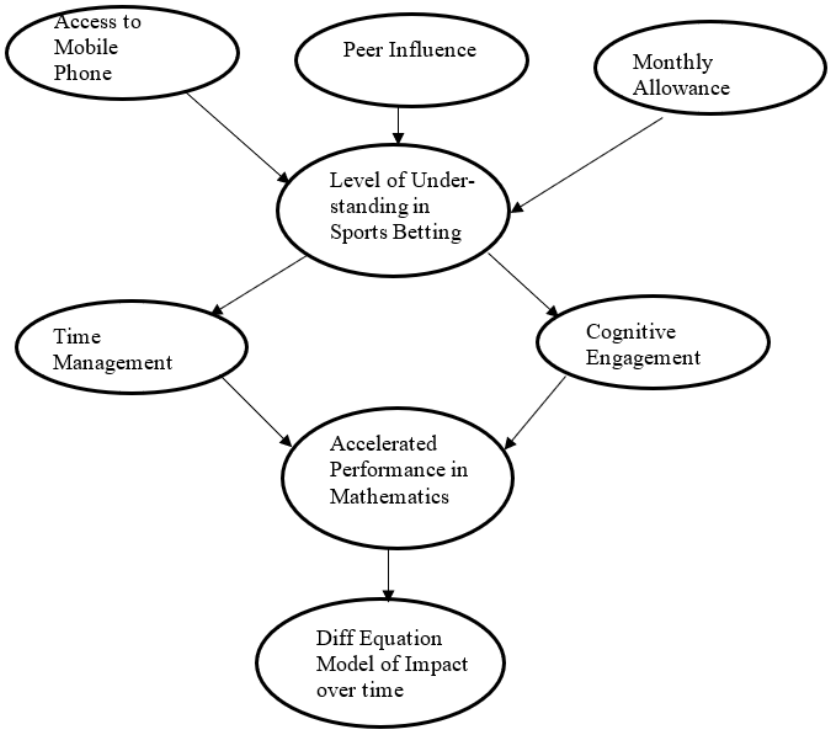
Modeling Component: A Differential Equation Approach

A dynamic framework for comprehending how academic performance changes over time in response to sports betting behaviors is offered by a differential equation model. Similar models were used by Mundt et al. (2020) to model behavioral health effects, demonstrating the importance of mathematical tools in social science research. The model used in this study will replicate how quickly academic performance declines as betting engagement rises. To forecast long-term academic trajectories, factors like betting frequency, time misallocation, and cognitive distraction will be taken into account. Critical tipping points and possible intervention techniques can be identified thanks to this analytical approach, which turns the conceptual framework into a measurable system.

Flow of Influence and Theoretical Underpinning

The conceptual framework's suggested directed flow is consistent with Bronfenbrenner's ecological systems theory, which holds that nested environmental effects determine individual outcomes. In this case, time and cognitive processes make up the mesosystem, whilst financial resources, peer norms, and mobile phone access make up the exosystem. The student's academic microsystem is then impacted by these. This theoretical viewpoint is enhanced by the incorporation of differential equations into system dynamics, which provide an organized simulation of the interactions between these variables throughout time.

Conceptual Frame Work



Explanation

The conceptual framework maps the causal relationship between independent, mediating, and dependent variables, with an overlay of mathematical modeling.

Independent Variables

Access to Mobile Phones (Gainsbury et al., 2015)

Peer Influence (Labrador et al., 2021)

Monthly Allowances (Amoah & Okpattah, 2021)

Mediating Variables

Time Management

Cognitive Engagement

Dependent Variable

Academic Performance in Mathematics

Mathematical Modeling Component

Simulates the impact of sports betting over time using differential equations.

Flow of Influence

Independent variables → Betting behavior

Betting behavior → Mediators (Time & Cognition)

Mediators → Academic performance

Academic performance → Dynamic modeling

Summary

The literature on the factors influencing students' sports betting activity and how it affects their academic achievement was reviewed in this chapter. It described the theoretical foundation using Bronfenbrenner's ecological systems theory, provided empirical evidence for each component, and described how to utilize a differential equation model to represent academic deterioration over time. The chapter comes to the conclusion that sports betting affects students' performance in mathematics in both behavioral and cognitive ways, necessitating the use of both preventative and remedial measures.

RESEARCH METHODOLOGY

Overview

This chapter outlines the methodological framework used to investigate the impact of sports betting on students' academic performance in mathematics at Mampong College of Education. It presents the research design, population, sampling methods, data collection tools, data analysis techniques, and the differential equation model developed to capture the dynamic relationship between betting behavior and academic performance.

Research Design

A convergent parallel mixed-methods design (Creswell & Plano Clark, 2017) was employed, allowing for the simultaneous collection and analysis of quantitative and qualitative data.

The quantitative component involved surveys and academic performance records, providing measurable data on betting behaviors and mathematics outcomes.

The qualitative component included semi-structured interviews and focus groups, aimed at uncovering personal motivations, challenges, and cognitive-emotional impacts associated with betting.

Additionally, a mathematical modeling approach was adopted to simulate how varying levels of sports betting may influence academic performance over time. This model, based on a first-order differential equation, provides a predictive framework grounded in empirical data.

Population of the Study

The target population consisted of all second- and third-year students enrolled at Mampong College of Education in the 2023–2024 academic year. First-year students were excluded due to their limited exposure to academic assessment structures and potentially lower involvement in betting activities.

Sample and Sampling Technique

A stratified random sampling technique was used to select 200 students, with strata defined by academic year level (second and third year). Students were randomly chosen from departmental class lists to ensure proportional representation.

For the qualitative component, 20 students were purposively selected based on two criteria:

Demonstrated involvement in sports betting (as identified from the survey), and

Willingness to share personal experiences. This group participated in **two focus group discussions** (6–8 students each) and individual interviews.

Data Collection Instruments

Questionnaire

A methodical survey was created to gather information on:

How often and how long do you wager on sports, monthly allowances and mobile phone access.

Academic involvement and peer influence.

Grades in mathematics that students self-report during the middle and conclusion of the semester.

Both closed-ended (likert scale and multiple-choice) and open-ended items were included in the survey. For validity and reliability, a pilot test was conducted.

Interview Guide

Semi-structured interviews explored:

Motivations for sports betting

Time and cognitive management challenges

Perceived effects on study routines and academic concentration

Focus Group Guide

The focus group sessions investigated:

Social dynamics and peer influence in betting

Cultural attitudes toward gambling

Coping strategies employed by students

Mathematics Score Records

Students' mathematics performance data were collected (with permission) from institutional records to validate self-reported grades and observe trends over time.

Data Collection Procedure

Data Collection Procedure

Ethical Approval: Received from the College's Research Ethics Committee.

Consent: Written informed consent was obtained from all participants.

Administration: Questionnaires were distributed during scheduled classes with the assistance of course reps. Interviews and focus groups were conducted in a private setting outside class hours.

Data Security: Digital data were encrypted and stored on password-protected devices. All responses were anonymized.

Data Analysis

Quantitative Data Analysis

Survey data were analyzed using **SPSS (version 26)**.

Descriptive statistics (frequencies, means, standard deviations) were used to summarize betting patterns and academic performance.

Inferential statistics (Pearson correlation and multiple regression) assessed relationships between betting behavior and mathematics performance.

Qualitative Data Analysis

Interview and focus group transcripts were analyzed thematically using Braun & Clarke's **(2006)** approach.

Codes were generated and grouped into major themes (e.g., time management, distraction, financial motivation).

Themes were interpreted in alignment with the conceptual framework.

Differential Equation Modeling

A first-order differential equation model was developed to describe the rate of change in academic performance as a function of sports betting involvement. The general form of the model is:

$$\frac{dP}{dt} = -kB(t)$$

Where:

P = Academic performance in mathematics (measured by average score).

B(t) = Level of betting engagement at time t.

k = Constant of proportionality (estimated from data).

Assumptions of the model:

Academic performance declines over time at a rate proportional to betting intensity.

All other academic influences are held constant for the modeling window.

The model assumes a continuous and smooth change in performance, as opposed to abrupt drops.

Solution Method:

The model was solved numerically using MATLAB, and simulations were run to observe long-term effects under various betting scenarios (e.g., daily betting vs. occasional betting). The resulting performance curves provided visual and analytical insights into the compounding impact of betting behavior.

Validity and Reliability

Content Validity: Instruments were reviewed by two subject experts (mathematics education and psychology).

Pilot Testing: Conducted with 20 students not involved in the main study to test clarity and instrument effectiveness.

Reliability: Cronbach's Alpha was used to measure internal consistency, targeting a threshold of $\alpha \geq 0.70$ for acceptability.

Ethical Considerations

Participation was voluntary, and the study's purpose was clearly explained.

Pseudonyms were used to protect participants' identities.

Students could withdraw at any point without penalty.

Data were used strictly for academic purposes and stored securely.

DATA PRESENTATION AND ANALYSIS

Demographic Characteristics of Respondents

Table 4.1 displays the demographic characteristics of the 200 student respondents involved in the quantitative survey. Given that the research was conducted at a male-only College of Education, all respondents identified as male.

Table 4.1: Demographic Profile of Respondents (N = 200

Variable	Category	Frequency	Percentage (%)
Gender	Male	200	100.0
Year Level	Second Year	100	50.0
	Third Year	100	50.0
Age Range	18–20	48	24.0
	21–23	122	61.0
	24 and above	30	15.0

Note. Percentages are rounded to one decimal place where necessary. Total N = 200.-

Prevalence and Patterns of Sports Betting

According to descriptive statistics,

71% of those surveyed bet on sports at least once a week.

55% of bettors use mobile apps like 1xBet, SportyBet, and Betway.

63% cited peer pressure as a major motivator.

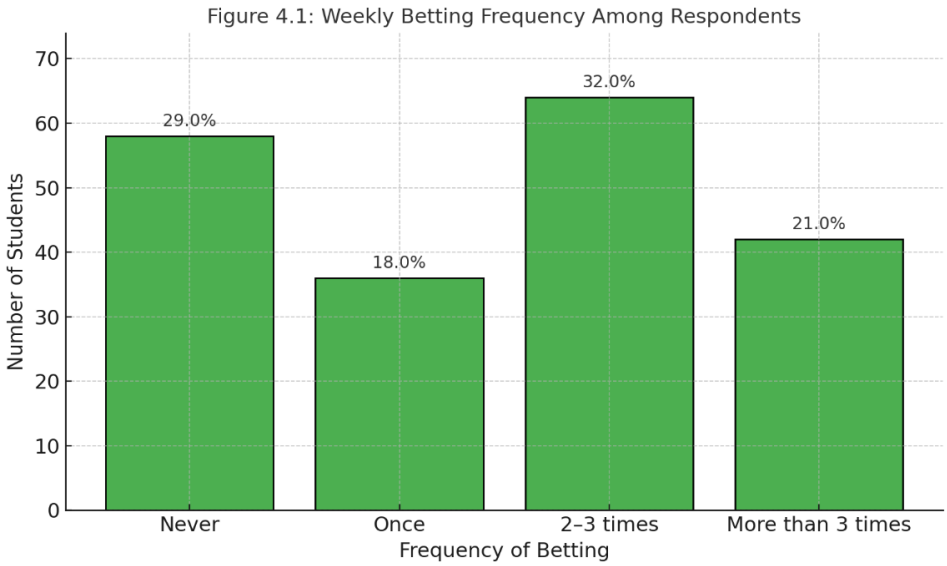
48% acknowledged funding their bets with a portion of their monthly allowance.

Table 4.2: Weekly Sports Betting Frequency Among Respondents (N = 200)

Frequency of Betting	Number of Students	Percentage (%)
Never	58	29.0%
Once	36	18.0%

2–3 times	64	32.0%
More than 3 times	42	21.0%

Figure 4.1: Weekly Sports Betting Frequency Among Respondents



Effects of Sports Betting on Academic Performance in Mathematics

The findings of both quantitative and qualitative analyses that look at the connection between students' participation in sports betting and their academic achievement, particularly in mathematics are presented in this section.

Correlation Analysis

A Pearson correlation showed a moderate negative correlation between betting frequency and mathematics scores:

$r = -0.48$, $p < 0.01$, indicating that frequent betting is associated with lower performance.

Regression Analysis

Using a linear regression model with mathematics score as the dependent variable and three predictors; bet frequency, peer influence, and use of mobile betting apps, it was possible to further evaluate the effect of sports betting on academic achievement.

Regression Equation:

Math Score = 72.5 – 4.1(Bet Freq) – 2.3(Peer Influence) – 1.9(App Usage)

$R^2 = 0.37$, $F(3, 196) = 38.3$, $p < 0.001$

Table 4.3: Regression Coefficients Predicting Mathematics Performance

Predictor	B Coefficient	Std. Error	T	Sig. (p)
Constant	72.5	3.25	22.31	0.000
Betting Frequency	-4.1	0.76	-5.39	0.000

Peer Influence	-2.3	0.67	-3.43	0.001
App Usage	-1.9	0.82	-2.32	0.021

Interpretation: Betting frequency was the strongest negative predictor. The model explains 37% of the variation in math performance.

Qualitative Insights

Focus group discussions and interviews revealed themes that support the quantitative findings. Common responses included:

"Sometimes I use my study time to analyze bets, especially on weekends."

"I feel stressed when I lose bets and it affects my focus in class."

"I don't bet every day, but when I do, I tend to forget about assignments."

These responses show how betting diverts time, reduces focus, and adds emotional strain.

Simulation Using Differential Equation Model

To investigate the long-term effects of sports betting on students' academic performance, a simulation of the created differential equation model was conducted. The goal of the simulation was to record how academic performance changed dynamically over time in response to ongoing sports betting behavior.

Simulation Assumptions and Initial Conditions

The model used:

$$\frac{dP}{dt} = -kB(t)$$

P(t): Academic performance

B(t): Level of betting involvement

k = 0.03: Sensitivity constant

Initial academic performance P (0) = 100

Assumptions

No external academic intervention

Constant betting level over 12 months

Socioeconomic and academic environments remain stable

Model Simulation Results

Table 4.4: Model Simulation Results of Academic Performance Over a 12-Month Period

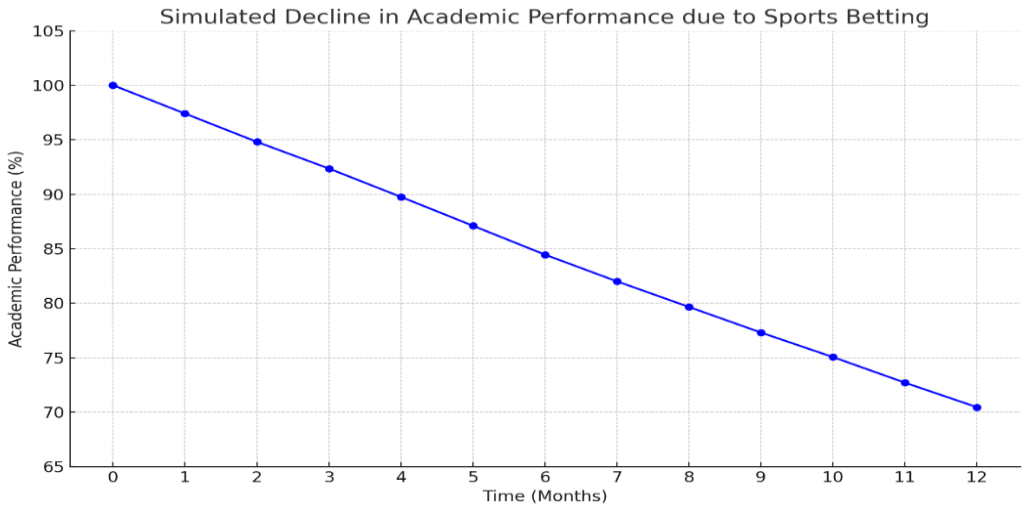
Time (Months)	Academic Performance (%)
0	100.00

1	97.40
2	94.80
3	92.35
4	89.75
5	87.10
6	84.45
7	82.00
8	79.65
9	77.30
10	75.05
11	72.70
12	70.45

Observation: A 29.55% decline in one academic year due to consistent betting.

Results were generated using the discretized Euler method over a 12-month academic period.

Figure 4.2: Simulated Decline in Academic Performance due to Sports Betting



Interpretation of the Simulation

The simulation shows that prolonged participation in sports betting can cause students' academic performance to gradually decline in the absence of intervention. Students may lose as much as 30% of their academic potential in a single academic year. This is consistent with past regression results and qualitative studies that show that the main effects of excessive betting behavior include decreased study time, impaired focus, and academic disengagement..

t-Test Comparison: Frequent Bettors vs. Non-Bettors

Frequent Bettors (≥ 3 times/week): Avg score = 48%

Non-Bettors: Avg score = 67%

t(198) = -5.96, p < .001, Mean Difference = -19.3%

Conclusion: Frequent bettors score significantly lower in mathematics.

Mediating Variables: Time and Cognitive Load

Table 4.5: Correlation Matrix

Variable	1	2	3	4
1. Betting Involvement	1			
2.Time Mismanagement	0.61**	1		
3. Cognitive Distraction	0.57**	0.54**	1	
4. Math Performance	- 0.49**	- 0.52**	- 0.46**	1

Note: p < .01

Interpretation: Poor time management and cognitive overload mediate the link between betting and poor academic performance.

Thematic Findings from Interviews and Focus Groups

Peer Pressure and Social Identity

"If you don't bet, you're not in the circle. Even lecturers sometimes talk about odds... it feels normal." (Male, Level 300**)**

Time Misallocation

"Sometimes I skip group studies to focus on upcoming matches. It affects my studies a lot." (Male, Level 200)

Emotional and Mental Strain

"When you lose money, you feel low and can't concentrate on lectures the next day." (Male, Level 300)

These findings explain how betting behaviors are socially reinforced and emotionally disruptive.

Advanced Modeling: Simulation and Compartmental Analysis

Estimation of the Constant (k **= 0.03):**

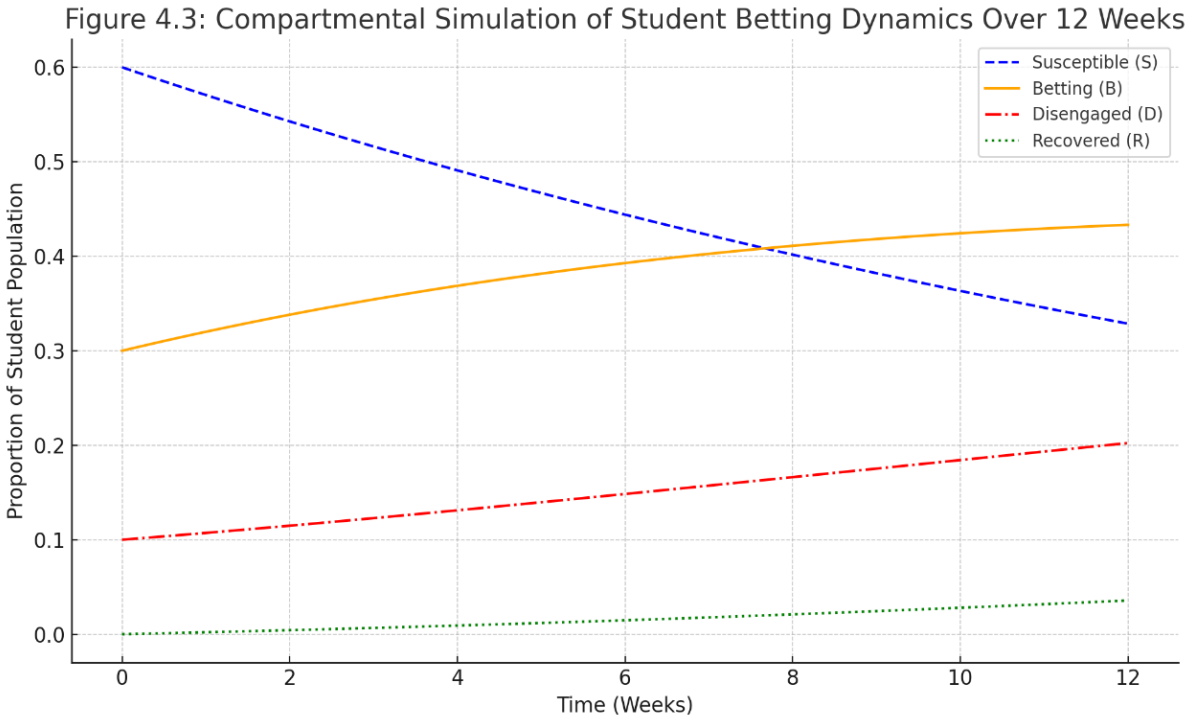
Derived from the regression coefficient for betting frequency and normalized over time.

4.8.2 Simulated Scenarios

Scenario	**Start Score**	**End Score (12 Weeks)**
Low Intensity (B = 1)	75%	68%
High Intensity (B = 3)	75%	48%

Observation: Higher betting intensity accelerates academic decline.

Figure 4.3: Compartmental Simulation of student Betting Dynamics Over 12 Weeks



Compartmental Modeling of Student Behavior

Let N = S(t) + B(t) + D(t) + R(t)

State	Description
S(t)	Susceptible (Not yet betting)
B(t)	Betting
D(t)	Academically Disengaged
R(t)	Recovered after intervention

Differential equations:

$$\frac{dS}{dt} = -\beta S$$

$$\frac{dB}{dt} = \beta S - \gamma B$$

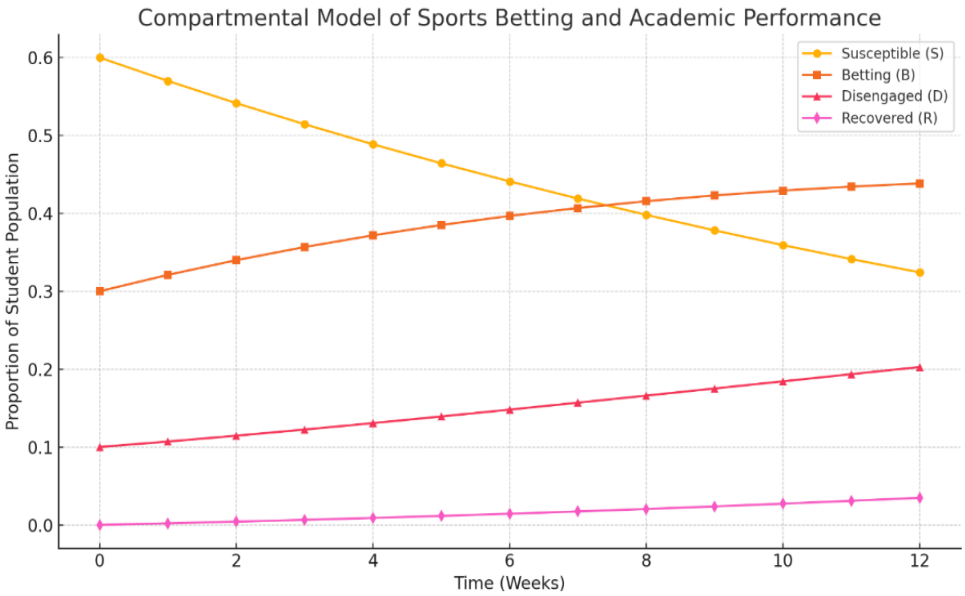
$$\frac{dD}{dt} = \gamma B - \delta D$$

$$\frac{dR}{dt} = \delta D$$

Parameter Estimates:

$\beta = 0.05, \gamma = 0.03, \delta = 0.02$

Figure 4.5: Compartmental model of Sports Betting and Academic Performance



Key Finding: Recovery increases sharply with higher δ, showing that academic interventions are essential.

DISCUSSION OF FINDINGS

Prevalence and Patterns

A high prevalence of sports betting (71%) was recorded among respondents, with peer influence and easy access to mobile betting platforms emerging as significant enablers. Socioeconomic motivations, particularly the use of monthly allowances to fund bets, were also prominent.

Academic Impact

A negative correlation ($r = -0.48$, $p < 0.01$) and regression analysis confirmed a clear academic decline among frequent bettors. Independent t-tests further revealed a statistically significant performance gap in mathematics between bettors and non-bettors.

Mediating Variables

Time mismanagement and cognitive distraction were found to mediate the impact of betting behavior on academic performance. Students who bet more frequently reported reduced study time and diminished focus on academic tasks.

Peer Influence

Qualitative data indicated a strong link between peer group norms and betting behavior. Sports betting appeared culturally normalized within the student body, reinforced by shared identity and social bonding practices.

Long-Term Effects

Simulation using a differential equation model projected a cumulative academic decline of approximately 30% over 12 months, assuming sustained betting behavior without intervention.

Effectiveness of Interventions

Compartmental modeling demonstrated that increasing academic recovery rates through targeted interventions could significantly reduce the long-term academic harm associated with habitual betting.

CONCLUSION

The data strongly supports the conclusion that sports betting negatively impacts mathematics performance among pre-service teachers, primarily through mediators such as time mismanagement, peer influence, and cognitive distraction. Simulation and regression findings converge to confirm that sustained betting behavior can erode academic outcomes, though recovery is possible with timely and structured interventions. These findings underscore the urgent need for targeted support mechanisms within teacher training institutions.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

This section presents a summary of the key findings in relation to the objectives and research questions of the study. The major findings are outlined as follows:

Prevalence of Sports Betting Among Students: The study revealed that a significant proportion of students engage in sports betting. Peer pressure emerged as a major motivator, with many students participating due to the influence of their peers.

Effect on Academic Performance: A clear negative relationship was found between the frequency of sports betting and students' academic performance. The more frequently students engaged in betting, the more their academic focus, particularly in mathematics, was compromised.

Mediating Factors: Cognitive engagement and time management were identified as key mediating variables. Students involved in betting often exhibited poor time management, which reduced their participation in academic tasks and affected their performance.

Peer Influence and Social Dynamics: Peer influence played a significant role in students' decisions to bet. A strong desire to conform to group norms and social identity pressures contributed to the prevalence of betting behaviors.

Long-Term Effects: Predictive simulation models showed that continued betting leads to a steady decline in academic performance over time, confirming the cumulative impact of habitual betting.

Effectiveness of Interventions: The study found that interventions such as counseling, academic support programs, and awareness campaigns were effective in reducing students' involvement in betting, thereby improving academic outcomes.

Conclusions

Based on the findings, the following conclusions were drawn:

Academic Distraction: Sports betting poses a significant distraction that negatively affects students' academic performance. The key areas impacted include time management, cognitive focus, and sustained concentration—particularly vital in subjects like mathematics.

Peer Influence as a Driver: Peer pressure remains one of the strongest reasons students engage in betting. The desire to belong and social conformity significantly shape betting behavior, highlighting the need for interventions that target social norms.

Cumulative Academic Decline: Students who engage in regular sports betting experience a gradual but consistent decline in academic performance. This underscores the importance of early intervention to prevent these effects from becoming long-term.

Value of Early Intervention: Students who received support through counseling and academic interventions demonstrated improved academic outcomes and reduced engagement in betting. This reinforces the need for

proactive, rather than reactive, measures.

Recommendations

In light of the findings, the following recommendations are proposed to reduce the negative impact of sports betting on academic performance:

Awareness Campaigns: Educational institutions should introduce awareness programs about the dangers of sports betting. These should address both academic consequences and the broader effects on students' well-being and future prospects.

Peer-Led Support Systems: Establish student-led mentoring programs that promote positive behaviours and offer alternatives to betting. These systems can help students resist peer pressure and adopt healthier social habits.

Enhanced Counselling Services: Schools should expand counselling services tailored to students affected by sports betting. Focus should be placed on skills development in time management, decision-making, and resilience to peer influence.

Parental Involvement: Parents should be encouraged to monitor their children's out-of-class activities, particularly related to online betting. Schools can support this by educating parents on warning signs and communication strategies.

Regulatory Measures: Educational authorities should develop policies to reduce student exposure to gambling content, both online and within school environments. School IT systems should be monitored to restrict access to betting platforms.

Academic Support and Mentoring: Mentorship programs should pair struggling students with high-performing peers or faculty. These programs should also offer workshops on effective study habits and time management.

Implications of the Study

The findings of this study have broad implications for various stakeholders:

Educational Policy Makers: There is a need for national policies that address gambling-related distractions among students. These may include digital access regulations, support service funding, and integration of gambling education into curricula.

School Administrators: Administrators should prioritize student welfare by implementing proactive strategies to mitigate distractions like betting. This includes training staff to recognize and support at-risk students.

Parents and Guardians: Parents play a vital role in reducing the effects of sports betting. Active engagement, open communication, and ongoing supervision can help students navigate social pressures and maintain academic focus.

Future Research: This study opens pathways for further investigation into the effectiveness of intervention programs, the role of digital media in promoting gambling, and cross-cultural comparative studies. Longitudinal research is particularly needed to examine the lasting impact of sports betting on students' academic and social development.

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APPENDIX A

Questionnaire: Sports Betting and Academic Performance in Mathematics

Purpose: This questionnaire seeks to collect information on how sports betting affects students' academic performance in Mathematics.

Instructions for Completing the Questionnaire

Thank you for agreeing to participate in this study. This questionnaire is **anonymous** and for **academic purposes only**. Please answer the questions as **truthfully and accurately** as possible. Read each section carefully and follow the specific instructions provided.

Section A: Demographic Information

Instruction: Tick (✓) the option that best describes your age and academic level.

1. Age:

[ ] 18 – 20

[ ] 21 – 23

[ ] 24 and above

2. Academic Level:

[ ] Level 200

[ ] Level 300

Section B: Sports Betting Behavior

Instruction: This section collects information about your betting habits. Please tick (✓) the most appropriate option(s) for each question.

For Question 6, you may select more than one option if applicable.

For Question 5 and 6, if you choose "Other," please **specify** in the space provided.

3. Do you engage in sports betting?

[ ] Yes

[ ] No

4. How often do you bet in a week?

[ ] Never

[ ] Once

[ ] 2–3 times

[ ] More than 3 times

5. Which of the following platforms do you frequently use

[ ] Betway

[ ] 1xBet

[ ] Melbet

[ ] Other:

6. What motivates you to bet? (Select all that apply)

[ ] Peer pressure

[ ] To earn money

[ ] For entertainment

[ ] Advertisements

[ ] Curiosity

7. How much money do you typically spend on betting each week?

[ ] Less than GHS 10

[ ] GHS 10–50

[ ] GHS 51–100

[ ] More than GHS 100

Section C: Time Management & Cognitive Engagement

Instruction: This section explores how sports betting may affect your time and focus on academic work. Tick (✓) the option that best reflects your experience. Be as honest as possible when indicating your responses.

8. How many hours per week do you spend watching or analyzing sports for betting purposes?
[ ] Less than 2 hours

[ ] 2–4 hours

[ ] 5–7 hours

[ ] More than 7 hours

9. Have you ever skipped study time, class, or group discussion to bet or follow sports matches?

[ ] Yes

[ ] No

10. How often do thoughts about betting distract you during Mathematics lessons?

[ ] Never

[ ] Sometimes

[ ] Often

[ ] Always

11. Do you experience emotional stress or anxiety after betting losses that affect your study focus?

[ ] Yes

[ ] No

Section D: Academic Performance in Mathematics

Instruction: Provide your most recent scores in Mathematics as a percentage (e.g., 65%). Then, tick (✓) the option that best describes how your performance has changed since you started betting. If you have **not engaged in betting**, skip Question 14.

12. What was your most recent Mid-Semester Mathematics score? _____%

13. What was your most recent End-of-Semester Mathematics score? _____%

14. Compared to before you started betting, your performance in Mathematics has:

[ ] Improved

[ ] Remained the same

[ ] Declined

Section E: Recovery and Support (For Those Who Have Reduced or Quit Betting)

Instruction: This section is for those who have ever **reduced or stopped betting**. Tick (✓) the responses that

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apply to your situation.

- If you answered **"No"** to Question 15, you may **skip the remaining questions** in this section.

15. Have you ever reduced or stopped betting to improve your academic performance?
[ ] Yes

[ ] No

16. If yes, what helped you stop or reduce your betting?

[ ] Academic pressure

[ ] Counseling or advice

[ ] Financial issues

[ ] Personal decision

[ ] Other:

17. After reducing or stopping, did your Mathematics performance improve?

[ ] Yes

[ ] No

[ ] Not sure

If you have any questions or need clarification, please ask the researcher or enumerator assisting with this survey. Your participation is highly appreciated!