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# SELF-EFFICACY AND SELF-REGULATION TOWARDS ACADEMIC PROCRASTINATION AMONG SENIOR HIGH SCHOOL SCIENCE STUDENTS

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## ABSTRACT
*This study determined the domains of self-efficacy and self-regulation that significantly influence academic procrastination among senior high school science students from public secondary schools in the Division of Davao del Norte. The correlational technique with regression analysis was used in this non-experimental study, which included 525 Science, Technology, Engineering, and Mathematics (STEM) respondents chosen using stratified random sampling. The data were collected from the student respondents using modified survey questionnaires and tested for reliability. The statistical methods utilized in this work were mean, Pearson-r, and multiple linear regression analysis. The result of the research revealed high levels of self-efficacy and self-regulation. The level of students' academic procrastination was low. Furthermore, there was a negative relationship found between academic procrastination and both self-efficacy and self-regulation, to academic procrastination. It was found that the independent variables, self-efficacy, and self-regulation, significantly predict academic procrastination. The study's conclusions can be utilized to advise teachers and students on how to combat academic procrastination and improve academic achievement.*
**KEYWORDS:** *MAED-Teaching Science, self-efficacy, self-regulation, academic procrastination, Philippines*

## INTRODUCTION

Procrastination is a widespread problem among students worldwide, particularly college, middle school, and high school students (Li et al., 2019). It emerges as a widespread global challenge, as indicated by an online survey by Study Mode. The survey reveals an increasing number of students procrastinating, primarily allocating significant time to non-academic activities. Procrastination is notably high among high school and college students, with 87 percent acknowledging procrastination habits and 45 percent reporting adverse effects on academic performance (Nartea et al., 2020).

Research in the United States found that 70% of college students procrastinate (Gollwitzer, 2019). In the same manner, students in Taiwan struggle with procrastination despite the increased use of digital technology and online learning platforms. It has been linked to lower academic achievement, more significant stress, and decreased well-being (Chen, 2021).

Furthermore, this popular culture, such as mañana, cramming, and bad mannerism, has been increasingly noticed during remote learning in the Philippines, creating unfavorable impacts on modular distance or online education and student time management (Tiboron et al., 2021).

In Sagayen National High School, in particular, it was noticed that most students were beating deadlines as they handed in their outputs through Google Classroom. This habit seriously affects their academic performance and mental health (Zarrin et al., 2020).

Not engaging in academic procrastination is very important for students because it helps them manage their time efficiently, reduces their stress, and improves the quality of their work. When students are organized and disciplined, they can achieve their academic goals more effectively and enjoy a healthier, more balanced lifestyle.

Academic procrastination is the deliberate postponement of crucial and necessary work. It can be caused by several factors, just as poor planning and self-control, low confidence, fatigue, lack of energy, and avoiding tasks (Steel, 2018). Individuals procrastinate because they do not perceive a particular task as valuable and anticipate being unable to achieve the desired value due to impulsiveness (Rozental, 2018).

This study is based on the Self-Determination Theory (Deci et al., 2000), which suggests that individuals have fundamental psychological needs like the desire for independence, the ability to succeed, and the need to connect with others. Meeting these needs increases people's intrinsic drive and interest in their work. However, failure to meet these needs can result in academic procrastination (Yang, 2021). Similarly, if students feel that they lack control over their academic tasks, doubt their abilities to succeed, or experience a lack of connection to the academic material or learning environment, they may be more inclined to delay their work. Furthermore, the aversiveness of the task is the most common cause of academic procrastination. The more complex the task, the more likely the students are to procrastinate. This difficulty may tempt someone to put off the task. Time management, self-regulation, and self-efficacy all contribute to academic procrastination in an individual (Afzal & Jami, 2018).

One of the internal factors that contribute to academic procrastination is self-efficacy. The degree of self-efficacy in a person will influence their academic procrastination. Self-efficacy is one of the components of motivation expectancy in education. It describes a person's confidence in completing a specific activity. Understanding an individual's self-efficacy improves their performance during the learning process. This suggests that a person's level of self-efficacy might influence his performance in carrying out the learning process and finishing his duties(Chen, 2021).

Similarly, students' procrastinating habits can stem from their self-efficacy. Self-efficacy is how someone thinks about how well they can do their tasks and meet their goals based on their efforts and potential—part of knowing yourself, which plays a big part in your daily life. Individuals with low levels of self-efficacy can be more likely to postpone tasks perceived as challenging or out of their comfort zones when they are unsure if they will succeed in completing them. By contrast, individuals with greater self-efficacy levels are in a better position to cope with challenging tasks and may be less inclined to postpone them (Zhang et al., 2021).

Studies have found that there is a strong link between how confident students feel in their academic abilities and how often they put things off or procrastinate. A recent study found that increasing academic self-efficacy can greatly reduce procrastination in schoolwork (Krispenz et al., 2019)The correlation between self-efficacy and procrastination shows a negative association, which means that when students feel more confident in their abilities, they are less likely to put off their school work (Momani, 2018).

This research is based on Social Cognitive Theory which point out the importance of self-efficacy in dealing with academic procrastination. It states that students with extreme self-efficacy in the academe will also have good time management, perseverance, and continuous attempts to seek correct solutions (Bandura, 1997).

Self-efficacy significantly influences academic procrastination (Przepiorka et al., 2019). It reflects one's confidence to execute certain activities or behaviors, which is critical in shaping motivation, actions, and persistence (Malouff, 2019). Students with stronger self-efficacy about their academic talents are likelier to engage in learning practices and display proactive behaviors, such as good time management, goal formulation, and task prioritizing (Puente-Diaz et al., 2018).

A breakdown in self-regulation is another variable that is associated with procrastination. A study revealed that self-regulation failure could account for 70% of observed procrastination behaviors .It is linked to a multitude of personal and situational factors. One's metacognition, strategy adaptability, and motivation support self-regulation in learning. It is vital in all aspects of human conduct that can be cultivated to promote a smooth transition from secondary school to university (Steel, 2007).

Several studies have indicated a high correlation between academic procrastination and difficulties with self-regulation. It is also supported by Fan et al. (2017), who state that students who exercise positive self-regulation in their learning also typically obtain higher grades since they complete their assignments on time (Zarrin et al., 2020).

Procrastination and a lack of self-regulation cause more problems, especially in learning. University students' research revealed an inverse relationship between academic procrastination and self-regulated learning. Individuals tend to procrastinate when they choose strategies or goals ineffectively, exhibiting a strong correlation. Thus, students' learning performance varies greatly depending on their self-regulation profile (Hong et al., 2021).

Additionally, Wolters et al. (2017) discovered that students who performed well academically also possessed a vital ability for self-regulation and used techniques counterproductive to procrastination, such as repetition and metacognition. For example, self-regulation resulted in learners outperforming weakly self-regulated learners regarding design work completeness (Li et al., 2020). Also, a previous study stated that students who carefully engaged in task preparation and had high self-regulation demonstrated greater competence in new situations and continuously improved their task completion performance (Irvine et al., 2021).

Self-regulation failure dramatically affects a person's procrastinating habits

(Eerde & Klingsieck, 2018). This study is based on the idea called Temporal Motivation Theory (TMT), which strongly emphasizes self-regulation in learning as a variable influencing procrastination behavior. Possessing practical self-regulation skills empowers students to effectively oversee and control their actions, allowing them to complete their academic responsibilities (Steel & Konig, 2006).

Thus, learners with robust self-regulation tend to obstruct their demands, be interested in performing their assignments, and exert more effort to complete their projects, decreasing procrastination tendencies. Self-regulated learners adapt their learning strategies and skills based on their understanding of what works best. Conversely, individuals experiencing deficits in self-regulation struggle with planning, managing, and monitoring their behavior independently, often relying on external support. Moreover, those with self-regulation deficits encounter challenges in controlling impulses, whether to cease or initiate actions (Darling-Hammond et al., 2019).

The theories mentioned earlier, and their supporting ideas form the basis for the assumption that self-efficacy and self-regulation in learning are critical components of goal-setting success. Students who practice self-regulation in learning exhibit high self-efficacy beliefs and a desire to achieve mastery goals. The Locke & Latham (1990) Goal Setting Theory supports this by emphasizing the importance of setting clear, demanding, and attainable goals to enhance performance. Students who believe in their abilities and can manage their learning well tend to procrastinate less. This is because they are better at setting achievable goals, making plans, and checking their progress (Cobo-Rendón, 2020).

Similarly, the results of a study indicate that interventions aimed at improving self-efficacy and self-regulation could help avoid or reduce delays in completing schoolwork among college students in health-related fields, particularly those with lower self-esteem. According to the goal-setting theory, self-efficacy and self-regulation considerably make procrastinating more difficult. Individuals who have faith in their capabilities and acquire effective self-control methods can more effectively develop and accomplish their goals, reducing the amount of time they spend procrastinating (Zhang et al., 2018).

Research has demonstrated that the combined impacts of self-efficacy and self-regulation may affect students' academic accomplishment, which helps prevent students from engaging in delaying behaviors. Students were less likely to procrastinate if they established specific and challenging goals and had confidence in their capacity to achieve those goals (Chunk & DiBenedetto, 2020).

Academic achievement of the students cannot be hindered if procrastination is overcome. Thus, studying academic procrastination can assist us in developing efficient interventions to lessen and prevent it and understand its sources and effects (Svartdal, 2020). Although several studies have studied various factors, such as personality and situational characteristics, the causes and correlates of procrastination are still poorly understood . Thus, it necessitates additional attention and research on the subject, especially in academic settings (Grund et al., 2018).

Many studies have been done on academic procrastination, but most of the people in these studies are college students. None of the research has been done on Senior High School Science students at Sagayen National High School. Most of the people who answered were college students, and no part of the study was done with Senior High School Science students. There is a substantial gap in the literature about the research on how self-belief and self-control affect delaying schoolwork, particularly among STEM (Science, Technology, Engineering, and Mathematics) students, despite the wealth of study on these topics in academic contexts. Limited studies have explored the unique dynamics of self-efficacy and self-regulation regarding academic procrastination within the STEM field.

Hence, the researcher felt compelled to conduct a quantitative inquiry on self-efficacy and self-regulation towards academic procrastination among senior high school science students. This study aims to offer helpful information that can support creating targeted programs and strategies designed for the specific needs of these students.

This current study shall make an essential contribution and provide a clear understanding of the unique challenges faced by STEM students because STEM subjects often require rigorous problem-solving skills, critical thinking, and time management, making it essential to examine how self-efficacy and self-regulation impact academic procrastination in this specific context.

It will also contribute to developing effective interventions and support strategies to reduce academic procrastination among STEM students. By finding out how self-confidence and self-control affect putting off schoolwork, DepEd can design targeted interventions that address STEM students' specific needs and challenges, ultimately improving their academic performance and success rates.

Moreover, this study's findings can inform STEM curriculum design and instructional approaches, emphasizing the cultivation of self-efficacy together with self-regulation skills. Understanding how self-efficacy convictions and self-regulatory processes influence academic procrastination can help educators create learning environments that foster self-confidence, effective time management, goal setting, and self-discipline, enhancing student engagement, motivation, and achievement in STEM disciplines.

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This study can also contribute to the existing knowledge on student motivation and achievement. It adds to the growing literature on self-regulatory processes and psychological factors that influence academic performance, shedding light on STEM students' specific challenges in managing their time, overcoming procrastination tendencies, and optimizing their learning outcomes.

In addition, the findings of this study would have significant benefits for the respondents and various stakeholders, such as DepEd officials, school administrators, and teachers. The findings will provide valuable insights into how STEM students can improve self-efficacy and self-regulated learning to combat academic procrastination.

By identifying areas for improvement, this study aimed to guide the development of programs and initiatives to enhance the overall learning experience for students. The research was conducted with a clear purpose, prioritizing essential learning opportunities for all stakeholders involved.

This study addressed the gaps in the previous research by determining the relationships between self-efficacy and self-regulation toward academic procrastination among senior high school science students.

Particularly, it sought responses to the following objectives: to describe the level of self-efficacy of senior high school science students in terms of self-confidence, efficacy expectation, positive attitude, and outcome expectation; to describe the level of self-regulation of senior high school science students in terms of receiving relevant information, evaluating, triggering, searching, formulating, implementing the plan, and assessing the plan's effectiveness; to describe the level of academic procrastination of senior high school science students in terms of time management, aversiveness of the task, sincerity, and personal initiative; to describe the significant relationship between self-efficacy and academic procrastination, and self-regulation and academic procrastination; to describe which domain/s of self-efficacy significantly influence academic procrastination; and which domain/s of self-regulation significantly influence academic procrastination.

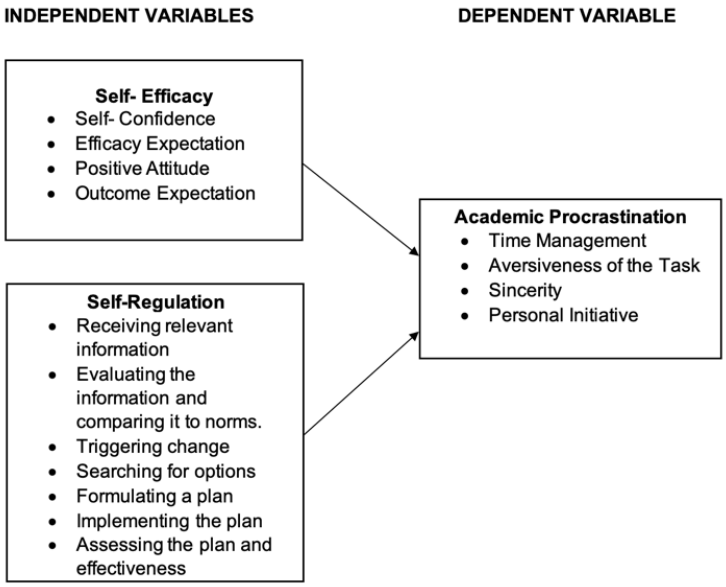


**Figure 1. Conceptual Model of the Study**

In Figure 1, we can see Conceptual Model 1. It shows how independent variables directly affect the dependent variable. In this study, the independent variables considered are self-efficacy and self-regulation while the dependent variable that might be affected by these is academic procrastination.

The first independent variable is Self-efficacy, which is determined by four indicators: self-confidence, efficacy expectation, positive attitude, and outcome expectation. Self-confidence is the belief and assurance in one's abilities, skills, and qualities. A positive perception of oneself and feeling capable of accomplishing tasks can significantly impact a person's overall well-being. Efficacy expectation is a person's competence assessment and effectiveness in a particular domain. Individuals with higher self-efficacy tend to approach tasks confidently and are more likely to persist in facing difficulties. A positive attitude refers to an optimistic and constructive mindset or outlook towards people, events, or situations. Outcome expectation refers to an individual's anticipation or belief about their actions or efforts' potential outcomes or results. It is the subjective assessment of the expected consequences or

rewards that may follow from engaging in specific behaviors or activities. It influences motivation, decision-making, and goal-setting, as individuals are often guided by their expectations of what will happen because of their actions (Bashir et al., 2019).

Another independent variable is self-regulation, which encompasses activities such as the following: Receiving relevant information involves actively obtaining pertinent information applicable to a particular situation. Evaluating the information is critically assessing and analyzing the gathered information to determine its quality, reliability, credibility, and relevance. Triggering change is recognizing the current information, which necessitates modifying behavior, attitudes, and strategies. Searching for options involves actively exploring and seeking alternative solutions to the identified need for change. Formulating a plan entail developing a structured and organized approach to address the identified problem. Implementing the plan involves putting the formulated plan into action. Assessing the plan's effectiveness involves evaluating the progress, outcomes, and impact of the implemented plan (Miller et al., 1991).

The dependent variable examined in this study is academic procrastination, assessed through indicators such as time management, aversiveness of the task, sincerity, and personal initiative. Time management refers to effectively allocating and prioritizing one's time to accomplish tasks, assignments, and responsibilities. It helps students finish their work on time, feel less stressed, and keep a good balance between school and life. Aversiveness of the task refers to the subjective perception of how unappealing or challenging a task feels to a student. Tasks considered aversive may decrease motivation, procrastination, or avoidance behaviors. Sincerity pertains to the genuine and authentic approach to learning, studying, and completing academic tasks. Students who exhibit sincerity are dedicated, diligent, and earnest in their efforts to achieve academic success. Lastly, Personal initiative is the ability and willingness to take independent and proactive action in pursuing academic goals and overcoming obstacles (Solomon, 1984).

## METHOD

### Research Respondents

This study's respondents were Science, Technology, Engineering, and mathematics (STEM) students from Asuncion, Kapalong, and Sto public secondary schools. Tomas District in the Division of Davao del Norte.

The researcher utilized Sloven's formula to determine the sample size of 288 from the total population. An equal distribution percentage was used to ascertain the number of respondents in each school. The respondents were from Asuncion National High School, Kapalong National High School, Sagayen National High School, and Sto. Tomas National High School. The respondents were chosen from 525 who were enrolled in the Senior High School Academic track under the STEM strand during the Academic Year 2023-2024 from the three districts of the said schools.

Also, Stratified Random Sampling was used to choose the people who answered. In this study, there were four schools, with each school treated as a separate stratum. Stratified Random Sampling reduced bias in the selection process. It created a sample that closely matched the entire group, making it possible to make correct conclusions about that group (Sharma, 2017).

Furthermore, inclusion criteria were used to determine the subjects of this study. The researcher provided an opportunity to all Science, Technology, Engineering, and Mathematics (STEM) students enrolled in the public secondary schools of Asuncion, Kapalong, and Sto. Tomas District was considered for selection—however, students who were not enrolled in the STEM strand in Asuncion, Kapalong, and Sto. Tomas District was excluded from the study.

Regarding the withdrawal criteria, participants were not compelled to remain in the study. They could withdraw if they felt uncomfortable or no longer wished to participate. Fortunately, all of the chosen respondents participated in the said study.

This research was conducted in Region XI, particularly in Asuncion, Kapalong, and Sto. Tomas District, Davao del Norte.

### Materials and Instrument

This study utilized three instruments specifically designed to align with the research objectives. These questionnaires were obtained through experts' adaptations and standardized tools downloaded from the Internet.

The Self-Efficacy questionnaire used in this study was adapted from Bashir, L., & Gupta, S. (2019). This instrument was found to have 0.859 Cronbach's alpha, which possesses a high degree of internal consistency. This measured the level of self-efficacy among senior high school science students. That particular instrument consists of twenty statements, with five items dedicated to each of the following constructs: self-confidence, efficacy expectation, positive attitude, and outcome expectation. It uses a 5-point Likert Scale for the responses. This instrument includes instructions that were stated in a way that no particular person or group can utilize.

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The questionnaire assessing students' Self-regulated learning in this study was adapted from the foundational work of Frederick Kanfer (1970) and the seven-step self-control model created by Miller and Brown in 1991. This survey questionnaire consists of 63 items. The tool encompasses seven indicators: receiving relevant information, evaluating information, triggering change, searching for options, formulating a plan, implementing the plan, and assessing the plan's effectiveness. Before its use, the questionnaire underwent pilot testing, resulting in a reliability coefficient of .943, indicating that the items demonstrate relatively high internal consistency.

The Academic Procrastination questionnaire employed in this research is a standard tool adapted from the original work of Solomon and Rothblum (1984) and was obtained online. It includes indicators such as time management, aversiveness of the task, sincerity, and personal initiative. The questionnaire has a high internal consistency, as denoted by its alpha coefficient of .906.

A 5-point Likert Scale was used in this study to measure how people responded consistently. In this study, we used a scale to measure different things. The scale goes from 1. 00 to 5.00 Here's what each range means: - 1. 00 to 1.79: Very Low - the item is rarely seen - 1. 80 to 259: Low - the item is seldom seen - 2. 60 to 339: Moderate - the item is sometimes seen - 3. 40 to 4.19: High - the item is often seen - 4. 20 to 5.00: Very High - the item is always seen.

The questionnaires were validated with the help of the Graduate Schools of the University of Mindanao five panel members and four experts from outside the university. A satisfactory rating was obtained after the validation, and the instruments were considered ready for pilot testing. The said testing was conducted, and 40 respondents answered the questionnaires. Pilot testing was done to see if the items in the instrument were clear, readable by the respondents, and were of internal consistency. The pilot testing respondents were not part of the study. The items in the instruments were then subjected to a Cronbach's Alpha reliability test.

The questionnaire on self-efficacy had an alpha Cronbach's Alpha of .859, self-regulation was .943, and academic procrastination was .906. All these questionnaires had a high degree of internal consistency.

**Design and Procedure**

In this study, the quantitative research methodology was applied. Descriptive-correlational research designs were also employed in this study. According to Bhandari (2021), quantitative research involves the process of gathering data, analyzing it, and interpreting its significance. This method uses it to quantify causal links, find the means, make predictions, and extrapolate findings to larger populations. This approach is the opposite of qualitative research, which uses the informants' words in analyzing data. In addition, descriptive-correlational research seeks to identify the quantities of variables and examine how these variables are interconnected in the context of the study (Creswell, 2013).

Descriptive research does not grant the researcher control over the study's variables but focuses on describing the nature of the variables involved. In contrast, a correlational research design examines and measures the relationships between variables without attempting to manipulate them. Correlation analysis assessed the strength and direction of the relationships, which can be positive or negative, as well as strong or weak.

This study can be classified as descriptive as it aimed to describe the self-efficacy, self-regulation, and academic procrastination levels among senior high school science students. Additionally, it employed a correlational approach to measure the extent of the correlation between the independent variables, namely self-efficacy and self-regulation, and the dependent variable, which is academic procrastination among senior high school science students.

The researcher prepared the relevant and published research instruments in advance of the data collection phase of the study. The research adviser reviewed the modified questionnaires to get feedback and ideas for inclusions. After that, the questionnaire underwent validation by a panel of experts. Specifically, the three downloaded and modified survey questionnaires were subjected to validation by five members of the Graduate Schools of the University of Mindanao panel and four experts from outside of the university using the validation sheets provided by the University of Mindanao Graduate Schools.

After thorough validation, approval and endorsement were secured from all the panel members. Then, the pertinent documents were submitted to the Ethics Review Committee of the University of Mindanao. Once UMERC issued the compliance certificate for the study ethics protocol review, pilot testing was conducted. Some 40 respondents were chosen to answer the questionnaires. After obtaining the proper research tools for the study, the data collection process started. By ensuring the consistency and reliability of the survey instruments, the pilot test yielded an acceptable Cronbach's alpha value.

The following steps included writing letters addressed to DepEd Region XI and the principals of the four schools. These letters were sent to ask permission to conduct the study in their schools. The Research Adviser and the Dean of the Graduate Schools ensured that the letters were noted.

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In the study "Self-efficacy and Self-regulation Towards Academic Procrastination among Senior High School Science Students," the researcher developed three survey questionnaires. The questionnaires were given to the study respondents. Attached to them were the approved letters and other significant information about the study, including the Informed Consent Form (ICF). Once the students committed to participating in the study, they were considered the respondents.

After the study, all the responses were monitored, collected, collated, and tallied for statistical analysis. The researcher ensured optimum confidentiality when handling all the responses submitted. The researcher also guaranteed that the respondents' identified information was safeguarded. All information and data were saved on a computer protected by a password. Also, no information was shared with other persons or entities, such as the data that might be used to identify the study's respondents.

As the responses were consolidated through the Excel spreadsheet, it then underwent tabulation. Subsequently, it was sent to the statistician via e-mail for statistical treatment. Descriptive statistics determine the frequency, mean, and standard deviation. It was employed to ascertain the central tendency measures for determining the level of self-efficacy and self-regulation toward academic delays among high school science students. It enabled researchers to achieve goals one (1) to three (3). In addition, Pearson's product-moment correlation was utilized to ascertain whether the variables in the study were positively or negatively correlated. This enables researchers to respond to objective four (4). Further, Multiple Regression Analysis was used to ascertain the fifth research objective: to determine which domain of self-efficacy and self-regulation best influences academic procrastination among senior high school science students. After employing the steps mentioned above, the researcher was given a copy of the results for interpretation and further discussion.

This research paper was subjected to the approval of the University of Mindanao Ethics and Review Committee (UMERC). It was evaluated in compliance with the ethical codes of conduct in research that the University of Mindanao strictly observed. The researcher observed considerations in the conduct of this study, and these were observed with utmost responsibility and accountability. It was ensured that the entire research paper and other documents had passed the university standards before the study.

In compliance with the Ethics Review Center of the University of Mindanao having Protocol No.UMERC-2023-555, the necessary precautions and ethical standards that an academic paper is expected to have been strictly followed. It ensures voluntary participation, privacy, discretion, informed consent, and transparency while avoiding factors that could damage the veracity of results such as fraud, plagiarism, conflict of interest, alteration, and fabrication. It was ensured that all this was observed, as it reflects the integrity of this research.

## RESULTS AND DISCUSSION

This portion presents the gathered data about self-efficacy and self-regulation towards academic procrastination among senior high school science students. The data gathered were evaluated and interpreted to the objectives of this study. The following is the flow of the topics discussed in this section: level of self-efficacy, level of self-regulation, level of academic procrastination, the relationship between self-efficacy and academic procrastination, self-regulation and academic procrastination, and the independent variables that best influence academic procrastination among senior high school science students.

### Level of Self-Efficacy

Table 1 depicts the level of self-efficacy among senior high school science students as measured by self-confidence, efficacy expectation, positive attitude, and outcome expectation.

**Table 1.**

*Level of Self-Efficacy*

| Indicators | Mean | SD | Descriptive Level |
|---|---|---|---|
| Self-confidence | 3.54 | 0.56 | High |
| Efficacy expectation | 3.70 | 0.63 | High |
| Positive attitude | 3.64 | 0.61 | High |
| Outcome expectation | 4.09 | 0.62 | High |
| **Overall** | **3.74** | **0.50** | **High** |

As shown in Table 1, the overall average was3.74and the SD was0.50, which is described as high. This shows that the level of self-efficacy is very high among senior high school science students. Specifically, an outcome

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expectation of 4.09 with an SD of 0.62, has the highest mean which is designated as high. On the other hand, self-confidence obtained the lowest mean of 3.54 has an SD of 0.56, which is also described as high.

The high level of self-efficacy among senior high school science students conforms to the findings of Puente-Diaz et al. (2018), who found that students with stronger self-efficacy attitudes are expected to engage in learning practices and proactive behaviors. These behaviors were manifested by their self-confidence, their efficacy expectations, their positive attitude, and their results expectations, which were high.

**Level of Self-Regulation**

Table 2 displays the level of self-regulation among senior high school science students measured by receiving relevant information, evaluating the information and comparing it to norms, triggering change, searching for options, formulating a plan, implementing the plan, and assessing the plan's effectiveness.

**Table 2.**

*The Level of Self-Regulation*

| Indicators | Mean | SD | Descriptive Level |
|---|---|---|---|
| Receiving | 3.96 | 0.58 | High |
| Evaluating | 3.81 | 0.52 | High |
| Triggering | 3.78 | 0.57 | High |
| Searching | 3.84 | 0.60 | High |
| Formulating | 3.66 | 0.65 | High |
| Implementing | 3.71 | 0.66 | High |
| Assessing | 3.91 | 0.65 | High |
| **Overall** | **3.81** | **0.51** | **High** |

Table 2 shows 3.81 as an overall mean and has an SD of 0.51, described as high. It indicates that the level of self-regulation is very high among senior high school science students. All indicators under self-regulation obtained the mean, which is described as high. Among those indicators, receiving relevant information recorded the maximum mean of 3.96 having the SD of 0.58, with the description as high. While formulating a plan, 3.66 got to be the lowest mean of which SD is 0.65, also described as High.

The high level of self-regulation among students will let them effectively oversee and control their actions, enabling them to accomplish their academic responsibilities. These manifestations align with the perceptions of Darling-Hammond et al. (2019) that learners with strong self-regulation are interested in performing their assignments and exert more effort to complete their academic tasks.

**Academic Procrastination**

Table 3 depicts the level of academic procrastination among senior high school science students as measured by time management, aversiveness of the task, sincerity, and personal initiative.

**Table 3.**

*The Level of Academic Procrastination*

| Indicators | Mean | SD | Descriptive Level |
|---|---|---|---|
| Time Management | 2.26 | 0.74 | Low |
| Aversiveness of the Task | 2.18 | 0.62 | Low |
| Sincerity | 2.14 | 0.62 | Low |
| Personal Initiative | 2.21 | 0.71 | Low |
| **Overall** | **2.20** | **0.55** | **Low** |

An overall mean of 2.20 with an SD of 0.55 was obtained in Academic Procrastination, which is described as low. It indicates that academic procrastination seldom occurs among senior high school science students. Specifically, time management recorded the highest mean of 2.26 with an SD of 0.74, which is low. It was followed by personal initiative with a mean of 2.21 and an SD of 0.71, which was described as low. The aversiveness of the task obtained a mean of 2.18 with an SD of 0.62, which was also described as low. Sincerity obtained 2.14 which is the lowest mean and an SD of 0.62, also described as low.

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The table shows that the overall mean is low, indicating that senior high school science students are less likely to procrastinate. All indicators were seldom observed among the students, meaning they had managed their time so well, were less likely to avoid doing the task, were sincere, and had personal initiative. It agrees with the Self-determination Theory of Deci et al. (2000), which suggests that each person has essential inner needs such as capability, autonomy, and understanding. When all such needs are met, students will be motivated and engaged in their academic tasks, contributing to less academic procrastination.

**Correlation between Self-Efficacy and Academic Procrastination**

This study aimed to understand how self-efficacy affects procrastination in schoolwork among senior high school science students. To do this, Pearson-r was used to check how they are related.

**Table 4.1**

*Significance of the Relationship between Self-Efficacy and Academic Procrastination among Senior High School Science Students*

| Independent Variable | Dependent Variable | r- value | r-square | p-value | Decision |
|---|---|---|---|---|---|
| Self-confidence | Academic Procrastination | -0.577* | .3329 | 0.001 | $H_o$ is rejected |
| Efficacy Expectation | | -0.607* | .3684 | 0.001 | $H_o$ is rejected |
| Positive Attitude | | -0.447* | .1998 | 0.001 | $H_o$ is rejected |
| Outcome Expectation | | -0.406* | .1648 | 0.001 | $H_o$ is rejected |

**Significant at 0.05 level of significance*

The results obtained in Table 4.1 revealed that all self-efficacy indicators significantly correlate with academic procrastination. As shown in the table, outcome expectations got the highest r-value, -0.406*, of which the p-value is 0.001, and 0.1648 coefficient determination, which indicates a negative correlation to academic procrastination. On the other hand, the efficacy expectation got the lowest r-value, -0.607*, with a 0.001 p-value and 0.3684 coefficient determination, which also indicates a negative correlation with academic procrastination.

The hypothesis indicating no significant relationship between self-efficacy and academic procrastination is rejected, as evidenced in the table. This study discovered a significant inverse relationship between academic procrastination and self-efficacy. Such results conform to Przepiorka's (2019) idea that self-efficacy greatly influences academic procrastination. In other words, students are less prone to put things off if they have higher levels of self-efficacy.

**Correlation between Self-Regulation and Academic Procrastination**

**Table 4.2**

*Significance of the Relationship between Self-Regulation and Academic Procrastination among Senior High Scholl Science Students*

| Independent Variable | Dependent Variable | r- value | r-square | p-value | Decision |
|---|---|---|---|---|---|
| Receiving | Academic Procrastination | -0.570* | 0.3249 | 0.001 | $H_o$ is rejected |
| Evaluating | | -0.485* | 0.2352 | 0.001 | $H_o$ is rejected |
| Triggering | | -0.570* | 0.3249 | 0.001 | $H_o$ is rejected |
| Searching | | -0.595* | 0.3540 | 0.001 | $H_o$ is rejected |
| Formulating | | -0.652* | 0.4251 | 0.001 | $H_o$ is rejected |
| Implementing | | -0.705* | 0.4970 | 0.001 | $H_o$ is rejected |
| Assessing | | -0.651* | 0.4238 | 0.001 | $H_o$ is rejected |

**Significant at 0.05 level of significance*

Table 4.2 presents the significance of the relationship between self-regulation and academic procrastination among senior high school science students. It shows that self-regulation and academic procrastination have a significant relationship. At 0.05 level of significance, all indicators were found to have a significant relationship.

*Receiving* has a -0.570 r-value of which the p-value is 0.001 and had a coefficient determination of 0.3249, indicating a negative correlation towards academic procrastination. *Evaluating* had a significant relationship with academic procrastination, with a -0.485 r-value, 0.001 p-value correspondingly, and 0.2352 coefficient determination,

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indicating a negative correlation. *Triggering* obtained an r-value of -0.570 which has a 0.001 p-value and a coefficient determination of 0.3249, which indicates a significant relationship towards academic procrastination.

Also, *searching* obtained the r-value of -0.595 with a 0.001 p-value and a 0.3540 coefficient determination, indicating a negative correlation. *Formulating* also signifies a negative correlation because it obtained a -0.652 r-value with a 0.001 p-value of which 0.4251 is a coefficient determination. It is, moreover, *Implementing* got -0.705 for the r-value and has a 0.001 p-value and coefficient determination of 0.4970; lastly, assessing obtained the r-value of -0.651 with 0.001 p-value and has a 0.4238 coefficient determination, which also signifies a negative correlation towards academic procrastination among senior high school science students.

The outcomes of the negative correlation between self-regulation and academic procrastination agree with the idea of Hong (2020) that academic procrastination is inversely connected to self-regulation. It also conforms to the Temporal Motivation Theory (TMT), which states that self-regulation in learning greatly influences procrastination behavior. More likely, students with strong self-regulation can effectively oversee and control their actions, which will help them accomplish their academic tasks. Thus, it also agree with the notion of Darling-Hammond et al. (2019) that students with a high self-regulation perform their assignments and exert more effort to complete their projects, decreasing procrastination tendencies.

**Regression Analysis on the Influence of the Domains of Self-Efficacy towards Academic Procrastination**

**Table 5.1**

*Regression Analysis on Self-Efficacy Towards Academic Procrastination among Senior High School Science Students*

| Independent Variables | Unstandardized Coefficients. B | SE | Standardized Coefficients Beta | t- value | p- value | Decision |
|---|---|---|---|---|---|---|
| | 4.596 | 0.215 | | | | |
| Self-Confidence | -0.263 | 0.077 | -0.267* | -3.413 | 0.001 | $H_o$ is rejected |
| Efficacy Expectation | -0.322 | 0.069 | -0.368* | -4.648 | 0.001 | $H_o$ is rejected |
| Positive Attitude | -0.034 | 0.064 | -0.037 | -0.524 | 0.601 | $H_o$ is not rejected |
| Outcome Expectation | -0.039 | 0.058 | -0.044 | 0.665 | 0.507 | $H_o$ is not rejected |
| Dependent Variable : Academic Procrastination | | | | | | |
| R = 0.642 | | $R^2$= 0.412 | | | | |
| F- ratio = 39.042 | | p- value = 0.001 | | | | |

*Significant at 0.05 level of significance

The computed F-value, 39.042, and a p-value of 0.001 indicate that self-efficacy and academic procrastination are significantly related.

Among the four indicators, self-confidence and efficacy expectation significantly influence academic procrastination. Respectively, they obtained beta values of -0.267* and -0.368* which have 0.001 p-value, which signifies a negative correlation towards academic procrastination. The overall $R^2$ of 0.412 insinuates that 41.2 % of academic procrastination is attributed to self-efficacy, with the persisting percentage accredited to other components not incorporated in the study.

**Regression Analysis on the Influence of the Domains of Self-Regulation towards Academic Procrastination**

**Table 5.2**

*Regression Analysis on Self-Regulation Towards Academic Procrastination among Senior High School Science Students*

| Independent Variables | Unstandardized Coefficients. B | SE | Standardized Coefficients Beta | t-value | p-value | Decision |
|---|---|---|---|---|---|---|
| | 4.936 | 0.197 | | | | |
| Receiving | -0.052 | 0.068 | -0.055 | -0.759 | 0.449 | $H_o$ is not rejected |
| Evaluating | -0.010 | 0.068 | -0.010 | -0.148 | 0.882 | $H_o$ is not rejected |
| Triggering | -0.060 | 0.071 | -0.063 | -0.847 | 0.398 | $H_o$ is not rejected |
| Searching | 0.027 | 0.073 | 0.029 | 0.363 | 0.717 | $H_o$ is not rejected |
| Formulating | -0.193 | 0.062 | -0.230* | -3.112 | 0.002 | $H_o$ is rejected |
| Implementing | -0.283 | 0.067 | -0.340* | -4.245 | 0.001 | $H_o$ is rejected |
| Assessing | -0.156 | 0.062 | -0.186* | -2.534 | 0.012 | $H_o$ is rejected |
| Dependent Variable : Academic Procrastination | | | | | | |
| R = 0.752 | | $R^2$= 0.565 | | | | |
| F- ratio = 40.852 | | p- value = 0.001 | | | | |

*Significant at 0.05 level of significance

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The computed F-value, 40.852, and 0.001 p-value demonstrate that self-regulation can significantly predict academic procrastination among senior high school science students. With an overall $R^2$ of 0.565, self-regulation is responsible for 56.5% of academic procrastination, with additional factors not examined in this study accounting for the remaining proportion.

The findings indicate that three measures of self-regulation, specifically *formulating*, *implementing*, and *assessing*, have a considerable impact on academic procrastination. The beta is 0.230*, 0.340*, and 0.186*, respectively, having a p-value of 0.001 which is lower than the 0.05 level of significance. This indicates that the overall process of self-regulation can have a substantial influence on academic procrastination.

## CONCLUSION AND RECOMMENDATIONS

The research results showed that there is a high level of self-efficacy present and is often observed among its indicators which are self-confidence, efficacy expectation, positive attitude, and outcome expectation. Similarly, the level of self-regulation is also high and is often observed in all of its indicators. On the other hand, the level of academic procrastination is low which is seldom observed among senior high school science students.

The correlation test revealed a statistically significant connection between self-efficacy, self-regulation, and academic procrastination. Self-efficacy and self-regulation are negatively correlated to academic procrastination. Further, in determining which domain of self-efficacy significantly influences academic procrastination, it is self-confidence and efficacy expectation obtained significant results. Given the four (4) indicators, only two (2) indicators significantly influence academic procrastination. While on the domain of self-regulation, among seven (7) indicators only three (3) greatly influence academic procrastination. To name, formulating, implementing, and assessing the effectiveness of the plan significantly influences academic procrastination.

Overall, the results of the research suggest that senior high school science students exhibit positive perceptions regarding self-efficacy, self-regulation, and academic procrastination. The results of the negative correlation between self-efficacy and self-regulation towards academic procrastination conform Social Cognitive Theory of Bandura and to the Temporal Motivation theory (TMT) of Steel and Konig, which states that self-efficacy and self-regulation in learning influence procrastination behavior.

Thus, the researcher recommends sustaining a high level of self-efficacy and self-regulation by fostering and nurturing this trait. Teachers may design interventions and programs that further boost students' self-confidence, efficacy expectation, positive attitude, and outcome expectation. Encouraging students to engage in challenging tasks and providing constructive feedback can help maintain and enhance their self-efficacy beliefs.

Further, DepEd may strengthen the implementation strategies of the programs that will support students in regulating their learning processes effectively. Providing resources and guidance through training, and workshops on how to monitor progress and adjust study strategies accordingly can empower students to become more autonomous and successful learners.

Although the level of academic procrastination is low, it is still important to provide support and resources to prevent any potential increase in this behavior. School administrators may initiate workshops, trainings, seminars, and interventions for teachers that will be focused on procrastination awareness and effective procrastination management techniques. So that teachers in return can also provide such workshops to their students.

Continuous monitoring of students' self-efficacy, self-regulation, and academic procrastination levels is also important. Thus, schools can also implement ongoing assessments or surveys to track students' perceptions and provide timely support and intervention. Additionally, creating a supportive environment where students feel comfortable seeking assistance and guidance can contribute to their overall academic success and well-being.

Finally, the results of this quantitative research will be of help to future researchers who aim to provide relevant studies, especially on academic procrastination. Other methods and approaches of research can be employed for this topic. They may explore more about the variables used to posit the results of this study or employ other factors not included in this research that may also influence academic procrastination among senior high school science students.

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