Academic Engagement among Criminology Students: A Structural Equation Model

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ABSTRACT

This study explores academic engagement among criminology students through a Structural Equation Model (SEM) framework, analyzing the relationships between self-efficacy, teacher behavior, and school effectiveness. Using a quantitative, non-experimental research design, data were collected from 400 criminology students in the Caraga region through validated survey instruments. Findings indicate that self-efficacy, teacher behavior, and school effectiveness significantly influence student engagement across affective, behavioral, and cognitive dimensions. Among these, school effectiveness emerged as the strongest predictor of engagement. The best-fit model demonstrates the interdependence of these factors, suggesting that fostering a supportive educational environment enhances student motivation and academic persistence. This research contributes to the understanding of student engagement in criminology education and provides insights for educators and policymakers aiming to improve academic outcomes through institutional and pedagogical interventions.

Keywords: academic engagement, criminology students, self-efficacy, teacher behavior, school effectiveness, Structural Equation Modeling (SEM), student motivation, higher education, learning persistence, institutional effectiveness

INTRODUCTION

Not every student has the liking to engage in academic pursuits, meaning not all students are academically engaged. This is also true for criminology students, who show varying levels of engagement in their studies. Some are inactive, while others are actively engaged. The lack of engagement can be frustrating for both teachers and students. Fredricks, Blumenfeld, and Paris (2014) affirmed that student engagement in learning activities is typically understood as involving good behavior (behavioral engagement), positive feelings (emotional engagement), and student thinking (cognitive engagement). These elements highlight that students may demonstrate behavioral or emotional commitment to an activity without necessarily applying the cognitive effort needed to fully understand and excel in the knowledge, technique, or skill that the activity supports (Almukhaild, 2023).

This study aimed to assess the level of engagement of criminology students. Barnes-Ceeney (2018) highlights that being engaged involves actively thinking about what has just been said or discussed and processing ideas and concepts. In a classroom context, student engagement refers to the level of intensity with which students dedicate themselves to learning in school (Kassab, Taylor & Hamdy, 2023); the student's willingness, need, desire, and drive to participate in and succeed in the learning process (Fletcher, 2018), and is considered a desirable trait in school (Almukhaild, 2023). Student engagement is closely linked to their emotional connection to learning and happens when students make a psychological commitment to the learning process. This commitment is best demonstrated by their effort to understand what the school offers. Students take pride not only in achieving formal indicators of success (grades) but also in grasping the material and integrating it into their lives (Lee, Song & Hong, 2019)

Student engagement is considered an indicator of effective classroom instruction and a valuable outcome of school reform. This means that both teachers and students should be encouraged to participate in the classroom, extracurricular activities, graded examinations, and other school events. What students need are support from

teachers, demonstrated through their investment of time, energy, and efforts to manage the students; school effectiveness, reflected in improved teaching and learning processes and fostering a culture of growth; and lastly, students' self-efficacy, which involves utilizing social resources, achieving academic success, and engaging in self-regulated learning in relation to criminology-related topics. Indeed, students can become engaged when they are fully involved in their tasks, persist through challenges, and genuinely enjoy completing their assignments (Anwer, 2019).

Indeed, there are various strategies to promote student engagement. Similarly, there are approaches to motivate criminology students to actively engage in learning and school activities in general. In other words, teachers' encouragement for students to participate and engage in certain study habits is essential. This, in turn, helps in achieving high performance in academic tasks and even in licensure and board examinations. In a study by Pacatang (2018) on the study habits of criminology students and their performance in the licensure examination, the Professional Regulation Commission reported a decline in the performance of criminology graduates. While it is true that teachers' controlling and supportive behaviors are important, it cannot be overlooked that student engagement is equally crucial. It is clear that motivating and encouraging students to engage in a variety of activities and approaches to acquiring knowledge, skills, and ideas (Onwubiko, 2022) can significantly contribute to achieving success in academic pursuits.

This study aims to address the gap between passive and engaged criminology students by fostering a positive and affective liking for learning and for school; behavioral effort and persistence; behaviors on extracurricular activities and that of the cognitive engagement. Additionally, it seeks to demonstrate how cognitive factors play a significant role in the learning process, contributing in unique and interactive ways. The study also intends to examine the level of criminology students' engagement using a Structural Equation Modeling (SEM) approach, which is the focus of this research.

This study aims to construct a causal model of engagement of criminology students through self-efficacy, teacher behavior and school effectiveness. Specifically, this study hopes to achieve the following objectives: (1) to describe the level of self-efficacy of criminology students in terms of enlisting social resources, academic achievements, self-regulated learning; (2) to determine the level of teacher behaviour as to teachers' supportive behaviours, teachers' controlling behaviours; (3) to measure the level of school effectiveness as to improve teaching and learning, fostering a culture of improvement; (4) to assess the level of engagement of criminology students as to affective liking for learning, affective liking for school, behavioral effort and persistence, behavior on extracurricular activities, cognitive engagement; (5) to ascertain the significance of the relationship between self-efficacy and student engagement, teacher behavior and student engagement, school effectiveness and student engagement; (6) to predict the singular and combined influences of independent variables to the level of criminology students' engagement. Lastly, to establish the model that best fits for the criminology students' engagement.

This study utilizes Self-Determination Theory (SDT) of Ryan and Reci (2017) which concerns with how an individual interacts with and depends on the social environment. SDT explains human motivation and factors that influence its development (Wang et al., 2024) and assumes that individuals are predisposed to psychological development and integration, which leads to learning, mastery, and interpersonal connections (Ryan & Deci, 2020).In the context of this study, SDT insinuates that criminology students are more likely to be actively involved in their academic endeavors when they feel in control of their education and form deep connections with both teachers and peers. Their participation, perseverance, and general academic achievement all demonstrate this enhanced engagement, which makes SDT a strong foundation and interest in this study.

This study is also grounded with the Social Cognitive Theory of Bandura (1986) which builds a strong emphasis on how cognition and observation can be used to understand and project behavior and learning (Govindaraju, 2021). It is a learning that is predicated on the idea that people pick up knowledge by seeing what other people do and don't do, and that these techniques are essential to understanding personality (Devi et al., 2022). The idea considers a person's past experiences, which influence whether or not they will engage in behavioural action. It assumes that when students perceive themselves as capable of understanding and applying learning concepts, their motivation and persistence increase.

The study integrates the concepts of Carini, Kuh and Klein (2014), Stephens (2015), and Onwuegbuzie as cited by Lindsey (2017) on the multifaceted nature of student engagement and its implications to learning outcomes. Carini, Kuh and Klein emphasize that student engagement is a key predictor of learning and personal development, suggesting that active participation in educational activities enhances both skill acquisition and personal growth. Stephens extends this by defining motivation as the driving force that energizes students to engage, learn, and achieve their potential, noting that motivated and engaged students generally exhibit higher academic performance and better behavior. Onwuegbuzie's interpretation of Bandura's theory further complements these findings by positing that students' beliefs in their capabilities significantly influence their engagement levels, their persistence in tasks, and their overall academic success. This synthesis presents a holistic view that students are more likely to participate in activities they believe they can succeed in, thereby persisting until they meet or exceed their performance expectations.

Figure 1 presents a structural model detailing the relationships among key variables affecting the engagement of criminology students. The model includes three exogenous variables: self-efficacy, teacher behaviors, and school effectiveness. Self-efficacy encompasses three dimensions—enlisting social resources, academic achievement, and self-regulated learning—and is posited as a crucial factor influencing student engagement (Cole, 2022). Teacher behaviors are bifurcated into supportive behaviors, which encourage active participation and academic discourse, and controlling behaviors, which focus is on discipline and classroom management (Odongo, Otyola & Loyce, 2021).

School effectiveness is conceptualized through improved teaching and learning and the fostering of a culture of improvement which focuses on transparency, self-improvement, and accountability (Cheng, 2022). The dependent variable, student engagement, is examined across five domains: affective engagement (liking for learning and school), behavioral engagement (effort, persistence, and extracurricular activities involvement), and cognitive engagement (Ben-Eliyahu et al., 2018). The model articulates the hypothesized interactions between these variables and their potential impacts on criminology students' engagement, divided into a measurement model, which relates observed to unobserved variables, and a causal model, which explores the dependencies among the unobserved variables.
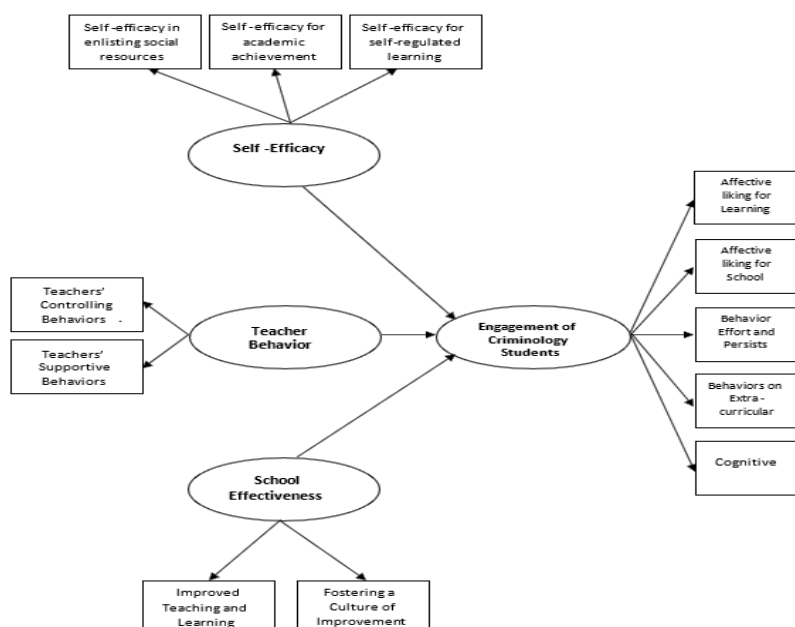

Figure 1. Conceptual Framework of the Study

This study significantly enhances the global body of knowledge on student engagement in higher education, particularly in criminology courses. By demonstrating the pivotal role of engagement in both academic and extracurricular activities, it offers empirical support for educational institutions worldwide to develop policies that foster an environment conducive to active student participation. Policymakers can utilize these insights to draft and implement strategies that not only encourage student involvement but also improve educational

outcomes and institutional attractiveness. This is particularly beneficial for enhancing student satisfaction and academic performance, which are crucial for maintaining high educational standards and competitive rankings. Teachers and students are also direct beneficiaries of this research. Educators can apply the findings to adopt teaching methods and classroom management techniques that boost student motivation and participation, leading to a more fulfilling educational experience for both teachers and students. Additionally, students gain access to strategies that enhance self-efficacy and self-regulated learning, equipping them with the necessary skills for academic success and lifelong professional development. Overall, the study provides actionable insights that can significantly impact educational practices and outcomes across various academic disciplines and cultural contexts, making it a valuable contribution to educational research and practice.

This study on the engagement of criminology students significantly aligns with the United Nations Sustainable Development Goal 4: Quality Education, which promotes inclusive and equitable quality education and lifelong learning opportunities. By enhancing student engagement through self-efficacy, teacher behavior, and school effectiveness, the research supports SDG targets aimed at improving skills for employment (Target 4.4) and fostering education for sustainable development (Target 4.7). Furthermore, the focus on improving teaching and teacher training aligns with Target 4.c, which calls for a global increase in qualified teachers. These contributions demonstrate how educational research can extend beyond academic outcomes to influence broader societal goals, equipping students with the necessary skills for professional and personal success in a sustainable future.

METHOD

This section of the paper contains a discussion on the research respondents, materials and instrument, research design, and procedure.

Research Respondents

The study targeted 400 criminology students from both public and private higher education institutions in the Caraga region, selected through stratified random sampling. Samples of potential participants represent the target population of interest, with the sampling frame comprised of the population from which the sample is drawn. Stratified purposive sampling is ideal for research involving criminology students as it ensures the representation of diverse subgroups, such as year levels, academic performance, and participation in school-related activities. This method allows for a more in-depth analysis by comparing experiences across these subgroups, providing richer insights into various aspects of their education and development.

Moreover, sampling method used in this study is stratified random sampling. According to Glasgow (2005), stratified sampling guarantees that each stratum is represented in a way that corresponds to its size in the population as a whole. The purpose of this is to produce a result that is capable of detecting the smallest magnitude of the influence and the extent to which the study is relevant (Faber & Fonseca, 2014). This ensures that the findings are both statistically significant and generalizable across the different strata within the population.

The study was conducted among Higher Educational Institutions (HEIs) which offered the Criminology program within Caraga Region. CARAGA Region has a total of 49 higher education institutions comprising 45 private Higher Education Institutions (HEIs) and four State Universities and Colleges (SUCs). Among the Higher Education Institutions, San Nicolas College (now St. Paul University-Surigao and first university established in the entire region) is identified as the center for development in teacher education and the regional center for Gender and Development, it being the seat of CARAGA Women's resources center.

Eligibility for the study was restricted to criminology students who were at least in their third year of study, irrespective of their gender. The study excluded students not currently enrolled, those below the third year, and those residing outside the Caraga region to ensure the relevance and focus of the data collected. Participation was voluntary, with students having the right to refuse or withdraw from the study at any time without any penalties or loss of benefits to which they would otherwise be entitled, ensuring ethical standards in the research process.

Materials and Instrument

This study adapted downloaded instruments and applied slight modification on the item indicators to match with the concern of the present study.

The researcher adopted Bandura's Children's Self-Efficacy Scale as basis for the semi-modified questionnaire to determine the level of self-efficacy of the criminology students in Caraga Region in relation to their level of engagement as to enlisting social resources, academic achievement and self-regulated learning. The reliability of the questionnaire was assessed using Cronbach's alpha, which resulted in a value of 0.893 and is considered acceptable, indicating that the questionnaire has good internal consistency reliability.

As to the Teacher Behavior, the researcher assessed the level of perception of the criminology students on their teachers' behaviors which affected their engagement. Thus, the modified tool is based from the scale obtained from the study conducted by Ismail and Majeed (2011). This involves two engagement domains such as supportive and controlling behavior, obtained a Cronbach alpha of 0.925 and is considered acceptable.

As to the level of school effectiveness, the researcher based the tool from Southern Association of Colleges and Schools Commission. It is a U.S-recognized accrediting organization. Still, some items will be revised to fit the nature and status of the criminology schools in Caraga Region. The reliability of the questionnaire was assessed using Cronbach's alpha, which resulted in a value of 0.894 and is considered acceptable, indicating that the questionnaire has good internal consistency reliability

A regard to student engagement, the level by which each student manifests their kind of affective engagement (liking for learning and liking for school); behavioral engagement (effort and persistence and behavior on extracurricular activities) and cognitive engagement is assessed by modifying the Student Engagement in Schools Questionnaire (SESQ) of Hart, Stewart & Jimerson (2011) especially on the scaling. The questionnaire garnered a Cronbach alpha of 0.921, indicating that it has an excellent internal consistency reliability.

To score the scales, a five-point Likert scale was used to measure the responses. The following scale was used to interpret the data gathered and determine the level of the variables being measured in this study: a mean ranging from 4.20 to 5.00 is described as very high, indicating that the measure is always manifested. For a mean of 3.40 to 4.19, the level is considered high, suggesting that the measure is oftentimes manifested. A moderate level is assigned to means between 2.60 and 3.39, implying that the measure is sometimes manifested. Means from 1.80 to 2.59 are interpreted as low, signifying that the measure is seldom manifested. Lastly, a mean between 1.00 and 1.79 is described as very low, meaning that the measure is rarely or never manifested.

To ensure that the scales are fitting and reliable to address the purpose of the study, a prior pilot test of the scales was conducted. The following are the reliability values by Cronbach's alpha for each of the variables: self-efficacy scale with α=0.893, good; teachers' behavior with α=0.925, excellent; school effectiveness with α=0.894, good; and engagement with α=0.921, excellent.

Design and Procedure

The study employed a quantitative non-experimental design utilizing Structural Equation Modeling (SEM) to validate the model concerning self-efficacy, teacher behaviors, and school effectiveness on student engagement. SEM, integrating techniques such as confirmatory factor analysis, path analysis, partial least squares path modeling, and latent growth modeling (Bagozzi & Yi, 2014), was chosen for its ability to analyze structural relationships between measured variables and latent constructs. This approach facilitates a comprehensive understanding of the interactions between abstract psychological variables and their impact on student engagement.

Furthermore, quantitative non-experimental method is concerned with the procedures used to organize, describe and summarize data, while correlation design describes the statistical association between two or more variables (Creswell, 2013). The said approaches are appropriate for this study deals with the exploration of the causal model of student online connectedness of college students.

The study was conducted during the school year 2023-2024. In collecting the data used in the study, the following procedures were performed. First, the researcher secured the consent to conduct the research from the University of Mindanao Ethics Review Committee. After acquiring the consent, 400 survey questionnaires were reproduced, which was distributed for the whole month of November 2023. Moreover, request letters signed by the adviser were distributed to the school heads of different higher education institutions of Caraga region. Administration and retrieval of data, collation and tabulation of data was then conducted. Data collected was screened to minimize the potential outliers during analysis phase. This was followed by encoding and tabulating of the data, analysis, and interpretation of the result guided by the purpose of the study.

Further, the data collected through the questionnaires were tallied and treated using the following statistical tools: weighted mean (with standard deviation) was used to describe the level of self-efficacy, teacher behavior, school effectiveness, and engagement of criminology students; Pearson product-moment correlation coefficient was used to ascertain the significance on the relationship between variables, after determining if the variables follow a normal distribution, or if the result has a non-significant p-value; and path analysis was used to determine the causal relationships of the variables.

The researcher has observed full ethical standards in the conduct of the study following the study protocol assessments and standardized criteria, contingent to UMERC approval number A472-1124-2018.

RESULTS AND DISCUSSION

In this section, the results of the data analysis and significant finding are presented and discussed.

Self-efficacy of Criminology Students

Table 1 presents the levels of self-efficacy among criminology students, measured across three indicators: enlisting social resources, academic achievements, and self-regulated learning. Each indicator provides a specific aspect of the students' self-efficacy. The overall mean score for self-efficacy was 4.04 (SD = 0.55), indicating a high level of self-efficacy across all three domains. Specifically, the mean scores for academic achievements were the highest at 4.17 (SD = 0.63), suggesting that students frequently demonstrate self-efficacy in this area. Self-regulated learning and enlisting social resources also scored high, with mean values of 3.98 (SD = 0.70) and 3.95 (SD = 0.64), respectively. These findings suggest that criminology students generally exhibit a high degree of self-efficacy in managing their learning processes, achieving academic goals, and utilizing social resources.

Table 1.Level of Self-efficacy of Criminology Students

Indicators	SD	Mean	Descriptive Level
Enlisting Social Resources	0.64	3.95	High
Academic Achievements	0.63	4.17	High
Self-regulated Learning	0.70	3.98	High
Overall	**0.55**	**4.04**	**High**

Criminology students demonstrate a high level of self-efficacy, reflecting a robust belief in their capacity to achieve specific performance goals and a confidence in their abilities. This finding aligns with Bandura's (1977) theory, which suggests that strong self-efficacy not only fosters human accomplishment and personal well-being but also encourages individuals to view challenges as opportunities for mastery rather than threats to be avoided. Furthermore, individuals with high self-efficacy are more resilient in the face of failure, often attributing setbacks to insufficient effort rather than a lack of ability. They approach potentially threatening situations with a mindset of control, which is associated with reduced stress and decreased susceptibility to depression, supporting the

views of Maddux and Gosselin (2012) who emphasize self-efficacy as a measure of one's self-worth, respect, and confidence.

Conversely, individuals with low self-efficacy perceive difficult tasks as personal threats, focusing more on their deficiencies rather than their capabilities, which can lead to avoidance of challenges. This mindset often results in a quick loss of faith in their own abilities following failures. Such negative self-perceptions are linked to increased stress and higher incidences of depression. These patterns underscore the significant impact of self-efficacy levels on a person's emotional resilience and overall mental health, emphasizing the need for supportive environments that help individuals maintain a positive view of their capabilities, particularly in demanding or high-stress academic fields like criminology.

Teacher Behavior

Table 2 presents the levels of teacher behavior, categorized into two indicators: teachers' supportive behavior and teachers' controlling behaviors, with an overall mean score of 4.01 (SD = 0.56), classified as "high." This indicates that both types of behaviors are frequently exhibited by teachers. Specifically, the mean for teachers' supportive behavior is 4.10 (SD = 0.58), suggesting a consistently high level of supportive interactions between teachers and students. In contrast, teachers' controlling behaviors also recorded a high mean of 3.92 (SD = 0.64), indicating that such behaviors are similarly prevalent. These findings underscore the significant presence of both supportive and controlling behaviors in teaching practices as detailed in the corresponding sub-tables (appended Table 2.1 for supportive behaviors and Table 2.2 for controlling behaviors).

Expanding on the interpretations from Table 2, which highlighted the high assessment of teacher behaviors by criminology students, it is crucial to understand the broader implications of these behaviors within the educational environment. As defined by Geier (2021), teacher behavior encompasses the activities necessary for directing and guiding the learning of others, essentially shaping the student's educational experience. This dynamic interaction is not unidirectional; while teachers significantly influence student learning and behavior, students also impact how teachers behave. This reciprocal influence is fundamental in the teaching-learning process, where teacher behavior plays a critical role in facilitating changes in students' learning outcomes and behavioral development.

Table 2 Level of Teacher Behavior

Indicators	SD	Mean	Descriptive Level
Teachers' Supportive Behavior	0.58	4.10	High
Teachers' Controlling Behaviors	0.64	3.92	High
Overall	**0.56**	**4.01**	**High**

Furthermore, the manner in which teachers conduct themselves directly affects their interactions not only with students but also with parents, colleagues, and school administrators. As noted by Cho et al (2022), the behavior of teachers is paramount in ensuring quality education. This extends beyond mere classroom management to influence broader educational outcomes such as student attendance and learning effectiveness. Geier (2021) further elaborates that teacher behavior is context-dependent, shaped by the social environment and cultural values of the educational setting. The effectiveness of a teacher's behavior, therefore, is judged not only on an absolute scale of good or bad but also on how well it aligns with the cultural expectations and educational goals of the society. This contextual sensitivity underscores the complexity of teaching behavior and its critical role in preparing future generations within culturally responsive educational frameworks.

School Effectiveness

Table 3 provides an analysis of the level of school effectiveness as perceived by criminology students, revealing an overall high level of effectiveness with a mean score of 4.03 (SD = 0.61). This high assessment indicates that

the elements of improving teaching and learning and fostering a culture of improvement are consistently observed within the educational environment. Specifically, the indicator for fostering a culture of improvement received a slightly higher mean rating of 4.06 (SD = 0.66), suggesting that the school is actively implementing strategies for continual enhancement and adaptation, which aligns with the perceptions of the students. On the other hand, the mean rating for improving teaching and learning was also considered high at 4.00 (SD = 0.64), reflecting a strong commitment from teachers towards enhancing student learning outcomes through compassionate and empathetic teaching practices. These findings highlight the school's effective approach in both pedagogical practices and institutional development, which positively impacts criminology students' educational experiences.

Table 3 Level of School Effectiveness

Indicator	SD	Mean	Descriptive Level
Improve Teaching and Learning	0.64	4.00	High
Fostering a Culture of Improvement	0.66	4.06	High
Overall	**0.61**	**4.03**	**High**

The interpretation in Table 3 illustrates that the high level of school effectiveness, as perceived by criminology students, is largely attributed to two critical components, particularly the fostering of a culture of improvement which received the highest ratings. This suggests that students recognize and appreciate the ongoing efforts in teacher professional development, which significantly contributes to the relevancy and quality of their educational experience. Such effectiveness is closely associated with educational leadership, emphasizing the role of teachers not just as educators but as pivotal leaders facilitating school effectiveness. Sparks (2003) supports this view by highlighting the teacher's vital role in spearheading changes that cultivate an effective educational environment.

Further discussions reveal that teacher leadership is instrumental to the school's success (Leithwood & Riehl, 2003), encompassing aspects such as knowledge, skills, attitudes, and the ability to influence student values and academic achievements. Shukor (1998) contends that effective school leadership is essential for fostering a commendable organizational culture. Moreover, the more favorable assessment of the component fostering a culture of improvement indicates that students value the progressive nature of their educational environment, which in turn encourages greater engagement with school programs. This is consistent with research by Muhia (2021), which links positive school cultures with key outcomes such as student and teacher motivation, educational achievement, job satisfaction, commitment, collaboration, and overall school community cohesion. These findings underscore the importance of proactive and responsive leadership in enhancing educational effectiveness and fostering a dynamic learning environment.

Engagement of Criminology Students

Table 4 presents the levels of engagement among criminology students across five indicators: affective liking for learning, affective liking for school, behavioral effort and persistence, behavior on extracurricular activities, and cognitive engagement. Each indicator represents a distinct aspect of student engagement. Overall, the students exhibited a high level of engagement with an overall mean of 4.12 (SD = 0.62), indicating that aspects such as liking for learning, school affinity, effort, participation in extracurricular activities, and cognitive involvement are consistently strong.

Table 4 Level of Engagement of Criminology Students

Indicators	SD	Mean	Descriptive Level
Effective Liking for Learning	0.70	4.21	Very High

Effective Liking for School	0.73	4.11	High
Behavioral Effort and Persistence	0.69	4.09	High
Behavior on Extracurricular Activities	0.73	4.16	High
Cognitive Engagement	0.70	4.05	High
Overall	**0.62**	**4.12**	**High**

Table 4 reflects a notably high level of engagement among criminology students, with affective liking for learning scoring the highest mean, indicative of their strong interest in indicative of their strong interest in criminology subjects and eagerness to learn new concepts. This high level of interest aligns with findings of Yulia, Sulistyo, and Cahyono (2020), who noted that engaging teaching activities enhance students' willingness to participate and can make the learning process both enjoyable and memorable, thereby improving information retention. Behavior in extracurricular activities also rated highly, supporting the notion that active participation extends numerous benefits including improved academic performance and personal development. Similarly, Covay and Carbonaro (2010) corroborated this by demonstrating that engagement in such activities correlates with better grades, increased regular school attendance, and a more robust self-concept while also fostering essential life skills like teamwork and leadership.

The positive disposition towards school, evidenced by high scores in effective liking for school, suggests that students not only appreciate their educational environment but also perceive it as crucial to their future well-being. This positive school affinity is instrumental in fostering strong relationships with peers and staff, contributing to a sense of belonging (Ireson & Hallam, 2005). Such environments promote more significant student engagement, both academically and socially. Furthermore, behavioral effort and persistence received high ratings, underscoring the students' dedication to their studies. In addition, Fredricks, Filsecker, and Lawson (2016) emphasize that persistence and hard work are vital for academic achievement, linking these traits to improved grades and lower dropout rates. Lastly, the measure of cognitive engagement revealed students' readiness to embrace and excel in learning tasks. Hardman (2016) notes that cognitively engaged students not only meet but exceed educational requirements, seeking challenges that further their knowledge and skills. This form of engagement is crucial, as it underpins the overall quality and effectiveness of the educational experience.

Significance of the Relationship between Self-Efficacy, Teacher Behavior, School Effectiveness and Engagement of Criminology Students

A Pearson product moment correlation analysis was used to determine the significance of the relationship of the exogeneous and endogenous variables of the study. The data in shown in Table 5.1 is the correlation between the self- efficacy and engagement of criminology students. Generally, it can be perceived from the results that there is a significant positive strong relationship between the self- efficacy and engagement of criminology students as reflected in the table, the correlation coefficient was r=0.713, $p<0.05$.

Table 5.1 Significance of the Relationship between Self- efficacy and Engagement of Criminology Students

Self- efficacy	**Engagement**					
	Affective Liking for Learning	Affective Liking for School	Behavioral Effort and Persistence	Behavior on Extracurricular Activities	Cognitive Engagement	**Overall**
Enlisting Social Resources	.451[**]	.485[**]	.447[**]	.418[**]	.508[**]	**.530[**]**
	.000	.000	.000	.000	.000	**.000**

Academic Achievements	.510**	.537**	.476**	.481**	.525**	**.581****
	.000	.000	.000	.000	.000	**.000**
Self-regulated Learning	.568**	.637**	.612**	.505**	.594**	**.669****
	.000	.000	.000	.000	.000	**.000**
Overall	**.612****	**.666****	**.617****	**.561****	**.652****	**.713****
	.000	**.000**	**.000**	**.000**	**.000**	**.000**

The null hypothesis, that there is no significant relationship between the self- efficacy and engagement of criminology students was therefore rejected. This finding supports the premise that students with greater confidence in their abilities, stemming from effective social resources, academic achievements, and self-regulated learning, tend to exhibit higher levels of overall engagement. The implications of this relationship are critical, suggesting that interventions aimed at enhancing self-efficacy could lead to more profound and comprehensive student engagement, thereby improving educational outcomes.

The relationship between self-efficacy and engagement among criminology students is strongly positive, indicating that higher levels of self-efficacy correlate with increased engagement (Sokmen, 2021). This study reinforces the notion that self-efficacy not only enhances engagement but also serves as a crucial psychological antecedent that influences student behavior and academic choices. According to Chien and Hwang (2022), engagement in tasks directly contributes to favorable outcomes, underscoring its significance across various educational domains. Furthermore, Shin and Bolkan (2021) highlight that engagement, driven by self-efficacy, is a vital construct in educational research, affecting a wide range of academic behaviors and decisions. Thus, the engagement of criminology students is intrinsically linked to their self-perceived efficacy, with each enhancing the other in a symbiotic relationship.

Shown in Table 5.2 is the relationship between teacher behavior and engagement of criminology students. There was a significant strong relationship between teacher behavior and engagement of criminology students as reflected in the table, the correlation coefficient is r=0.676, $p<0.05$. Specifically, the data shows that teachers' supportive behavior and teacher's controlling behavior both attained the highest correlation with affective liking for school at an r value of 0.548 and 0.575 ($p<0.01$). Meanwhile, behavior on extracurricular activities obtained the lowest correlation value with teachers' supportive behavior (r=0.482, $p<0.05$) and teachers' controlling behavior (r=0.505, $p<0.05$)

Table 5.2 Significance of the Relationship between Teacher Behavior and Engagement of Criminology Students

Teacher Behavior	Engagement					
	Affective Liking for Learning	Affective Liking for School	Behavioral Effort and Persistence	Behavior on Extracurricular Activities	Cognitive Engagement	**Overall**
Teachers' Supportive Behavior	.512**	.548**	.523**	.482**	.543**	**.599****
	.000	.000	.000	.000	.000	**.000**
Teachers' Controlling Behavior	.548**	.575**	.571**	.505**	.573**	**.636****
	.000	.000	.000	.000	.000	**.000**
Overall	**.581****	**.615****	**.600****	**.540****	**.611****	**.676****
	.000	**.000**	**.000**	**.000**	**.000**	**.000**

This research identifies a significant correlation between teacher behavior and student engagement among Criminology students. This relationship underscores the significant impact of teachers' supportive and controlling behaviors on students' engagement levels. The analysis indicates that supportive teacher behaviors, which include fostering a positive learning environment and encouraging student participation, are crucial in enhancing students' affective responses and cognitive involvement in learning activities. Similarly, appropriate controlling behaviors, which help maintain discipline and focus within the classroom, also contribute positively to students' engagement, affirming the dual role of teacher behavior in shaping educational experiences.

From the implications discussed, this relationship aligns with the Self-Determination Theory (SDT) by Ryan and Deci (2017), which suggests that supportive environments enhance engagement by fulfilling basic psychological needs, thereby improving the quality of engagement. Skinner and Belmont (2013) further reinforce this, noting that engaged students demonstrate sustained involvement in learning activities with a positive emotional tone, choosing challenging tasks, and showing enthusiasm, curiosity, and interest.

Additionally, researches by Reeve (2012), Reeve et al. (2004), Ryan and Deci (2016), and Niemiec and Ryan (2009) links teaching behaviors indirectly to student engagement through motivation. Specifically, certain teaching behaviors can foster autonomous and intrinsic motivation, while others may encourage more extrinsic and controlled motivations, as discussed by De Meyer et al. (2014), Haerens et al. (2015), and Van den Berghe et al. (2013). These underlying motivational factors, though not directly observable, manifest in visible forms of student engagement in the classroom.

Given in table 5.3 is the relationship between school effectiveness and engagement of criminology students. Generally, there was positive correlation between school effectiveness and engagement of criminology students (r=0.772, $p<0.05$). Specifically, data shows that improve teaching and learning, and fostering a culture of environment, both demonstrate a high correlation with affective liking for school with an r value of 0.693 and 0.681 ($p<0.05$). In contrast, while both indicators of school effectiveness obtained the lowest correlation value with behavior on extracurricular activities, with an r value of 0.513 and 0.578, ($p<0.05$), demonstrate a positive correlation.

The result implies that increasing school effectiveness can improve many aspects of student engagement (Masumzadeh, Hajhosseini & Gholamali Lavasani, 2022). Students who believe their school is effective are more likely to form a positive attitude toward it, according to a high positive association with affective liking. Additionally, even the weaker but still favorable correlation with extracurricular conduct suggests that in productive school environments, students would be more likely to engage in extracurricular activities (Fujiyama, Kamo, & Schafer, 2021). Thus, concentrating on methods to increase school efficacy may be essential to encouraging students' academic and extracurricular involvement.

Table 5.3 Significance of the Relationship between School Effectiveness and Engagement of Criminology Students

School Effectiveness	Engagement					
	Affective Liking for Learning	Affective Liking for School	Behavioral Effort and Persistence	Behavior on Extracurricular Activities	Cognitive Engagement	**Overall**
Improve Teaching and Learning	.622[**]	.693[**]	.615[**]	.513[**]	.619[**]	**.703[**]**
	.000	.000	.000	.000	.000	**.000**
Fostering a Culture of	.676[**]	.681[**]	.618[**]	.578[**]	.663[**]	**.738[**]**
	.000	.000	.000	.000	.000	**.000**

Improvement						
Overall	.696**	.736**	.660**	.585**	.687**	.772**
	.000	.000	.000	.000	.000	.000

The rejection of the null hypothesis regarding the correlation between school effectiveness and student engagement demonstrates a significant positive relationship, highlighting the crucial role of institutional quality in influencing student involvement and enthusiasm towards learning. Enhanced teaching methods and a culture that promotes continuous improvement are particularly impactful, correlating strongly with all aspects of student engagement. These findings suggest that efforts to improve educational practices and the learning environment can lead to substantial gains in student engagement, thereby suggesting a pathway for schools to enhance both academic and developmental outcomes for students.

Research consistently shows that effective schools, characterized by high academic expectations and quality teacher-student relationships, not only foster higher academic achievement but also mitigate the adverse effects of poor socioeconomic backgrounds (Berkowitz, Moore, Astor, & Benbenishty, 2017; Wang & Degol, 2016). Additionally, studies like those by Mehta, Cornell, Fan and Gregory (2013), and Wang and Eccles (2013) have found that students' perceptions of their schools significantly influence their engagement levels, particularly in settings where schools provide clear behavioral expectations and a supportive, caring environment. This body of evidence highlights the crucial role of school effectiveness in enhancing student engagement and academic outcomes.

Significant Influence of Exogenous Variables on the Engagement among Criminology Students

Regression analysis was conducted to investigate the influence of self-efficacy, teacher behavior, and school effectiveness on the level of engagement among criminology students. The results, as presented in Table 6, indicate that these three exogenous variables collectively explain 66% of the variance in student engagement (R^2 = 0.660), suggesting a significant impact (F = 257.262, p <.01). Specifically, school effectiveness emerged as the strongest predictor of engagement (B = 0.492, p < .01), followed by self-efficacy (B = 0.298, p < .01), and teacher behavior (B = 0.160, p = .01). The remaining 34% of the variance in engagement is attributed to factors not included in this study.

The regression results discussed highlight a robust relationship between the three exogenous variables of self-efficacy, teacher behavior, and school effectiveness and the level of engagement among criminology students. These findings are underpinned by theoretical and empirical studies that elaborate on the mechanisms through which these variables influence student engagement. Firstly, the significant influence of self-efficacy on

student engagement is supported by Bandura's (1977) theory of self-efficacy, which posits that a strong sense of personal efficacy enhances human accomplishment and personal well-being. This theory suggests that students with high self-efficacy are more likely to engage deeply with learning tasks as they believe in their capabilities to execute necessary behaviors to produce desired results. The regression coefficient (B = 0.298, p < .01) for self-efficacy further supports this notion, indicating that as students' confidence in their academic abilities increases, so does their engagement.

Table 6. Significance of the Influence of Self-efficacy, Teacher Behavior, School Effectiveness on Engagement of Criminology Students

Engagement					
Exogenous Variables		*B*	B	*t*	*Sig.*
(Constant)		.292		2.030	.043

Self-efficacy		.298	.263	5.561	.000
Teacher Behavior		.160	.145	3.118	.002
School Effectiveness		.492	.485	10.923	.000
R	.813				
R^2	.660				
ΔR	.658				
F	257.262				
p-value	.000				

The role of teacher behavior in influencing student engagement can be contextualized within the framework provided by Skinner and Belmont (2003). They suggest that engaged students exhibit sustained behavioral involvement in learning activities, which is greatly enhanced by positive teacher-student interactions. Teachers who foster a supportive classroom environment contribute to higher levels of student engagement. The study's findings (B = 0.160, p = .01) corroborate this perspective, reflecting the crucial role of teachers' behaviors in facilitating an engaging learning environment.

Moreover, the strongest predictor of student engagement in the regression model was school effectiveness (B = 0.492, p < .01). This aligns with the assertions of Wang and Degol (2016) who argued that schools characterized by high academic expectations and high-quality teacher-student relationships are more likely to promote better academic outcomes through enhanced student engagement. This relationship underscores the critical role of the overall school environment in influencing student engagement, suggesting that effective schools provide a supportive framework that facilitates and nurtures student involvement in both academic and extracurricular activities.

Additionally, the broader impact of an engaging school environment is supported by research from Fredricks, Filsecker, and Lawson (2016), who highlight that engagement is critical for academic success and is influenced by the school's ability to meet students' psychological and educational needs. This comprehensive approach to student engagement not only emphasizes the significance of individual teacher interactions but also the overarching influence of the school's policies and its climate on student motivation and engagement.

Best Fit Model of Engagement among Criminology Students

This portion provides the result on the investigation of the interrelationships among the variables of the study. The several hypothesized models were tested in an attempt to achieve an identified best fitting model. A discussion on the models and their implications for understanding the impact of the exogenous variables on endogenous variables performance were also presented. Five alternative models were tested to obtain the best fit model of personal effectiveness. The conclusion of the investigation of the goodness of fit measures of these five structural models is presented in Table 7.

Table 7 Summary of Goodness of Fit Measures of the Five Generated Models

Model	P-value(>0.05)	CMIN DF (0<value<2)	GFI (>0.95)	CFI (>0.95)	NFI (>0.95)	TLI (>0.95)	RMSEA (<0.05)	P-close (>0.05)
1	.000	15.721	.767	.789	.779	.727	.189	.000
2	.000	8.469	.878	.894	.882	.857	.137	.000

3	.000	2.785	.943	.974	.960	.966	.067	.018
4	.000	2.725	.947	.976	.963	.967	.066	.028
5	.090	1.368	.983	.997	.987	.993	.030	.930

Legend: CMIN/DF – *Chi Square/Degrees of Freedom*

NFI –*Normed Fit Index*

GFI – Goodness *of Fit Index*

TLI -*Tucker-Lewis Index*

RMSEA – *Root Mean Square of Error Approximation*

CFI – Comparative *Fit Index*

In identifying the best-fitting model, all the indices included must consistently fall within the acceptable ranges. Chi-square/degrees of freedom value should between 0 and 2, with its corresponding p-value greater or equal to 0.05. Root Mean square of Error Approximately value must be less than 0.05 and its corresponding p-close value must be greater or equal to 0.05. The other indices such as Normed Fit Index, Tucker-Lewis Index, Comparative Fit Index, and Goodness of Fit Index must be all greater than 0.90.

Hypothesized Structure Model 1 considered only the direct effects of level of state of self-efficacy; level of teacher behavior and level of school effectiveness to the level of engagement among criminology students. It suggested a poor fit model to the data as all the index values did not fall within each criterion. Likewise, hypothesized Structural Model 2 suggested a poor fit model to the data as all the index values do not fall within each criterion. Hypothesized Structural Model 3 showed an index value are in unacceptable range. All the index values hardly meet the criteria which also indicates a poor fit for the model. Hypothesized Structural Model 4 showed that almost all of the index values did not meet the criteria which also indicates a poor fit for the model. Hypothesized Model 5 appended as Figure 2 was identified as best fit model.

Model 5 included a level of state of self-efficacy, level of teacher behavior and level of school effectiveness as the latent variables which are expected to have influence on the latent endogenous variable on the level of engagement among criminology students. The model fitting was calculated as being highly acceptable as presented in Table 7. The chi-square divided by the degrees of freedom was 1.368 with the p-value of 0.90. This indicates very good fit model to the data. Significantly, the result was highly reinforced by RMSEA index of 0.030, which was less than to 0.05, level of significance with its corresponding P-close value > 0.05. Similarly, other indicators like NFI, TLI and CFI were found to be consistently indicating a very good fit model as their values, all fall within each criterion.

Examining closely, the model represents the causal relationship between school effectiveness level and engagement level among criminology students as represented by the single-headed arrows. It further shows that the latent variables as represented by oval shapes are school effectiveness, and level of engagement among criminology students. As to the observed variables, improve teaching and learning (ITL) and fostering a culture of improvement (FCI) under the level of school effectiveness are also included.

The model also reveals that teacher supportive behavior (TSB) and teacher controlling behavior (TCB) under the level of teacher behavior are also included in the model. The appearance of enlisting social resources (ESR), academic achievements (ACA) and self-regulated learning (SRL) under level of state of self-efficacy is also included in the model. The model also shows that effective liking for learning (AFL), effective liking for school (ALS), behavioral effort and persistence (BEP), and cognitive engagement (COE) under level of engagement among criminology students are included in the model. Moreover, residuals are represented by the symbol e are

observed among all the indicators of self-efficacy; level of engagement; level of school effectiveness and level of teacher behavior as perceived by criminology students.
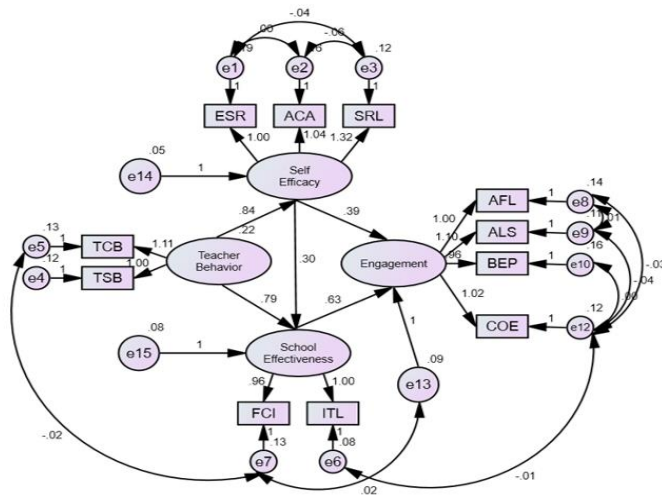

Figure 2. The developed path model showing the causal relationships of variables on engagement

It can also be garnered from the figure that two factors of level of school effectiveness and four factors of level of engagement among criminology students have strong interconnectedness with each other. As a result, the goodness of fit values changes in all indices and notably achieved the desired range for good fitting model. Regression weights were estimated to measure the effects between measured and latent variables. As presented in Table 7, the model proposed that level of school effectiveness was a strong predictor of level of engagement among criminology students as signified by its level of significance (β=0.683, p<0.01). This indicated a very strong link of level of school effectiveness towards level of engagement among criminology students.

Moreover, Model 5 exhibits exceptional fit indices, evidenced by a Comparative Fit Index (CFI) of 0.997 and a Tucker-Lewis Index (TLI) of 0.993, both of which exceed the commonly accepted threshold of 0.95, indicating an excellent fit to the data. Additionally, the Root Mean Square Error of Approximation (RMSEA) of 0.030 not only falls well below the 0.05 cutoff, suggesting a close fit, but also a P-close value of 0.930 indicates a very high probability that the RMSEA would be as small as observed if the model were the true model.

These statistics signify that Model 5 not only fits the observed data exceptionally well but also confirms the theoretical expectations laid out in the study's hypotheses. The low Chi-square to degrees of freedom ratio (CMIN/DF) of 1.368 further reinforces the model's appropriateness, suggesting that the model does not overfit the data despite its complexity. This robust model validation supports the inferential strength of the findings, providing strong empirical backing for the causal pathways specified between the constructs of self-efficacy, teacher behavior, school effectiveness, and their collective impact on student engagement.

Table 8 provides an overview of the direct and indirect effects of the independent variables on the engagement of criminology students. Self-efficacy exhibits both a substantial direct effect (.387) and an indirect effect (.189), culminating in a total effect of .576 on student engagement, which underscores the powerful influence of students' confidence in their abilities on their overall engagement. Teacher behavior, however, shows only an indirect effect (.979) on engagement, suggesting its impact is mediated through other variables, possibly through school effectiveness or aspects of self-efficacy. School effectiveness presents a strong direct effect (.626) on engagement, emphasizing the importance of effective school policies and environments in fostering student involvement.

Table 8 Direct and Indirect Effects of the Independent Variables on the Engagement of Criminology Students of Best Fit Model

Variables	Direct Effect	Indirect Effect	Total Effect

Self-efficacy	.387	.189	.576
Teacher Behavior	-	.979	.979
School Effectiveness	.626	-	.626

In addition, Table 9 details the regression weights of various variables within the best fit model, revealing intricate relationships among constructs. For instance, self-efficacy influences both academic achievements (ACA; Estimate = 1.037) and self-regulated learning (SRL; Estimate = 1.319), indicating that students' confidence extends significantly into their academic and personal management skills. The pathways from teacher behavior to school effectiveness (Estimate = .787) and from school effectiveness to engagement (Estimate = .626) highlight the cascading impact of supportive teacher behaviors through improved school practices to enhance student engagement. These findings illustrate the complexity of interactions within educational settings, where teacher behaviors not only affect the immediate classroom environment but also permeate broader school effectiveness and student engagement outcomes.

Table 9 Estimates of Variable Regression Weights in Generated Best Fit Model

			Estimate	S.E.	Beta	C.R.	P-value
Self_Efficacy	<---	Teacher_Behavior	.843	.066		12.677	***
School_Effectiveness	<---	Teacher_Behavior	.787	.243		3.239	.001
School_Effectiveness	<---	Self_Efficacy	.303	.263		1.149	.251
Engagement	<---	School_Effectiveness	.626	.155		4.031	***
Engagement	<---	Self_Efficacy	.387	.208		1.862	.063
ESR	<---	Self_Efficacy	1.000				
ACA	<---	Self_Efficacy	1.037	.077		13.400	***
SRL	<---	Self_Efficacy	1.319	.095		13.899	***
TSB	<---	Teacher_Behavior	1.000				
TCB	<---	Teacher_Behavior	1.111	.063		17.754	***
ITL	<---	School_Effectiveness	1.000				
FCI	<---	School_Effectiveness	.961	.049		19.475	***
AFL	<---	Engagement	1.000				
ALS	<---	Engagement	1.099	.047		23.215	***
BEP	<---	Engagement	.963	.052		18.620	***
COE	<---	Engagement	1.017	.056		18.254	***

Legend:

ESR-enlisting social resources	*FCI-fostering a culture of improvement*
ACA-academic achievements	*AFL-affective liking for learning*
SRL-self-regulated learning	*ALS-affective liking for school*
TSB-teachers' supportive behaviours	*BEP-behavioural effort and persistence*
TCB-teachers' controlling behaviours	*BEA-behaviour on extracurricular activities*
ITL-improve teaching and learning	*COE-cognitive engagement*

CONCLUSION AND RECOMMENDATIONS

Based on the study's findings, the level of self-efficacy, teacher behavior as perceived by the respondents, school effectiveness, and level of engagement is high as assessed by the criminology students in Caraga Region. The findings further indicate self-efficacy, teacher behavior, school effectiveness were correlated with engagement. The results of the study indicate that criminology students' overall evaluations of the characteristics they looked at are positive and high, indicating a satisfactory academic experience.

These elements act as the fundamental frameworks around which student engagement can be constructed. By understanding and addressing these relationships, administrators and teachers may create focused plans to improve the learning environment that stimulates student engagement. Institutions can make education more interesting and encouraging by emphasizing self-efficacy, establishing good teacher-student interactions, and guaranteeing school effectiveness. Higher student satisfaction, improved academic results, and a deeper feeling of school community can all result from this. In the end, addressing these concerns comprehensively can greatly improve students' general performance and wellbeing.

Given the correlation between self-efficacy, teacher behavior, school effectiveness were correlated with engagement, it is imperative for students to prioritize several actions. Students are urged to actively look for ways to improve their self-efficacy by evaluating their accomplishments and establishing sensible academic goals. Having open channels of communication between educators can foster trust and lead to more support and direction. Their academic experience can also be further enhanced and high levels of involvement in their studies maintained by taking part in school activities and making use of the resources that are available.

For the path analysis, the results revealed that self-efficacy, teacher behavior as perceived by the respondents and school effectiveness all have direct impact on academic engagement demonstrating a multitude of influences on students' engagement in the learning environment. As a result, these findings highlight how complicated the variables affecting academic engagement of criminology students in the learning environment are.The result further confirms the idea in Self-Determination Theory which stressed that students are inclined with and depends on the influence they acquired from their environment (Ryan & Reci, 2017). These behaviors are positively manifested in the overall result of this study where respondents are influenced to demonstrate efficacy and participate in their learning environment.

With the findings and conclusions derived from those, the study maintains that while teacher behavior would result in keeping the students' motivation positive, it is important to consider to consistently cope with stressful situations in the classrooms and reduce inactive behaviors, for students to maintain their engagement level. That may also involve providing the student the freedom to adjust, encourage students to engage in volunteer school projects, encouraging to take breaks and rest, ask for feedbacks, conduct regular social assembly and clarify their goals and objectives. In this way, students will feel valued and provided with the worth they wanted.

Lastly, subsequent researchers may use the variables employed in this study to evaluate if they also influence the enagement of students in other regions. It is also recommended that future researchers should continue exploring factors and variables that impact students academic engagement. Examining the effectiveness of

different approaches and practices focused at strengthening and encouraging learning engagement may provide educators and institutions with invaluable perspectives to maximize the learning experience of the students.

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