Achievement Emotions and Student Engagement as Predictors of Academic Achievement among Form Three Students in Trans-Nzoia County, Kenya

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ABSTRACT

Poor academic achievement is ubiquitous in secondary school settings in Kenya and a major source of concern. Despite the government's and educational stakeholders' numerous efforts and interventions, students from public secondary schools have not been performing well; Kwanza Sub-County in Trans-Nzoia County is not immune. Several factors, such as learner, school, and motivational factors, have been attributed to this failure; however, there is little empirical data on how achievement emotions and student engagement predict the student's academic achievement. The present research sought to examine this. The study was grounded on control value theory (Reinhard Pekrun, 2006) and Self-determination theory (Ryan & Deci, 2017). Based upon a correlational research design, 3927(2012 boys) form three students from 51 public secondary schools in Kwanza Sub-County, Trans-Nzoia County in 2023 were targeted in the study. Simple, stratified, and judgmental sampling techniques were utilized and a sample size of 454 students was obtained. The current study adapted the achievement emotions questionnaire and student engagement in school questionnaire. Data analysis was done through the Pearson product-moment correlation coefficient. Findings from the study demonstrated that there were significant positive, albeit weak associations between achievement emotions; r (391) = .21 P < 0.01 and student engagement; r (391) =.17 p < .01, with academic achievement. The findings herein provide a basis for educators and policymakers to formulate effective strategies designed to support students and optimize academic achievement.

Keywords: Achievement Emotions, Student Engagement, Academic Achievement

INTRODUCTION

Academic achievement constitutes a fundamental outcome of formal education, and it holds immense significance in student's current and future life (Moore, 2019). It not only affects students' future career opportunities but also the nation's success through long-term economic growth, stimulating innovation, and fostering social cohesion (Gauthier, 2018). (Psacharopoulos & Patrinos, 2018) opine that a further year of education correlates with a 9% rise in hourly wages. Despite the individual and societal benefits of academic achievement, several countries continue to struggle with meeting the minimum educational expectations.

Poor academic achievement has already been intensively researched in the education field, with direct repercussions in secondary school education as well as professional careers. However, the issue continues to persist. This is evident from reports by prominent international organizations, including the Program for International Student Assessment (PISA), the World Bank, and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Similarly, studies were carried out in the UK, Spain, European countries, Ghana, South Africa, and even Kenya. As per the Organization for Economic Co-operation and Development (OECD, 2019b), solely 1.1% of students from the municipalities of Beijing and Shanghai, along with Jiangsu and Zhejiang provinces were underperforming. Individual, familial, and institutional factors significantly influence suboptimal student performance (Carpintero, 2022). Furthermore, a downward trend was evident in two countries namely, Azerbaijan and South Africa which witnessed a significant drop of over 30 points in their average scores. It is also highlighted that boys underperformed compared to girls (World Bank report, 2018). This is in harmony with the UNESCO (2022) report that addressed boys' disengagement from education with 132 million boys out of school worldwide compared to 127 million girls also out of school. Class streaming and gender segregation, for example, contribute to boys' low motivation, underachievement, and disengagement from school.

Several measures have been put across globally to curb this challenge but the issue persists. Such include; replacing retiring teachers by 100% rather than 50% as it was the previous years (Veas et al., 2016), as well as setting aside 250 million Euros for dropouts and underachieving students (Axians, 2023). Regionally, parental involvement was advised and school management was suggested to be held accountable for underperforming schools (South Africa's General Household Survey, 2021). In Kenya, the government set a new record in the 2023-2024 budget by allocating Sh. 628.6 billion (27.4%), the largest portion of the education sector (Machunguh, 2023). Despite this, poor academic achievement remains a major issue that needs to be resolved.

Within Kwanza Sub-County, the average KCSE scores have consistently trailed the benchmark for the past four consecutive years. According to Trans-Nzoia County Education Office data (2023), the Sub-County's KCSE mean scores were 4.13 in 2022, 4.02 in 2021, 3.688 in 2020, and 3.659 in 2019. It is concerning that Kwanza Sub-County has consistently ranked last in comparison to the other sub-counties. This indicates that the majority of students' achievement has been below average. Academic achievement represents a vital objective in education, with its achievement shaped by a diverse array of factors. Among these, achievement emotions and student engagement have emerged as significant predictors (Mutisya et al., 2018; Masila, 2022).

Achievement Emotions, Student Engagement, and Academic Achievement

Students experience numerous emotions in an academic setting. Pekrun et al. (2019) conceptualize achievement emotions as the feelings that emerge during academic tasks and in response to their outcomes. Literature reports that the most common emotion experienced by students is positive emotions (40.5%). Positive emotions related to achievement encountered by students in this context, therefore, make them achieve more and better academically because they highly value and have authority over their learning activities. Conversely, learners who experience negative emotions fail to concentrate on their work and are less motivated hence low achievement outcomes. Putwain et al. (2022) contend that emotions wield a profound impact on academic achievement. Achievement emotions affect students' academic achievement through attention, motivation, self-regulation, and interest (Mega et al., 2014).

Several studies undertaken globally, regionally, and locally on the association between achievement emotions and academic achievement demonstrate a significant correlation (Balaz et al., 2021; Nyatsikor et al., 2022; Mutisya et al., 2018). Achievement emotions were linked with sustained intrinsic motivation and engagement in learning tasks and by extension enhancing higher academic outcomes. Also, when students are effectively engaged in their learning, it initiates the drive to persist in challenges. There is a paucity of studies examining achievement emotions together with academic achievement in Kwanza Sub-County, Trans-Nzoia County, Kenya. Prior studies looked into other psychological variables (Kelly & Ireri, 2022; Johnson, Sarah, & Julius, 2023) however, there has been a lack of scholarly attention on achievement emotions as a predictor of academic achievement.

It has been demonstrated by recent literature that student engagement is imperative when it comes to the academic achievement, success, and psychological well-being of a student (Reschly & Christenson, 2019; Wang & Eccles, 2019). Student engagement has been defined broadly by Fredricks et al. (2019) as the extent to which students

actively immerse themselves in and consistently participate in classroom learning tasks and school activities. It`s a multifaceted concept entailing aspects of behavioral, emotional, and cognitive. Students who exhibit behavioral engagement display on-task behaviors, maintain determination in their learning endeavors, concentrate intensely, and exert effort. Students who experience emotional engagement find a sense of inclusion, establishing respectful and emotional connections with both staff and fellow students within the school. Lastly, cognitive engagement is showcased by a genuine eagerness for learning and a willingness to push their boundaries.

Studies conducted on student engagement and academic achievement found a positive relationship (Mizani et al., 2022). A reasonably strong and positive relationship was identified between student engagement, along with its various aspects, and academic performance (Lei et al., 2018). Also, concerning the connection between these two, the approach to reporting engagement, cultural values, and gender were discovered to have an effect. Relatedly, (Torto, 2020) investigated the types of student engagement that exist in Ghanaian classrooms. The study discovered that, while all three components of student engagement were evident, the assertive one was emotional. Moreover, in Kenya, Masila and Ireri, (2022) looked at student engagement from a different locale as a result, the findings may not apply to other Kenyan counties.

The successful use of Self Determination Theory to look into student engagement has been supported by reviewed literature (Yang et al., 2022). Self-determination is a concept regarding human motivation and personality, which asserts that individuals possess inherent psychological desires for competence, relatedness, and autonomy. According to SDT, individuals have a higher chance of being driven and actively involved in activities once these needs are catered for; additionally, these fundamental psychological needs must be fulfilled for humans to perform optimally (Ryan & Deci, 2019). When students believe their needs have been met, they become more engaged, resulting in positive academic outcomes (Jang et al., 2019).

Several research studies have been carried out in different contexts about the relationship among the variables under study and the findings were interesting (Oriol-Granado et al., 2017; Liu et al., 2021). The aforementioned used samples from developed-country universities and primary schools. In Kenya, there is scant evidence on how achievement emotions and student engagement predict students' academic achievement.

The following hypotheses were developed in line with this investigation:

H_{a1}: There is a relationship between achievement emotions and academic achievement.

H_{a2}: There is a relationship between student engagement and academic achievement.

MATERIALS AND METHODS

Research Design

The current research utilized a correlational research design. It is utilitarian when one wants to establish how two or more variables are related (Creswell, 2018).

Participants and Procedures

The research study’s target population entailed 3927 (2012 boys, 1915 girls) form three students in the year 2023 from Kwanza Sub-County. From a pool of ten public secondary schools, a sample size of 454 students was obtained. The ages of the respondents varied from 14 to 21 years, with a mean age of 16.73 (SD = 1.16). Judgmental sampling was utilized during the selection of Kwanza Sub-County, form three students as well as public secondary schools. The researcher utilized stratified sampling to select the schools involved in the study, categorizing them based on school type and gender. Lastly, simple random sampling was of great use in getting the students from the already

sampled schools.

Ethical Statement

Ethical approval, including informed consent from participants, was secured prior to data collection. The study emphasized the voluntary nature of student participation, and the researcher guaranteed their confidentiality and anonymity. This was accomplished by not requiring them to fill out questionnaires with their names and that their responses would be used solely for the present study.

Instruments

Achievement Emotions Questionnaire Short (AEQ-S)

This study utilized AEQ-S, following the modifications made by Bieleke et al. (2021), to evaluate students' achievement emotions within an academic context. This tool has 12 items comprising parts of emotions related to the classroom. On average, the AEQ-S questionnaire had a proven internal consistency of $\alpha = .76$ in the validation study (Bieleke et al., 2020). The components of the scale are evaluated using a 5-point Likert scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The average was computed to produce an overall score for each scale.

Student Engagement in Schools Questionnaire (SESQ)

This instrument, based on the work of Lam et al. (2014), was modified to measure student engagement including its dimensions which are emotional, behavioral, and cognitive. It is mainly composed of 15 items split into three subscales, with the 5-point Likert of emotional also behavioral engagement measured on a scale from 1 (strongly disagree) to 5 (strongly agree), while cognitive engagement is assessed using values ranging from 1 (never) to 5 (always). It has a reliability range of .80 to .89 on its sub-scale, with a reliability of $\alpha = .78$ on the full scale in the author's study. The average score for each item on the respective subscale is computed to show student engagement in the relevant dimension. Furthermore, high levels of engagement were indicated by high scores found by computing the average of the three subscale ratings.

End-of-Term Examination Results Analysis

This was utilized to measure the form three academic achievement, determined by the 2023 end-of-year assessments examinations provided by the concerned bodies in the selected institutions. To ensure comparability, raw scores were subjected to a two-stage transformation, initially yielding Z-scores, which were subsequently converted to T-scores.

Validity and Reliability of the Research Instruments

Content validity was employed in this research, and it was ensured through peer review and expert judgment. To ensure that the items in the questionnaires are correlated with the variables of interest, experts, as well as consultations were conducted with the Department of Educational Psychology at Kenyatta University. Since the study adapted existing tools, these provided evidence of construct validity.

The internal consistency method was applied in the estimation of the study`s reliability. It involves administering the test to the respondents, computing the correlation among the items, and computing the average of those intercorrelations. To assess, Cronbach's alpha, which reflects the average correlation between items, was employed. Internal consistency is acceptable when Cronbach alpha values are .7 or higher (Taber, 2018). The reliability coefficients for the scales are outlined in Table 1.

Table 1: Pilot Study Reliability Coefficients

Scale	Authors' α	Pilot α
Achievement Emotions Total	.86	.89
Enjoyment Subscale	.85	.75
Hope Subscale	.79	.78
Pride Subscale	.81	.51
Student Engagement	.83	.86
Emotional Engagement	.88	.87
Behavioral Engagement	.85	.77
Cognitive Engagement	.93	.67

Table 1 shows that all the scales and their subdomains met and surpassed α =.70 threshold recommended by Taber (2018) except for the cognitive engagement subscale of student engagement.

DATA ANALYSIS

The investigation used quantitative approaches to analyze the data gathered. Afterward, the unprocessed data was serialized, coded, and subsequently inputted into Statistical Package for Social Sciences (SPSS) Version 25. To analyze the characteristics of the sample profile at a significance threshold of 0.05 descriptive statistics were employed, and each null hypothesis was tested.

Descriptive statistics

Descriptive analyses of respondents` achievement emotions, student engagement, and academic achievement were analyzed and outlined in Table 2.

Respondents' Descriptive Statistics

Scale	*N*	*Range*	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
Achievement Emotions	393	3.67	1.33	5.00	4.43	0.57	-1.86	5.92
Student Engagement	393	3.60	1.40	5.00	4.28	0.56	-1.13	2.61
Academic Achievement	393	40.18	37.43	77.61	50.00	10.00	0.63	-0.38

Note. Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness; Kur = Kurtosis

Table 2 reveals that the student cohort reported elevated levels of achievement emotions, with a mean of 4.43 (SD = 0.57), though the distribution exhibited a slight negative skew and leptokurtic kurtosis. Student engagement scores, ranging from 1.40 to 5.00, were approximately normally distributed, as per Wang and Lee's (2020) criteria, despite a minor negative skew. Academic achievement, measured on a scale of 1 to 11, yielded a mean of 4.13 (D+),

with a larger standard deviation of 2.49, and displayed a distribution consistent with normality.

Hypothesis Testing

Objective one investigated the association between achievement emotions and academic achievement. The subsequent hypothesis was examined.

H_{01}: There is no significant relationship between achievement emotions and academic achievement.

The Pearson product-moment correlation coefficient analysis was conducted. Prior to this analysis, a scatter plot provided a visual check of the assumption of a linear relationship. Figure 1 demonstrates this.

Figure 1: Correlation between Achievement Emotions and Academic Achievement

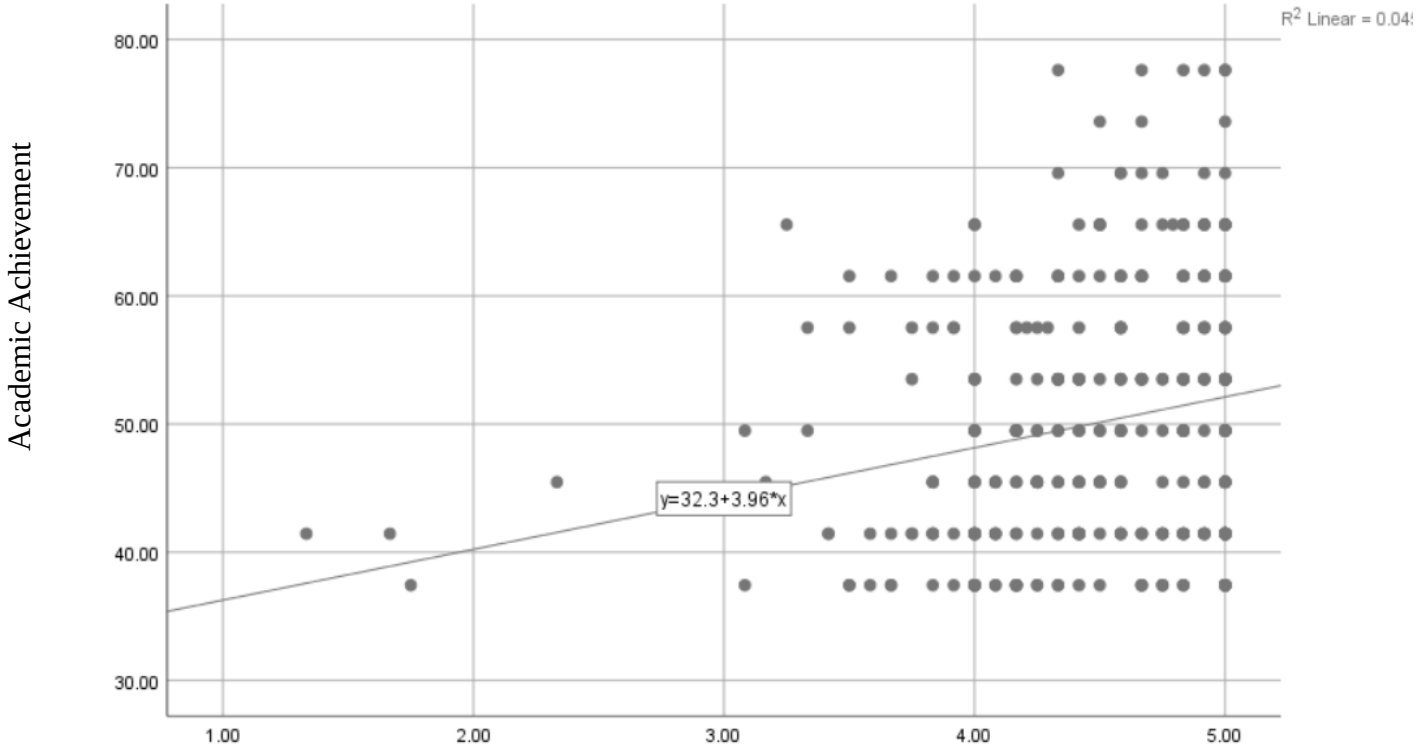

Figure 1 indicates that the association had a linear rather than curvilinear relationship. In line with recommendations from Hayes (2021) on the interpretations of the effect size, coefficients r^2 = .10, r^2 = .25, and r^2 = .50 indicate weak, medium, and large effect sizes respectively. It can be deduced that there was a weak effect size (r^2 = 4.5%). Achievement emotions account for 4.5% of the variance in academic achievement. Following this, a bivariate correlation analysis was performed to ascertain the relationship. Table 3 summarizes the findings.

Correlation between Achievement Emotions and Academic Achievement

Achievement Emotions	
Academic Achievement	.21***

Note. *** = Correlation significant at .001 level (2-tailed)

Table 3 demonstrates a weak but significant positive correlation existed between achievement emotions and academic achievement, r (391) = .21 $P < 0.01$ (2-tailed). The findings suggest that a higher degree of positive achievement emotions is significantly correlated with an increase in academic performance. The results did not support the null hypothesis, leading to its rejection. It was therefore concluded that achievement emotions exhibited a significant relationship with students' academic achievement.

In assessing the association between student engagement and academic achievement, the following null hypothesis was tested.

H_{02}: There is no significant relationship between student engagement and academic achievement.

A Pearson's Product Moment Correlation test was performed. However, before this, and as shown in Figure 2, a scatter plot was generated to graphically represent the association.

Figure 2: Correlation between Student Engagement and Academic Achievement

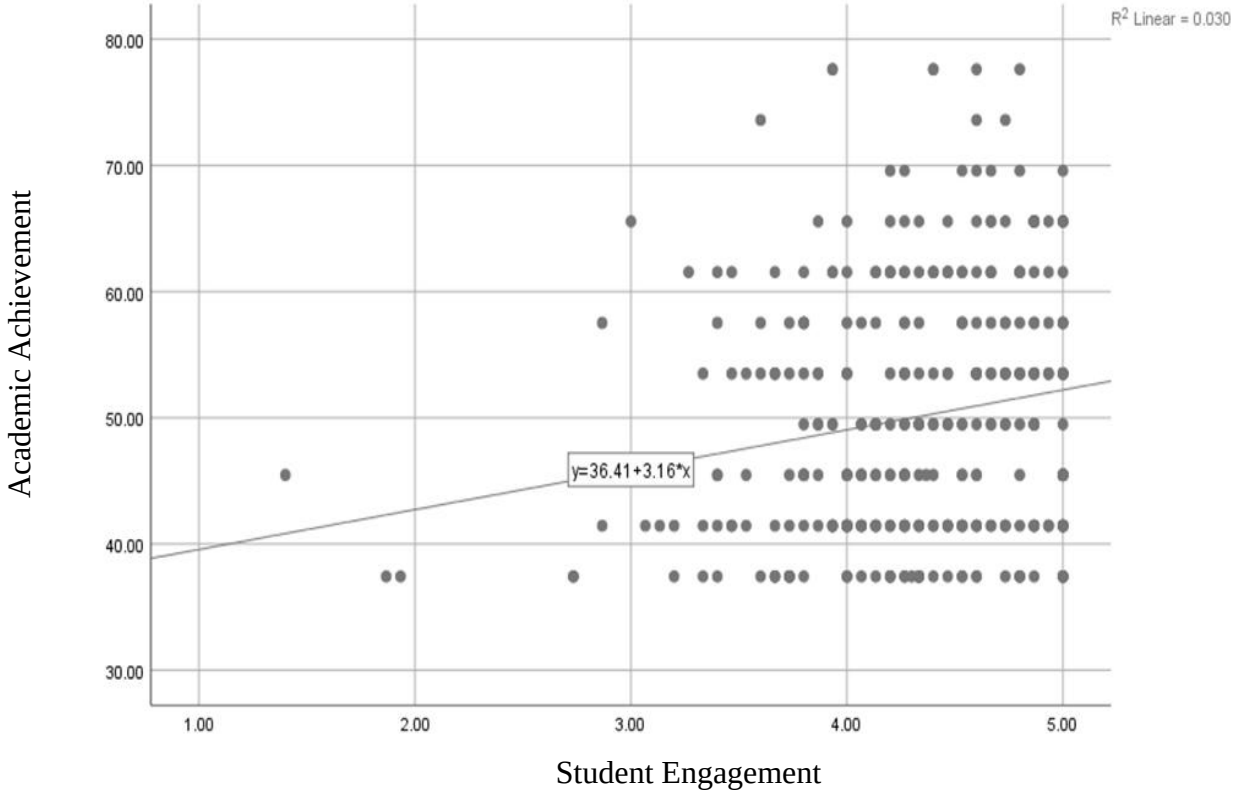

Figure 2 depicts that the relationship between the variables was linear. Further, a small effect size of r2 = 0.03 was established, this suggests that student engagement contributed to only 3% of the variance in academic achievement scores. After establishing linearity, a bivariate correlation test was executed. Findings are highlighted in Table 4.

Correlation between Student Engagement and Academic Achievement

Student Engagement	
Academic Achievement	.17**

Note. ** = Correlation significant at .01 level (2-tailed)

As documented, the link between student engagement along academic achievement was weak, r (391) =.17 p < .01. Consequently, the results supported the alternative hypothesis, revealing a statistically significant, but weak, positive correlation between student engagement and academic achievement. An increase in student engagement was thus associated with a small increase in academic achievement among students.

DISCUSSION OF FINDINGS

The primary goal of the research aimed to establish the link between achievement emotions and academic achievement among students. Before hypothesis testing, descriptive analyses revealed that many of the students had high achievement emotions, with a comparative majority having higher than average scores. Further analyses of academic achievement scores reveal that the majority of learners exhibited moderate academic achievement levels followed by a smaller proportion with low academic achievement levels. A significant positive association was established between the discussed predictor and outcome variable. This outcome aligns with several current studies (Li et al., 2024; Balaž et al., 2020; Nyatsikor et al., 2022; King et al., 2019; Liu et al., 2025; Zuo, 2024). Whereas most studies established significant positive relationships connecting achievement emotions and academic outcomes, this was not consistently observed. Non-significant findings were also established (Putwain et al., 2020; Tze et al., 2016; Goetz et al., 2019). This discrepancy may be due to the age of the participants, as adolescents' emotions may be more influenced by social and developmental factors than academic factors. It is, thus, important for teachers to factor in external influences that may shape the learning experiences. In sum, the exploration established the association between positive achievement emotions and academic achievement. It is evident that such emotions as hope, pride, and enjoyment nurture and sustain students' internal motivation resources and ability to self-regulate resulting in more positive academic outcomes. The value of these findings rests on the enhancement of our comprehension of the influence of emotions on academic settings, informing educational practices aimed at promoting positive emotional experiences and, ultimately, enhancing student learning and success.

The second objective aimed to determine the association between student engagement and academic achievement. Descriptive statistics indicate most students demonstrated high student engagement levels. Moreover, the respondents exhibited relatively higher levels of emotional engagement in comparison to behavioral and cognitive engagement, respectively. Hypothesis testing revealed a positive, statistically significant but weak correlation between student engagement and academic achievement. The present research's outcome is in congruence with several studies that have explored the association (Latifa et al., 2024; Phuntsho et al., 2020; Abid et al., 2022). Whereas an overwhelming body of literature has established the connection between student engagement and students' outcomes as positive, not all studies found significant relationships. For instance, Brallier, 2020; Omole et al., 2024). Also, the results of this inquiry further strengthen the validity of self-determination theory. Students are optimally engaged in their learning when their basic needs have been fulfilled (Ryan and Deci, 2017). In sum, the research demonstrated a significant positive correlation linked student engagement and academic achievement. The corresponding significance of the aforementioned results is that they elucidate the role of engagement within academic settings, impacting educational practices and policies targeted at boosting student engagement and, eventually, improving student learning and achievement.

CONCLUSIONS

Achievement emotions and student engagement were found to be positively and significantly associated with academic achievement. It was therefore concluded that when students' core psychological demands are met they enjoy learning, and are intrinsically motivated. Consequently, this leads to deeper learning, adaptive engagement, and ultimately improved academic achievement.

RECOMMENDATIONS

This study has significantly enriched our understanding of theory and has provided valuable insights into educational

methodology. Therefore, parents, teachers, and peers should consider the cultivation of positive achievement emotions which resultantly enhance motivation. Further, teachers may consider developing programs that promote emotional awareness and self-reflection to the learners as well as interventions such as mindfulness and positive self-talk. The findings may also inform the design of curricula that are engaging and relevant to the student's experiences. School counselors should promptly establish the genesis of disengagement among the learners and offer solutions such as counseling and social support.

For future research, the study recommends that other dispositional variables such as task value and academic risk-taking behaviors be looked into as they may provide other explanations for the gaps in knowledge witnessed in the target population. Future investigations may consider triangulating multiple data collection approaches like student records, interviews, observations, and laboratory methods to strengthen the credibility of their findings. There is a need to consider longitudinal and experimental designs which allow the establishment of cause-effect conclusions. Other researchers may, to this end, consider doing studies on other regions in the country to gain insights specific to the cultural and geographic dispositions of these populations. Lastly, it is advisable to conduct a thorough exploration of robust statistical approaches, such as structural equation modeling. This advanced method has the potential to account for confounding variables, providing a more comprehensive and powerful analytical framework to gain a more in-depth insight into the interconnections within the study framework.

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