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# Motivational Factors in Science Learning, Learner's Satisfaction and Learning Outcomes of Pre-Service Teachers

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## Abstract

Motivation is a significant factor of academic success to actively engage the students in a more meaningful discussion. And the big challenge here is getting the students motivated enough to cope with the new system, learn, and succeed on their own which is critical to their academic performance and overall success. This study aimed to measure and analyze if there is significant relationship between the motivational factors as perceived by the science students and their academic performance. Likewise, association between the motivational factors and learners' satisfaction is also measured. The study is a descriptive-correlational in nature and employ in sixty-five (65) science students of Laguna State Polytechnique University. Survey questionnaire is adapted in Science Motivational Questionnaire (SMQ-II) and a researcher-made questionnaire are administered to gather data that are needed and crucial for this study. The study found out that there is no significant relationship between the motivational factors and academic performance of the students. Notably, there is enough evidence that supported the claim that motivational factors are significantly correlated with the satisfaction of the students towards learning components. However, it appears that the assessment in anxiety as motivational factors has no significant relation with any of the learning components. Likewise, the component learning environment, is also not associated with any motivational factors.

**Keywords:** Motivational Factors, Science Learning, Satisfaction, Learning Outcomes.

## 1. Introduction

Motivation is a process of initiating, guiding, and maintaining goal-oriented behaviors of every student in this kind of educational setting. Motivation has a significant impacton the overall approach of the students in school or learning (Cherry, Differences of extrinsic and Intrinsic Motivation, 2019). It affects the time and effort they devote to learning, the way they seek help or support when they are struggling and how they will interact and participate actively in everyday class. If students aren't motivated, it is hard, or maybe impossible, to boost their academic performances regardless of how good the teacher or the school curriculum is. Students who lack interest or motivation will see no value in the course or its content, regardless of the objective value of an activity or topic, as stated in the released syllabus of Carnegie Mellon University (2022).

Correspondingly, Walden University (2022) stated that Science learning in today's generation is shaping according to preparation to overcome scientific breakthroughs. Hence, learning Science helps hone individuals' capability to solve problems, answer inquiries, and collect evidence for shaping young minds afterward, benefiting Science and technology.

Students' academic performances are always associated with motivation to demonstrate willingness and interest to the academic pursuits they do. It should be noted that motivation is essential in learning because it significantly explains academic performance. Motivation is a critical component of academic success. Furthermore, motivational behaviors are crucial to students' academic achievement because they help to determine the extent to which students will consider, value, put in the effort, and show interest (Gbollie, 2017). Science learning is relatively engaging the students to beneficial and meaningful education and exposes them to conditions that give them a constant energy of curiosity to sustain science practices. In relevance, students' metal cognition must be reshaped towards academic success and attain the required capabilities through science instruction (Dogomeo & Aliazas, 2022).

Motivation encourages or persuades someone to do something because they have a burning urge to do so. Certainly, motivation is considered to be a significant factor in academic success since it energizes and drives behavior toward achievement (Steinmayr, 2019). Since the pandemic began, there is a sudden shift in learning mode. Most universities and schools shifted to modular and online learning or blended learning. In this learning method, students' study at home, where the lessons are mostly delivered online.

Being constantly motivated is a big challenge to all, especially in new learning modalities. According to Omodan et al. (2021), encouraging students to succeed during the implementation of the "new normal" is a significant concern because the goal of the modified teaching-learning during the pandemic is for students to succeed in school. And the big challenge here is getting the students motivated enough to cope with the new system, learn, and succeed independently. This is critical to their academic performance and overall success. Self-study and accomplishing activities and performance tasks alone seem like losing the motivation to give the best output and just being fine with the output they produce. Dealing with simultaneous work without enough courage because students feel they are fighting alone and they only rely on their selves triggers the level of their motivation to study in different ways.

It has been pointed out that motivating students to learn in school is a major challenge for educators. Although there are studies conducted in past years, the motivational content of these works is mostly focused on finding and giving strategic approaches on how they will keep the students active in the classroom and engaged in the activities the instructor has given. One of today's challenging issues about learning, given that, student is in self-paced learning or online learning, is keeping them motivated to be successful in school and afterward in their life. To achieve the sole objective, teachers and educators must increase the motivational level and identified factors for students to keep striving and do their best in school in various ways (Adamma, 2018).

Internal factors and external factors affect the performance of the students (Relianisa, 2020). Some become unmotivated, which leads to poor academic performance. They are more likely

to have difficulties in comprehending lessons or have low critical thinking and difficulties in solving problems and having a hard time focusing on studying, given that science is filled with concepts, theories, and mathematics. In fact, according to the analysis of Delgado et al. (2021), about 46% of the science and engineering students declared to have thought of dropping out because of being unmotivated, followed by having poor academic performance. Meanwhile, Chuter (2020), asserts that motivated students appear to have good and exemplary academic performance. They enjoy the challenge of thinking behind the lines, cano think outside the box, and appear more intelligent.

Notably, Science learning motivation is thought to be one of the most important factors in fostering a lifetime interest in science and increasing students' scientific literacy. Furthermore, motivation has been shown to impact students' learning and influence their science achievement. In fact, according to Chan and Norlizah (2017), in the field of science education, motivation has been recognized as an important construct. The majority of literature also indicates that motivation is crucial in science learning. Science learning is effective because students are motivated to learn about science. Likewise, Caves (2011), students' motivation is important in science learning because it promotes students' construction of their conceptual understanding of science (Siudad & Aliazas, 2022). Unfortunately, numerous studies have indicated that students' attitudes, interests, and enthusiasm for science learning deteriorate over time in school.

Laguna State Polytechnic University- San Pablo City Campus has performed so well in different aspects and has provided quality education and services for its stakeholders. More than that, despite the sudden changes in the educational platform, the university is not shaken, and they were able to provide continuous education in different ways. They continue to give the greatest extent of concern to the students and continuously provide solutions to keep them on track and continue learning with them. LSPU-SPCC accommodates a student population of over 6000 and has provided excellent graduates over the past years. Correspondingly, in this time of the pandemic, the university, LSPU, is looking out for the students' situations. Different research has been conducted that shows this pandemic's effect on students. The readiness of the students in the shift of learning is also their concern, wherein Andal et al. (2020), students' readiness for online learning is only above average. Hence the study of Erlano-De Torres (2021), revealed that all students are equipped for online learning, and their gadgets can access applications and students.

Correspondingly, the university conducted a study regarding the motivation and performance of its stakeholders. However, these stakeholders are non-teaching personnel. This study conducted by Manalo and Apart (2021), reveals that rewards, promotions, salaries, and quantity and quality of work are the factors that motivate workers, which has a significant relationship with their job performance. This shows good indicators to promote quality services. However, no other study has been conducted on the motivational approach that addresses students, especially in learning science.

Furthermore, other existing research expressed the significance of motivation in an individual's performance level. Still, they mainly focus on businesses and work to increase their employees' performance levels. Bot Blog (2021) expressed that many organizations use extrinsic

incentives to inspire staff, such as prizes for perfect attendance, bonuses for enhanced productivity, benefits, and pay raises. An intrinsic motivation such as being passionate and task value also increase employee performance. It also found that positive feedbacks increase the performance of employees as they can improve their working skills.

Numerous factors have been recognized to influence students' motivation to learn science. However, the issue appears to be vaguer regarding the student's motivational factors in science learning. Hence, there is an increasing need for understanding the factors that affect the satisfaction and learning progress of the students. For this reason, the researcher is motivated to assess some motivational factors in increasing the learners' satisfaction and obtaining positive academic performance in science learning.

Satisfaction is their perception of their consumption results compared to a benchmark of pleasure versus unsatisfaction. In higher education, variety of factors influence students' academic achievement. Teachers always measure the academic performance of the students to see their progress. This enables them to assess students' levels of knowledge as well as the success of their teaching methods and potentially provide a measure of student happiness (Hijazi& Naqvi, 2006; Martirosyan, 2014). In both academic and non-academic contexts, satisfaction is a well-researched topic. In academic contexts, student satisfaction data assists colleges and universities in adapting their curricula to the demands of shifting standards for jobs and opportunities. It's crucial to assess efficacy indicators and students' satisfaction with each institution, department, and program curriculum to make it more effective and responsive (Tessema, 2012).

## 2. Literature Review

### 2.1 Motivation and Motivational Factors

To begin with, motivation is the power that propels us toward our objectives. Motivation is one of the most critical components in achieving anything in life. Motivation encourages a person to go above and beyond to achieve success. A motivated individual seeks to attain the objective, is persistent and attentive to the task, likes running for the goal, views achievement as positive reinforcement, and employs techniques to achieve the goal. As a result, motivation can be defined as an action directed toward a particular purpose (Solak, 2012).

People have motivations to keep moving on track to achieve a goal or an objective in any task or work. This is what makes them different from what they were before and makes people goal-oriented. Motivation is the fuel to ignite the desire, the urge and the power within to continue striving for what people want to get in their life. As stated, it is an action that directs people to the purpose they set.

Motivation is a response to a stimulus, and not all stimuli elicit the same response. In science, motivation has been linked with hormones that the body releases the, dopamine. Dopamine has something to do with the pleasure feeling of a person. Dopamine is released before receiving a reward.  his neurotransmitter

At this point, motivation is the feeling that came from the head and sends signals to react to certain things. It shows that motivation is not purely a feeling from the material to be received.

The motivation level of a person is not always the same. The response to something also varies depending on what your brain signaled. Hence, people react to certain stimuli and probably act to predict the possible result. It either does well in a task or does it poorly. The reaction words to a stimulus may increase the possibility of a reward or decrease the probability of punishment.

However, people tend to look for ways to increase motivation levels, and that is when people seek motivators. Mostly, motivations rely on punishment or rewards. Various motivators or factors have been identified, including intrinsic motivation, extrinsic motivation, task value, self- determination, self-efficacy, and test anxiety.

According to Velayutham and Aldridge (2012), students' learning in science was also influenced by their learning goal orientation, task value, and self-efficacy in a large way. Scientists have discovered that educators may plan and implement successful teaching tactics that increase students' self-control and motivation while learning science.

All but the most influential motivational factors in learning are self-efficacy, intrinsic motivation, task value, and control of beliefs. These factors impact the individual on how they regulate their selves in learning and direct the learners to what extent they are motivated to finish or do a task. It is related and has a significant connection to how learners become successful in their tasks or performances. Moreover, test anxiety as part of motivational factors mostly has a separate impact or different results as it perceives negatively. Hence, test anxiety is mostly behind all the factors since it doesn’t ignite the desire of the students towards successful learning.

Motivational behaviors are essential to students' academic achievement because they help to determine the extent to which students will consider, value, put in the effort, and show interest (Gbollie, 2017). It is the doorway to active engagement and active learning, and if it is continuously nurtured and valued, it has a great and positive impact on the student's academic performances. According to the ANOVA results, student motivation for learning science has a considerable impact on academic achievement. Significantly positive correlations between many aspects of motivation for science study and success were discovered by researchers (Rana, 2015)

Motivation is one of the most important internal factors affecting pupils' academic achievement. In addition to coming from within the students, motivation can also come from others or the surroundings. After all, it can produce stimuli that thrill pupils, making them motivated and enthusiastic about studying all the time (Mauliya, 2020).

However, the study findings of Llabao et al. (2016) show no significant relationship between the intrinsic task value, self-efficacy, test anxiety, and learning beliefs and the academic performances of their respondents in science subjects. Except in extrinsic motivation, it shows that the motivational factor has nothing to do with the students' academic performance in science learning. It does not matter how motivated you are while you are studying. In fact, Cleary (2014) also asserts that there is uncertainty regarding the connection between motivation and academic success. This means that there is still a claim that motivational factors do not clearly or directly affect the students' academic performance.

**Intrinsic Motivation**

Intrinsic motivation is the act of doing something for no apparent external gain. In other words, intrinsic motivation deals with doing something for the sake of doing it rather than for external rewards. In essence, the reward is not obvious, and the action is rewarded by itself (Sennet, 2021).

According to Cherry (2019), some factors increase intrinsic motivation or can be classified as a challenge, control, cooperation and competition, and curiosity. It is simply the motivators are coming from the self. The actions are not focused on what has been given as a reward or from the outside. The feeling of satisfaction within the self, delightfulness, and enjoyment are the primary "reward" of doing or accomplishing a task or an action. The person does such action entails fun rather than pressure. People seek personally important goals, and when achieving the goal is attainable but not guaranteed, they are more driven. When performance feedback is available, these goals may also affect their self-esteem. Likewise, they gain satisfaction as they feed their curiosity and learn more about things, both in physical and cognitive curiosity.

Mathewson (2019), asserts that intrinsic motivation is also highlighted in education. Inspiring pupils' intrinsic motivation to learn is a more effective method for attracting and retaining their attention. It's even more than that. When students are motivated in this way, they learn more effectively. They put in more effort and take on more difficult assignments, and as a result, they get a deeper knowledge of the subjects they study. This motivation motivates the students, gives them a responsibility to learn on their own, and gives them an opportunity for self-evaluation and self-reflection. When they are intrinsically motivated, they likely learn better as they faced the real-word on their own and can solve problems. Additionally, they track their own progress as they go on with their learning; exert efforts, and they can choose what learning style or strategy they will take to improve their learning and achieve their academic goals. This only implies that intrinsic motivation greatly impacted the students to be great performers on their way.

According to Lancaster (2012), intrinsic motivators have a far bigger impact on engagement; people achieve great things because of their intrinsic interests. Every student in the perfect class would be working on something constructive, exciting, and interesting all of the time. Of course, that is an ideal, but ideals can serve as a guide. Only students who are intrinsically motivated to be engaged in school will find their experience to be truly challenging, enriched, energetic, and ultimately fulfilling. Intrinsically motivated means that students are motivated by their own and they are gaining a self- fulfillment. Working with interest can give a consistent excitement that pushes the student to work better. With that, students would be able to give the best they can and would be able to feel and conquer the true essence of being in-challenge and the satisfaction of completing a task

**Extrinsic Motivation**

According to Tambo (2012), extrinsic motivation is a type of motivation that comes from beyond the learner. Extrinsically motivated children study because they fear punishment from their parents or teachers. A youngster may also learn because they expect to be rewarded with grades, compliments, and prizes. Extrinsic motivation is required for students who have lost

interest in learning. This greatly affects the students' interest to concentrate and become enthusiastic about their work. This kind of motivation is suitable for influencing students to perform and succeed academically. Extrinsic incentive encourages effort and performance. Rewards provide positive reinforcement for the desired behavior.

Moreover, this type of motivation is mostly not viewed alone, compared to intrinsic motivation, which can mostly stand alone. Extrinsic is mostly paired up with intrinsic as researcher findings revealed that they might appear together when motivating students. A study revealed the multiplicative effect of these two variables as an extrinsic incentive was detrimental to academic performance for students with high intrinsic motivation. On the other hand, extrinsic motivation assisted pupils with poor intrinsic motivation to improve their academic performance (Liu, 2020).

This motivation applies when students losses their interest or have a low energy of engagement to the task or activities. Though this motivation has low for learners with high intrinsic motivation, it still contributes greatly to achieving good academic performance for students with low intrinsic motivation. In this case, these two variables are related to each other as they assist each other in helping students to achieve academic success.

According to (Meadows-Fernandez, 2018), extrinsic motivation always has a positive outcome. A 2014 meta-analysis found that extrinsic motivation has negative consequences only in extremely narrow contexts. However, for the most part, it may be a powerful motivator. Extrinsic motivation may have detrimental long-term consequences depending on how it is applied. When utilized in conjunction with other sources of incentives, it’s likely to be effective.

Extrinsic is found to be negative when it is overly used or not used properly. It said to be that this type of motivation overpowered the intrinsic motivation of the learners. The more extrinsic motivators are given, like rewards and prizes, the students tend to lessen their interest in the activity, which happens as over-justification in internal motivation. But, those researchers still found extrinsic motivation as a good motivator for students with lower intrinsic motivation.

**Personal Relevance**

According to Stuckey et al. (2013), One of the essential concepts in scientific education reform is 'relevance.' Policymakers, curriculum developers, science education researchers, and instructors utilize it frequently. Many policy documents based on international surveys have suggested in recent years that scientific education is frequently perceived as unimportant for and by students (particularly at the secondary school level). According to the literature, one of the most important purposes of science education should be to make science learning relevant to both the learner and the society in which they live. However, most people do not understand what "relevant" entails. The term "relevance" is employed in various ways, as this literature survey demonstrates.

In teaching and learning science in schools, pursuing disciplinary validity and personal relevance cause difficulties that should be acknowledged and handled. The fundamental connection point is personal relevance and standard school science (Kapon, 2018).

Students thought science was moderately beneficial but didn't always see how helpful their everyday course activities were (Schmidt, 2019). Teachers differed in the students' perceptions of the depth and breadth of linkage between science subjects and students' lives, and their ideas were substantially reflected in the relevance claims they made while teachingStudents were more likely to regard daily information a useful and had higher evaluations of science usefulness when their teachers made more frequent relevance comments. On the other hand, the study of Yong and Chow (2013) reveals that when it comes to motivational factors such as personal relevance, students perceived learning combined science is not highly relevant to their personal goals, and there is only a low significance level or practical value to them. This only means that they did not see learning combined science as helpful and useful to them in their career or personal goals in life. They couldn't fully see the value of science in their everyday lives.

**Self-efficacy**

According to the study, self-efficacy appears to be the most crucial motivational element among students. This implies the need to shift to a growth mindset style of teaching that makes science relevant to everyday life and that the intervention program had a substantial impact on the students' engaged (Ghasem, 2021).

Being acquainted with the value of the learning or science learning makes the students more motivated to learn as they see the relevance and importance of that learning in their life. With the coordination of self-efficacy, they are moved to keep on learning and completing and finishing their task as they believe that they can do things on their own and they learn from it and that knowledge can be used or applied in their life.

According to socio-cognitive theory in the review of Mete (2021), self-efficacy affects people's lives in various ways, including their objectives, decisions, resilience in the face of adversity, and the kind of tasks they take on. In essence, self-efficacy explains how people act, think, and feel. Their perceptions of self-efficacy influence individuals' task value growth process. If pupils have good thoughts about finishing work, the value for that task will increase. The difficulty of the work is considerable. A higher level of self-efficacy equates to a higher task value. According to the study's findings, self-efficacy and task value substantially impact learning scientific attainment targets. Self-efficacy and task value influence student mastery and performance approach goals. Furthermore, task value plays a role in the relationship between self-efficacy and approach goals.

If students believe that they can and they a sense of self-efficacy, they tend to work more and work harder and believe that they will succeed in that, and students will give more value to a task they do. This only implies that task value and self-efficacy are always together and have a significant relationship. The way students think positively about a task, the higher the value it; in that case, their performance will kick into a positive outcome. In a science class, the impacts of students' self-efficacy on approach goal orientation were explored through the mediated impact of task value.

Further, Sanli (2021) some studies looked into how self-efficacy beliefs influenced the outcome when it comes to the relationship between task value and test anxiety. The results demonstrated

that self-efficacy attitudes moderated the link between task value and test anxiety. Increased self-efficacy attitudes lowered exam anxiety among students. As a result, children should be provided with opportunities to participate in complete, successful, and appropriate experiences that will help them increase their self-efficacy perceptions.

By this study, this only means that self-efficacy has a connection to task value and even in test anxiety. Hence, the link between them shows that they always work together and to have higher level of task value, self–efficacy should be enhanced and improved as it helps the students have an opportunity to successful learning. These two factors also reduced the test anxiety of the learners, making them more competitive and confident with themselves and having a positive point of view towards their performance or task.

Jones et al. (2015), and Sánchez and Bedis (2015) found that task value is related to a person's attention level. The task regarded as essential, useful, fascinating, or beneficial arouses and concentrates attention in this way. For example, the more useful arithmetic exercises are regarded to be in passing a test, the more attention they will receive. The level of effort, tenacity and activity selection are all influenced by self-efficacy. As a result, a high level of self-efficacy would focus attention in class, enhancing efforts to focus on the task's objective needs and in control of distracting stimuli.

In line with this, giving the time and effort to perform and complete a task is associated with self-efficacy. The high attention to the class is a result of having high self-efficacy. They believe that they can for the attainment of a good positive outcome or for the sake of complying with the task. With this, they will pay more focus and attention, which shows task value and indicates that they are interested and less boredom with the class. The relationship between these two is somehow inseparable as they always come together, and one comes after one. And in the literature that has been presented, these two are always paired up with each other as they both need to have a good performance and positive learning outcomes.

**Self-Determination**

According to Wood (2019), Self-Determination Theory (SDT) is a sociocultural motivational theory that has been widely used in schools to help teachers develop evidence-based practice by demonstrating that satisfying three basic psychological needs for relatedness, competence, and autonomy has a positive impact on students' motivation to participate in classroom-based learning activities. SDT has proven to be a useful tool for determining why certain critical classroom behaviors and variables impact student engagement more than others.

"Volitional behaviors that enable one to operate as the principal causal agent in one's life and maintain or improve one's quality" is how self-determination behavior is defined. Successful students with SLD have better self-determination skills, practice more goal-oriented actions, and are more self-aware, according to studies (Richman, 2014).

This implies that self-determination is the power of making a choice to gain improvement. This factor helps the students with a specific learning disability (SLD) as they having a difficulty in achieving their academic goals. With this, they were able to have a control or autonomy over themselves, increasing their self-awareness, control and goal achievement.

Ju et.al. (2017) state that there are several empirical researches looked into postsecondary students with impairments' self-determination and academic experiences. The findings revealed that self-determination abilities are essential for postsecondary students' academic achievement. The researchers also highlighted the need for interventions to promote self-determination who found that increased self-determination was linked to better academic and transition results.

Research about self-determination is usually linked with students with disabilities. It found that self-determination is effective for students with impairment to have improvement with their academic performance and also improvement with their conditions. Being determined to help them to accommodate the learning and to have an identity development as they identify the key components in self-determination to be successful in life, it includes self-awareness and setting goals.

**Assessment Anxiety**

Anxiety is a typical occurrence that is a prevalent cause of poor academic performance among students worldwide. An average amount of anxiety is important in keeping hardworking people accountable for what they have to achieve. It is an undeniable truth in human life that influences an individual's accomplishment in various scenarios (Dawood, 2016).

Anxiety is a mental disorder that usually affects a person's behavior towards something or how they respond to the stimuli. For instance, students with anxiety experience challenges in they will react to their environment or to the learning they acquire. It may affect positively or negatively, but it usually turns out that anxiety is why students have a low-performance level (Fideli & Aliazas, 2022).

In line with this, test anxiety is a psychological disorder in which students are distressed and anxious when taking a test. Students must experience some anxiety throughout tests in order to stay focused and study. Anxiety will not aid a student's performance; rather, it will have a negative impact on academic performance (Oluoch, 2018). And a study by Von der Embse and Witmer (2013) looked into the concept of "bad relationships", between learners' test anxiety and test performance." And you'll discover that the greater the number, the better. Low test performance was linked to test anxiety. The reduction in test anxiety will have a positive impact, allowing the student to concentrate on the exam and improve their grades

This only shows that anxiety also helps the learners to become motivated with their studies, noting that only a small amount or only a certain level of anxiety. It implies that certain critical situations boost the motivation of the students and that help them to do well and be good at their performance. But on the contrary, too much or high anxiety brings students to a a critical point where they do nothing good with their studies. This anxiety level only impacted their performances negatively. And number of studies have identified text anxiety as one of the leading causes of student underachievement and poor performance at various stages of their educational careers.

The majority of the study's findings point to a negative correlation between test anxiety and academic accomplishment. According to these data, an increase in test anxiety affects pupils'

academic achievement (Oluoch, 2018; Dodeen H. M., 2014; Shishigu, 2018; and Syokwaa, 2014). However, in their research, Kavakci et al. (2014) found no link between test anxiety and student academic achievement. Several studies have examined gender differences in test anxiety and discovered that girls experience more overall test anxiety than males (Syokwaa, 2014). Text anxiety affects accomplishment along with other characteristics such as motivation to learn, ability to profit from formal education, and gender, as evidenced by the reasons presented above and the findings of the studies provided.

Notably, not all-time test anxiety negatively impacts students' academic performance. Thus, the level of test anxiety depends on gender, where girls mostly have high anxiety levels, and boys have lower anxiety levels. This implies that test anxiety is somewhat positively impacted and linked to the student's motivation level to accomplish tasks and later on have a positive academic achievement.

Meanwhile, based on the analysis of Akshaya, Jeeva Ninan, and Sonnet (2021) Thomas's sort of performance anxiety is test anxiety. When the stakes are high, and a decent grade is on the line, students might get so concerned that they cannot perform at their best. While test anxiety can be extremely distressing for those who suffer from it, many students do not. It's easy to overlook the fact that it's extremely prevalent. Anxiety and nervousness are entirely typical responses to stress. However, for some individuals, this dread can become so overwhelming that it interferes with their ability to perform successfully. Poor study habits, poor test performance, or an underlying anxiety condition can cause a test failure.

While students have the abilities and knowledge to perform effectively in these situations, their fear interferes with their ability. Though, a little nervousness can be beneficial, as it makes individuals feel cognitively awake and prepared to face the challenges that an exam presents, but only at a certain point. When the arousal of the stress cross over the line, then the performance of the students will be affected. The concentration will be destructed, which could make the students struggle. And when that happens, losing in focus and forgetting the information only added to the anxiety they feel over the exam or test.

### 2.2 Science Learning

Walden University states learning science has personal benefits in addition to potential scientific advances, such as expanding our abilities to ask questions, obtain intelligence, formulate and analyze our ideas, address problems, and apply what we practice. More importantly, science provides a strong foundation for building confidence, enhancing communication skills, and understanding the world around us—a world that is undeniably transformed by science and technology.

Teaching science is more likely focus on the cognitive domain which includes the intellectual skills, cognitive strategy and verbal information. Since, science contributes a lot in the innovation of the future; these areas are frequently the focus of teaching; the ability to solve problems, have a high critical thinking, acquire information, organization, elaboration, and scientific reasoning, together with the psychomotor domain which is the application in the laboratories and in real life situations. The goal is to produce innovators that future needs,

hence, affective domain is still taught but in least point (Aliazas et al., 2021). Attitude towards the subject is still important in order to learn it well and have encourage to continue learning.

According Vieyra R.E., Wenning, C.J., (2020) the development of scientific processes and intellectual skills, such as critical thinking and scientific reasoning, is part of a holistic physics education. Individuals who are scientifically literate have these qualities. Using an inquiry-based approach to teaching, in which students build knowledge primarily based on their experiences, teachers can best assist students in learning these techniques. Implementing physics instruction based on the Levels of Inquiry Model for Physics Teaching can help teachers teach and improve students' intellectual abilities

**2.3 Motivational Factors and Learning Components**

**Intrinsic and Extrinsic Motivation and Learning Components**

More intrinsic motivation leads to higher levels of satisfaction and involvement in daily activities (Beachboard C. , 2020). Students like being engaged in class as their intrinsic motivation grows. They become more engaged and satisfied with their teacher as well as the way the lessons are taught and carried out. They actively contribute to the conversation while growing competence, independence, and purpose.

Moreover, synchronous learning is one component of being at the students' convenience. Intrinsic motivation is the force that amplifies students' response to the assignments that are provided to them (Bailey D. A., 2021). Intrinsically and extrinsically motivated students are more likely to be pleased with the educational process and find it useful as they hone specific skills, including speaking and writing. According to Deci and Ryan (2012), after becoming motivated to finish a project or an activity, a person would eventually focus all of their time, energy, and attention on learning new things. Lui (2020) states that extrinsic mostly paired up to intrinsic as researcher findings revealed that they may appeared together when it comes to motivating students.

Correspondingly, according to Pozón-López et al (2020), behavioral .'s model study from 2020, there is a substantial correlation between participants' satisfaction and autonomous motivation when using technology in their classes. Since they view it as comfortable for them to learn while sitting at home in this environment, students who are naturally driven are satisfied to pursue their education online (Panergayo & Aliazas, 2021). Because they are genuinely motivated, students are better equipped to impart and receive knowledge, which affects the course's quality, usefulness, and efficacy.

**Personal Relevance and Learning Component**

According to study’s results, it is important to enhance students' learning and boost their satisfaction with learning through personal relevance, instructor support, active learning, and authentic learning. Student satisfaction is most strongly predicted by personal relevance. This result suggests that online learners are generally better happy when they can relate the course material to their own personal experiences. This finding indicates that learner-centered online learning environments should incorporate students' outside-of-classroom knowledge and skills (Ellis, n.d)

In line with this, Gopal, et.al., (2021)asserts that reconsidering the lesson ideas is a must because research indicates that learning relevant to one's life leads to successful learningThe relevance of the students' learning give a long -term learning because they can relate it on their lives. Building brain connections and long-term memory storage is aided by meaningful, pertinent activities that emotionally engage children and make links to prior knowledge.

Students need to feel a personal connection to the subject, whether by emotionally engaging them or by connecting the new knowledge and what they have already learned. Relevance is a crucial factor in intrinsically motivating student learning. Without it, students risk losing interest, disengaging, and motivation to attempt. Students are given a vital opportunity to connect the course material to their personal experiences and the world outside of school by establishing both personal and real-world relevance, which helps them internalize the information in line with their preexisting assumptions and ideas. Relevance is crucial in creating a learning atmosphere where students can build theironceptual frameworks for the course material (Briggs, 2014).

**Self-efficacy and Learning Component**

Strong self-efficacy enables students to picture success scenarios that offer encouraging resources and performance feedback. Therefore, compared to students with low self-efficacy, these students frequently claim to feel more satisfied with the teaching process (Doménech-Betoret F, 2017 ). As the motivational level in self-efficacy increases, the satisfaction towards the teaching methodology also gets higher. The learners must have belief in the learning process as they become more independent on learning. However, this belief affects how they view the teaching process as it includes the strategies and methods to used.

Correspondingly, Aldahahi, et.al., (2022)argue on their study that the majority of students expressed satisfaction, demonstrating a link between self-efficacy in online learning domains and positive experiences with online learning. Further evidence points to the idea that a strong sense of self-efficacy in online learning improves students' satisfaction with the online learning environment.

## 3. Methodology

The research design used in the study is a descriptive formulation approach to measure the variables and keep evidence for the study. Meanwhile, a correlational approach is employed in this study to give evidence of the relationship between the two variables: motivational factors and the final grades of the students; and the motivational factors and the learner's satisfaction.

According to Mc Combes (2020) Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. The researchers used this method which they think that it is suitable and appropriate to get the intended outcome of this study. Likewise, this design is to describe the result of motivational factors that may affect the learners' performance of the students in this time of pandemic. Likewise, correlational was used to determine the degree of relationship between the two variables.

The researchers used the Central tendency treatment specifically the average weighted mean (mean) to measure the motivational factors that affects the students learning. Hence, the same

treatment is employed in getting the satisfaction scale of the students towards the learning component. In lined with this, the researcher also used the standard deviation to identify how cluster the answer or opinion of the respondents. Meanwhile, Pearson-R Correlation statistical treatment is used to determine the significant relationship of motivational factors to the students' final grade.

The primary respondents are from the College of Teacher Education as researchers believe that students under the CTE, having twenty-three (23) from first year, seventeen (17) from second year level, and twenty-five (25) from the third-year level, giving a total of sixty-five (65) respondents. The respondents are purposively chosen by the researchers as they believed that these students will give the primary data necessary for this study.

Correspondingly, the adapted questionnaire from Science Motivational Questionnaire (SMQ-II) developed by Glynn, et al., (2011) was used to measure the perceived motivational factors of the students. It is consisting of six categories including the intrinsic motivation, extrinsic motivation, personal relevance, self-efficacy, self-determination, and assessment anxiety. Further, a researcher-made questionnaire which is used to measure the satisfaction level of the students towards the learning components. The instrument consists four categories: satisfaction level for teaching method, course content, and learning environment. The instruments were subjected to thorough validation by the internal and external validators with characteristics of having expertise in the same study subject. In addition, the instrument also underwent pilot testing to check its reliability and see the consistency of the data gathered which gained a Cronbach's alpha with excellent internal consistency.

## 4. Results and Discussion

**Table 1: Intrinsic Motivational Factor as Perceived by the Respondents**

| Statements | Mean | SD | Verbal Interpretation | Equivalent Motivational Level |
|---|---|---|---|---|
| 1. Learning science is easy. | 3.22 | 0.94 | Slightly Agree | Moderately Motivated |
| 2. Learning science is interesting. | 4.52 | 0.64 | Strongly Agree | Extremely Motivated |
| 3. I am curious about discoveries in science. | 4.66 | 0.64 | Strongly Agree | Extremely Motivated |
| 4. I enjoy learning and doing science very much. | 4.18 | 0.73 | Agree | Motivated |
| 5. I like reading information about science to acquire knowledge. | 4.35 | 0.73 | Agree | Motivated |
| 6. Experiments and discoveries make learning science more exciting. | 4.62 | 0.65 | Strongly Agree | Extremely Motivated |

| | | | | |
|---|---|---|---|---|
| 7. I like learning science because I can manage activities and lessons clearly. | 3.95 | 0.80 | Agree | Motivated |
| 8. I prefer science activities that are really challenging for me to learn new things. | 3.97 | 0.88 | Agree | Motivated |
| 9. Learning science is satisfying when I try to understand the content thoroughly. | 4.32 | 0.81 | Agree | Motivated |
| 10. I give more focus and attention in understanding science to achieve higher grades than before. | 4.18 | 0.73 | Agree | Motivated |
| **OVERALL** | **4.18** | **0.56** | **Agree** | **Motivated** |

***Legend:*** *4.50- 5.00- Strongly Agree/Extremely Motivated, 3.50- 4.49- Agree/ Motivated, 2.50- 3.49- Slightly Agree/ Moderately Motivated, 1.50- 2.49- Disagree/ Unmotivated, 1.00 – 1.49- Strongly Disagree/Extremely Unmotivated*

Table 1 shows the overall mean rated as Agree with an overall mean weighted mean of 4.18 and a standard deviation of 0.56. This proves that students are motivated and genuinely engaged in learning science without getting the reward. They are motivated by their selves since learning which means most of the time, they are all by themselves too. Lancaster (2012) suggests that students are encouraged by their own gaining self-fulfillment. Working with interest can create consistent excitement that pushes the students to work better.

Meanwhile, with the highest mean of 4.66 with a standard deviation of 0.64 as interpreted as strongly Agree, the respondent was curious about scientific discoveries. Since science is full of concepts, theories and experimentation, the study students are found to be motivated when the students are engaging in discoveries. Their curiosity opens their mind to discover more to understand the concepts better. Being curious is like being intelligent, asking and finding answers to question that makes learning more effective. Therefore, if a teacher can pique students' interest in a subject, they are already eager to learn, they will be better equipped to master subjects they would typically find boring or challenging and increases the effectiveness and fun of learning (Stenger, 2014).

However, the lowest mean of 3.22 and standard deviation of 0.94 as interpreted as slightly Agree that learning science is easy. This means only a part of the students agreed that science is easy, which is supported by Vahia (2014) that learning science is “too difficult” and learning other subjects like language is much easier than science.

**Table 2: Extrinsic Motivational Factor as Perceived by the Respondents**

| Statements | Mean | SD | Verbal Interpretation | Equivalent Motivational Level |
|---|---|---|---|---|
| 1. Getting good grades in science gives me satisfaction. | 4.46 | 0.75 | Agree | Motivated |

| | | | | |
|---|---|---|---|---|
| 2. I actively participate in science class to get notice by my classmates and teacher. | 3.11 | 1.06 | Slightly Agree | Moderately Motivated |
| 3. I perform well in science to get praises. | 2.82 | 1.12 | Slightly Agree | Moderately Motivated |
| 4. I motivate my group to actively participate to get extra points. | 3.48 | 1.08 | Slightly Agree | Moderately Motivated |
| 5. During science discussion, I become more active if my teacher gives extra points for recitations. | 3.91 | 0.91 | Agree | Motivated |
| 6. During science discussion, I always raise my hand because I see most of my classmates raise their hands | 2.82 | 1.09 | Slightly Agree | Moderately Motivated |
| 7. During science discussion, I become competitive to get high grades. | 2.94 | 1.03 | Slightly Agree | Moderately Motivated |
| 8. It is important to me to be praise by parents, classmates, and teachers. | 2.86 | 1.21 | Slightly Agree | Moderately Motivated |
| 9. Gifts and rewards from my parents boost my confidents to do well in science. | 3.18 | 1.22 | Slightly Agree | Moderately Motivated |
| 10. I always aim for a high grade because my parents give me extra allowance for doing well. | 2.58 | 1.31 | Slightly Agree | Moderately Motivated |
| **OVERALL** | **3.22** | **0.73** | **Slightly Agree** | **Moderately Motivated** |

***Legend:*** *4.50- 5.00- Strongly Agree/Extremely Motivated, 3.50- 4.49- Agree/ Motivated, 2.50- 3.49- Slightly Agree/ Moderately Motivated, 1.50- 2.49- Disagree/ Unmotivated, 1.00 – 1.49- Strongly Disagree/Extremely Unmotivated*

Table 2, the table show the overall mean rated 3.22 with the standard deviation of 0.73 interpreted as slightly agree, this mean in some way extrinsic motivation keep the students moderately motivated in their learning in this type of setting. Notably, an indicator with the highest mean of 4.46 and standard deviation of 0.75 interpreted as Agree which the respondents want getting a good grade in science to give their satisfaction. Grades plays a role in motivating the students to keep going and perform well in their class. In fact, the most prevalent illustration of an extrinsic or external motivation that we might use to advance learning is grades. Many people think that grades can serve as motivation for pupils to study harder and learn more, and that the more difficult the grading scale, the better the outcomes (Do grades motivate students?, 2017).

According to Furnham (2012), money is a straightforward, efficient, and effective incentive. Money naturally drives individuals to work hard, and having more money motivates people even more. Competition is natural, and when better work is rewarded with money, everyone's

productivity and standards rise, but also pointed out that money is not always a motivator especially when it is amounted so little. On the contrary, the lowest mean of 2.58 standard deviation of 1.31 is interpreted as slightly agreeing that the respondents always aim for a high grade because their parent give them allowance for doing well.

**Table 3: Personal Relevance Factor as Perceived by the Respondents**

| Statements | Mean | SD | Verbal Interpretation | Equivalent Motivational Level |
|---|---|---|---|---|
| 1. Learning science is relevant to my life. | 4.51 | 0.62 | Strongly Agree | Extremely Motivated |
| 2. Learning science will help me to have a good career in the future. | 4.52 | 0.62 | Strongly Agree | Extremely Motivated |
| 3. Learning science will give me potential career advantages. | 4.52 | 0.66 | Strongly Agree | Extremely Motivated |
| 4. Learning science will give benefits to my personal goals. | 4.37 | 0.72 | Agree | Motivated |
| 5. Learning science makes my life meaningful. | 4.38 | 0.70 | Agree | Motivated |
| 6. Learning science makes me aware in my environment. | 4.58 | 0.56 | Strongly Agree | Extremely Motivated |
| 7. Learning science can save me in some situations someday. | 4.51 | 0.62 | Strongly Agree | Extremely Motivated |
| 8. I can use what I learned from science in my daily life. | 4.52 | 0.64 | Strongly Agree | Extremely Motivated |
| 9. Learning science taught me how to better took care of my health. | 4.35 | 0.78 | Agree | Motivated |
| 10. I think I can use scientific computations in my career someday. | 4.08 | 0.82 | Agree | Motivated |
| **OVERALL** | **4.44** | **0.54** | **Agree** | **Motivated** |

***Legend:*** *4.50- 5.00- Strongly Agree/Extremely Motivated, 3.50- 4.49- Agree/ Motivated, 2.50- 3.49- Slightly Agree/ Moderately Motivated, 1.50- 2.49- Disagree/ Unmotivated, 1.00 – 1.49- Strongly Disagree/Extremely Unmotivated*

In table 3, the overall mean rated 4.44 and standard deviation of 0.54 interpreted as Agree. This revealed that students mostly rely their motivation in personal relevance. If they see that the lessons are relevant to their life, they become motivated to learn. Relevance is a crucial factor

in intrinsically motivating student learning. Without it, students risk losing interest, disengaging, and motivation to attempt. Students are given a vital opportunity to connect the course material to their personal experiences and the world outside of school by establishing both personal and real-world relevance, which helps them internalize the information in line with their preexisting assumptions and ideas. Relevance is crucial in creating a learning atmosphere where students can build their conceptual frameworks for the course material (Briggs, 2014).

In detail, with the highest mean of 4.58 and standard deviation of 0.56 interpreted as strongly agree, that learning science makes them aware in the environment. Almost in the universe is a science, it provides explanations for how the environment works. Likewise, it is important to develop awareness in the environment since all interact with it, through the help of science. Despite its shortcomings, science education has been shown to have a number of chances to promote environmental consciousness (Skoumios, 2013).

However, the lowest mean is 4.08 with a standard deviation of 0.82, interpreted as agreeing that they think they can use scientific computation in their career someday. The student agreed with the statement that science being incorporated into their future work motivated them to learn more. Possibly, they are taking the course because their future career is definitely in line with what they are taking now. More than that, science offers a lot of opportunities for them in the future. Learning science is like building the foundation of your career as it offers wide learning in every aspect of society, according to the University of Melbourne (n.d.).Exploring the vast array of prospective occupations that a bachelor's degree in science is the first step towards. Science graduates are appreciated by employers and find satisfying careers across a wide range of industry and government sectors.

**Table 4: Self-Efficacy Factor as Perceived by the Respondents**

| Statements | Mean | SD | Verbal Interpretation | Equivalent Motivational Level |
|---|---|---|---|---|
| 1. I believe I will receive passing and good grades in my science class. | 4.14 | 0.73 | Agree | Motivated |
| 2. I am confident I can easily understand basic science concepts. | 4.02 | 0.74 | Agree | Motivated |
| 3. I am confident I can understand complex and difficult science concepts. | 3.40 | 0.90 | Slightly Agree | Motivated |
| 4. I am sure I can do well in my science class. | 3.69 | 0.79 | Agree | Motivated |
| 5. With my skills and knowledge, I can perform experience very well. | 3.65 | 0.82 | Agree | Motivated |

| | | | | |
|---|---|---|---|---|
| 6. I can perfect my science tests and assessments. | 3.09 | 1.07 | Slightly Agree | Moderately Motivated |
| 7. I can master the skills and techniques taught in my science class. | 3.63 | 0.74 | Agree | Motivated |
| 8. I believe I can demonstrate science experiments on my own. | 3.74 | 0.89 | Agree | Motivated |
| 9. I expect that I will have a high grade with my science activities. | 3.57 | 0.73 | Agree | Motivated |
| 10. I can explain things scientifically with my knowledge and understanding. | 3.65 | 0.74 | Agree | Motivated |
| **OVERALL** | **3.66** | **0.61** | **Agree** | **Motivated** |

***Legend:*** *4.50- 5.00- Strongly Agree/Extremely Motivated, 3.50- 4.49- Agree/ Motivated, 2.50- 3.49- Slightly Agree/ Moderately Motivated, 1.50- 2.49- Disagree/ Unmotivated, 1.00 – 1.49- Strongly Disagree/Extremely Unmotivated*

This table shows the overall mean of 3.66 with a standard deviation of 0.61, interpreted as agree, which implies that students, in general, are still motivated to use their personal belief that they can do well in school. Self-efficacy helps them that they will able to do things on their extent. According to the Self-Efficacy Theory. The level of self-efficacy will determine how confident students are in their ability to complete a task or reach a goal. In contrast, the lower the level of self-efficacy, the less confident ability to complete a task.

Since grades is a good motivator, students are striving for high grades with the belief that can be able to achieve it. The self- efficacy motivation drives them to perform well and aim higher. In line with this, the highest mean of 4.14 with standard deviation of 0.73 interpreted as agree that the respondents are motivated to believed that they will receive passing and good grades in science class. However, the lowest mean of 3.09 with a standard deviation of 1.07 is interpreted as slightly agree that they can perfect in science test and their assessment. Since it has resulted that science is not that easy to learn, respondents have little doubt that they can perfect their examinations. Supported that these students have assessment anxiety (refer to table 10, which justifies the statement low average mean.

**Table 5: Self-Determination Factor as Perceived by the Respondents**

| Statements | Mean | SD | Verbal Interpretation | Equivalent Motivational Level |
|---|---|---|---|---|
| 1. I rest assured I put enough effort in learning science. | 3.98 | 0.87 | Agree | Motivated |
| 2. I assure that I am well-prepared for my science laboratory activities and assessments. | 3.95 | 0.84 | Agree | Motivated |

| | | | | |
|---|---|---|---|---|
| 3. I use effective strategies in learning science. | 3.97 | 0.77 | Agree | Motivated |
| 4. I spend a lot of time to learn science better. | 3.82 | 0.79 | Agree | Motivated |
| 5. I study hard to fully understand and apply what I've learned in science. | 3.98 | 0.78 | Agree | Motivated |
| 6. I keep seeking and trying in order to fully understand science concepts | 4.06 | 0.81 | Agree | Motivated |
| 7. I grab every opportunity that is offered and available to enhanced my science knowledge. | 3.86 | 0.79 | Agree | Motivated |
| 8. I listen very well during science discussion. | 4.11 | 0.71 | Agree | Motivated |
| 9. I keep my notes and study at least few minutes to remember what has been taught about science. | 3.94 | 0.85 | Agree | Motivated |
| 10. I try to explore things and discoveries to understand certain science concepts | 4.12 | 0.70 | Agree | Motivated |
| **OVERALL** | **3.98** | **0.64** | **Agree** | **Motivated** |

***Legend:*** *4.50- 5.00- Strongly Agree/Extremely Motivated, 3.50- 4.49- Agree/ Motivated, 2.50- 3.49- Slightly Agree/ Moderately Motivated, 1.50- 2.49- Disagree/ Unmotivated, 1.00 – 1.49- Strongly Disagree/Extremely Unmotivated*

The table show that the overall mean is 3.98 and standard deviation of 0.64 interpreted as agree. This implies that self-determination motivated the students in their learning in science. Self-determination as their ability to me make decision giving them an urge to continue learning. With the highest mean of 4.12 with standard deviation of 0.70 interpreted as agree, students try to explore things and discoveries to understand certain science concept. SDT has proven to be a useful tool for determining why certain critical classroom behaviors and variables impact student engagement morehan others (Wood, 2019). Exploration on their own promotes independent and responsibility in learning. Since this learning is in online platform, they try to explore things that helps them understand the lesson. With this initiative of being a self-directed learning the learning become effective. As Costa , Kallck, Zmuda (2022), students will be better prepared for the present and the future if they leave the schools with a greater understanding of their capacity for learning and of the people they are developing as lifelong learners. Nothing is more essential to establishing the ability to learn from both internal and external evaluation feedback than becoming a self-directed learner.

On the contrary, the lowest mean of 3.82 with standard deviation of 0.79 interpreted as agree that they spend a lot of time to learn science better. With the determination to learn better

students are motivated to spend a lot of time in learning science. Rather than wasting their time for leisure they spent time to continue learning. This is good implication for the students to be responsible their studies because studying does not end at the end of class session. Despite having a low mean, it still reflects the students' positive motivated drive.

**Table 6: Assessment Anxiety Factor as Perceived by the Respondents**

| Statements | Mean | SD | Verbal Interpretation | Equivalent Motivational Level |
|---|---|---|---|---|
| 1. I think I will fail my assessments in science. | 2.57 | 1.10 | Slightly Agree | Moderately Motivated |
| 2. I always find science test difficult. | 3.22 | 1.07 | Slightly Agree | Moderately Motivated |
| 3. I always felt nervous when taking test in science. | 3.45 | 1.00 | Agree | Motivated |
| 4. I feel uneasy during science test because I think my teacher is constantly watching me. | 3.12 | 1.11 | Slightly Agree | Moderately Motivated |
| 5. During science assessments, I'm thinking the consequences of having a failing grade. | 3.51 | 1.19 | Agree | Motivated |
| 6. My heart beat fast and I am shaking when taking science test. | 2.95 | 1.29 | Slightly Agree | Moderately Motivated |
| 7. During exam I can't stop thinking of the items I failed to answer | 3.40 | 1.18 | Slightly Agree | Moderately Motivated |
| 8. Compare to my classmates, I think how I am poorly doing during exams. | 3.26 | 1.23 | Slightly Agree | Moderately Motivated |
| 9. I usually overthink after taking science exam. | 3.54 | 1.26 | Agree | Motivated |
| 10. I usually bite my nails and pen when taking science test. | 2.49 | 1.45 | Disagree | Unmotivated |
| **OVERALL** | **3.15** | **0.87** | **Slightly Agree** | **Moderately Motivated** |

***Legend:*** *4.50- 5.00- Strongly Agree/Extremely Motivated, 3.50- 4.49- Agree/ Motivated, 2.50- 3.49- Slightly Agree/ Moderately Motivated, 1.50- 2.49- Disagree/ Unmotivated, 1.00 – 1.49- Strongly Disagree/Extremely Unmotivated*

The table above presents how the respondents perceive assessment anxiety. Notably, the overall mean is approximately 3.15 (SD=0.87) which is interpreted as slightly agree. It means that the students are motivated by assessment anxiety. In some ways the students fear in exam help them to become moderately motivated and do their best in performance. However, a study

of Von der Embse and Witmer (2013) suggest that only a mild anxiety can help the students to have an academic success. So, if the students strive hard to achieve a good performance with their fear in examination, reducing assessment anxiety will put them in a better level.

It also clears in the result that, the highest mean which is 3.54 is garner by the indicator about the students overthinking after taking a test. This indicates an unmotivated sign in the students. This interpretation is based on the reverse coding since the statements are in negative disposition. Thus, due to overthinking in exam the students become unmotivated in their study. The anxiousness and nervousness affect their belief that they will pass the exam. Too much overthinking makes the students feel down that shows a sign of fear in test or assessment anxiety, which is not good for them. On the other hand, part of the result shows that students disagreed in statement that they bite their nails and pen when taking an exam. This got the lowest mean at 2.49 (SD=1.45), which means if they disagreed, following the reverse coding, students are motivated. They show motivation when they are not biting their nails and pen, since this action shows stress and anxiety that puts in so much tension especially during examination or test (Schwartz, n.d.).

**Table7:** Summary of Perceived Motivational Factors of the Respondents

| Motivational Factors | Mean | SD | Verbal Interpretation | Equivalent Motivational Level |
|---|---|---|---|---|
| Intrinsic | 4.18 | 0.56 | Agree | Motivated |
| Extrinsic | 3.22 | 0.73 | Slightly Agree | Moderately Motivated |
| Personal Relevance | 4.44 | 0.54 | Agree | Motivated |
| Self-Efficacy | 3.66 | 0.61 | Agree | Motivated |
| Self-Determination | 3.98 | 0.64 | Agree | Motivated |
| Assessment Anxiety | 3.15 | 0.87 | Slightly Agree | Moderately Motivated |

***Legend:*** *4.50- 5.00- Strongly Agree/Extremely Motivated, 3.50- 4.49- Agree/ Motivated, 2.50- 3.49- Slightly Agree/ Moderately Motivated, 1.50- 2.49- Disagree/ Unmotivated, 1.00 – 1.49- Strongly Disagree/Extremely Unmotivated*

It is evident in the table that there is a distribution in the motivational factors as perceived by the respondents. Most science students are motivated through personal relevance as it gains a mean of 4.44 with a standard deviation of 0.54 and interpreted as agree which is equivalent to motivated. This only means that finding the relevance of science with their personal life motivated them to learn more and be successful towards their academic life. Relevance is a crucial factor in intrinsically motivating student learning. Without it, students risk losing interest, disengaging, and motivation to attempt. Students are given a vital opportunity to connect the course material to their personal experiences and the world outside of school by establishing both personal and real-world relevance, which helps them internalize the

information in line with their preexisting assumptions and ideas. Relevance is crucial in creating a learning atmosphere where students can build their conceptual frameworks for the course material (Briggs, 2014).

Following the personal relevance, science students appear to be agreed which means that through intrinsic, self-efficacy and self-determination, which all fall under the autonomous motivation as these all factors are drive coming within the person, students are moderately motivated. And slightly agree in external factors which gave them motivation as they get high grades, get extra points for the recitations, rewards, and complements from other people.

Notably, that assessment anxiety undergoes a reverse coding as the equivalent value of the scale is reversely analyze. Thus, assessment anxiety is perceived as a factor that slightly agree which is equivalent to motivated, them in learning science. The nervous, consequence, failing grade and unnecessary actions like biting pen and nails are agreed (refer to table 6) upon to be regarded as having anxiety towards science assessments but still motivated to learn. In table 19, it also appears that this kind of motivation is not correlated on the academic performance of the respondents. So, this means that even they are nervous and show anxiety over the tests, their academic performance is not affected.

**Table 8:** The Respondents' Academic Performance in Science

| Average Grade | f | % | Remark |
|---|---|---|---|
| 90-100 | 61 | 93 | Excellent |
| 84-89 | 3 | 5 | Proficient |
| 81-83 | 0 | 0 | Approaching Proficient |
| 75-80 | 1 | 2 | Developing |
| 74- below | 0 | 0 | Beginner |
| **Total** | 65 | 100 | |

***Legend:*** *1.00 (99-100%), 1.25 (96-98%),1.5 (93-95%), 1.75 (90-92%) = Excellent*
*2.00 (87-89), 2.25 (84-86) = Proficient*
*2.5 (81-83) = Approaching Proficient*
*2.75 (78-80), 3.00 (75-77) = Developing*
*4.00 (70-74), 5.00 (69-below) = Beginner*

As illustrated in Table 8, the academic Performance of the respondents as to average grade is as follows: 93 percent is the highest percentage the consists of 61 students with the average Grade of 90-100 percent with the remarked of Excellent On the other hand, the lowest percentage was 2 percent consisting of 1 student with the Average Grade of 75-80 with the remarked as developing.

It shows that mostly of the respondents range their academic performance from very satisfactory to outstanding. This only implies that the students have good performance towards science based on the academic grade presented wherein most of the respondents have an excellent overall performance towards science. But it is a rare case that one respondent seems to be deviating from the group. As for respondent, being a working student hinders his effective learning and gives the respondent a shorter time to study. Several studies have revealed that students' physical and emotional health can indeed suffer from the combination of full-time schooling and part-time employment. It might have a bad effect on a student's academic

achievement. Students' physical and emotional health can indeed suffer from the combination of full-time schooling and part-time employment, as several studies have revealed that academic performance may suffer as a result (Hovdhaugen, 2015; Creed, French, & Hood, 2015; Darolia, 2014). Missing lectures with a lot of lesson to catch up could have been the reason why getting good grades is not possible. However, there are also instances that students encounter problem with how the teacher implement instruction that made students harder to catch up. In fact, according to Panergayo, Gregana & Panoy (2021), the root of the poor performance of the students especially in science is because of the lack of qualified teachers, wherein the students rated themselves when it comes to the teaching efficacy, beliefs and attitude towards science is only at fairly high level.

**Table 9: The Respondents' Satisfaction Level Towards Teaching Method**

| Statements | Mean | SD | Verbal Interpretation |
|---|---|---|---|
| 1. The teacher makes the discussion engaging and interactive. | 4.11 | 0.73 | Very Satisfied |
| 2. The teacher provides relevant and authentic examples and situations. | 4.18 | 0.77 | Very Satisfied |
| 3. The teacher provides instructional materials like videos, concept maps, and visual aid that the lessons or topics. | 4.26 | 0.76 | Extremely Satisfied |
| 4. The teacher provides scaffolding activities to better understand the assigned task to students. | 4.12 | 0.76 | Very Satisfied |
| 5. The teacher gives guidance and assistance in answering task and activities. | 4.11 | 0.87 | Very Satisfied |
| **OVERALL** | **4.16** | **0.70** | **Very Satisfied** |

***Legend**: 4.21- 5.00- Extremely Satisfied, 3.41- 4.20- Very Satisfied, 2.61- 3.40- Moderately Satisfied, 1.81- 2.60- Unsatisfied, 1.00 – 1.80- Extremely Unsatisfied*

The table above shows the mean response of the students towards their satisfaction in teaching method. It reveals that the students are very satisfied with the overall teaching method use by the teacher with a mean of 4.16 with a standard deviation of 0.70. This means that the students will able to provide the materials and other necessities for an effective teaching. The ability of to use appropriate tools and materials to deliver the lessons are very important, as Mabas (n.d) states that the quality of those materials directly impacts quality of instruction. A teacher's ability to locate the best educational resources is one that is highly valued.

Moreover, based on the result, the highest mean of 4.12 (SD=0.76) is garnered with the statements about the teacher providing instructional materials. This means that providing this material is very important as the students find it more satisfying. Further, teaching method able to incorporate the students in teaching-learning process where the student’s engagement is applied that makes it more interactive with them. As these teaching tools facilitate learning more quickly, improve student-teacher contact, encourage active participation. The value of

teaching aids cannot be overstated because they help teachers and students learn more effectively by combining textual lessons with visuals, audio, and video content. When taught through visuals, students frequently pick up new information quickly (What Are The Types Of Teaching Aids, n.d).

However, the indicators where the teacher should make the discussion engaging and interactive (statement 1) and teacher provide assistance for the students (statement 5) appear to have the lowest mean of 4.1. Even though they garner the lowest mean, it is still interpreted as very satisfied, which means that the students are satisfied in how the teachers engage in the discussion and how they provide help. They tend to learn more with their engagement that may resulted to a long-term learning and pay more attention with the lesson. Students are more attentive and focused when actively involved in the learning process, which encourages them to use higher-order critical thinking. Students are more likely to become engaged in learning when their instructors take a student-centered approach to instruction, which ultimately aids everyone in more effectively completing the course's learning objectives (Engaging students in learning, n.d). Notable that the teacher should clearly only offer a help and provide assistance but still let the students to the work. As Lombardi (2019), task or idea that a student initially finds difficult to understand on their own is helped by the teacher. Only those skills that are above the student's capacity are offered assistance with by the teacher.

**Table 10: The Respondents' Satisfaction Level Towards Course Content**

| Statements | Mean | SD | Verbal Interpretation |
|---|---|---|---|
| 1. The course contents are complete. | 4.23 | 0.77 | Very Satisfied |
| 2. The course contents provide understanding content such as link of video, readings, assessment, and other related materials. | 4.18 | 0.86 | Very Satisfied |
| 3. The course contents are clearly stated or explained. | 4.06 | 0.79 | Very Satisfied |
| 4. The course contents are aligned to or meet the course objective or learning goals and assessment. | 4.26 | 0.73 | Very Satisfied |
| 5. The course contents provide the criteria for grading performances and activities. | 4.28 | 0.67 | Very Satisfied |
| **OVERALL** | **4.20** | **0.67** | **Very Satisfied** |

***Legend**: 4.50- 5.00- Extremely Satisfied, 3.50- 4.49- Very Satisfied, 2.50- 3.49- Moderately Satisfied, 1.50- 2.49- Unsatisfied, 1.00 – 1.49- Extremely Unsatisfied*

As illustrated in the table above, the overall mean of the course content is 4.20 with a standard deviation of 0.67 which interpreted as very satisfied. In general, course content is very important as it serve as the backbone of teaching and learning. It serves as the teacher and students' guide on the lesson's organization. It contains all the needed information about a

certain topic. Courses that are well-organized help students be motivated, perform well, and persevere. Courses can be designed in a variety of rich ways by instructors to foster student motivation and improve prospects for more efficient learning. The development of conceptual awareness, the ability to synthesize information, and the start of knowledge construction can all be aided by a course that is created with the learning objectives in mind and the activities and assessments following suit (Yale, n.d.).

Furthermore, the statement for the course contents provides the criteria for grading performances and activities gather a mean of 4.28 with a SD of 0.67. This only implies that providing criteria for how the students' work will be graded is important because will be guided on how they will work on their activities and performances. Students will be able to provide the necessary content and skills of their outputs and outline their works into the best version of it, which is supported by Mc Tighe (2016) on his blog which states that students can essentially outline the key components of student work in respect to established learning objectives. The creation of a rubric, a tool for assessing student work in accordance with a performance scale, is based on criteria.

On the other hand, the lowest mean of 4.06 (SD=0.79) is got by the indicator about the course content is well explained. Although this statement is the lowest above all still it has a positive satisfaction level from the students wherein, they respond as very satisfied. Course content, as mentioned, provides the information for the students, it serves as their basis on their study and their references. Explaining it very well help the student the concepts and the lesson easily by just reading. According to Sorcinelli (n.d.) Effective learning depends on instructors clearly explaining course information to students. Students can be encouraged to more efficiently process and retain course material by being presented with and explained course material in a clear and simple manner. In parallel, if the course content is completely filled up with information coming from the instructor, students can catch up with what idea has been projected in it. Well- constructed course guide will definitely help the student specially in pandemic setting.

**Table 11: The Respondents' Satisfaction Level Towards Learning Environment**

| Statements | Mean | SD | Verbal Interpretation |
|---|---|---|---|
| 1. The learning environment is clean, safe, and bright enough. | 3.95 | 0.96 | Very Satisfied |
| 2. The learning environment is spacious enough for a comfortable and ventilated environment. | 3.83 | 1.05 | Very Satisfied |
| 3. The learning environment is quit that's make me hear understand the discussion. | 3.82 | 1.10 | Very Satisfied |
| 4. The learning environment makes me focus and give all my attention in learning my lessons. | 3.69 | 1.03 | Very Satisfied |
| **OVERALL** | **3.82** | **0.97** | **Very Satisfied** |

***Legend**: 4.50- 5.00- Extremely Satisfied, 3.50- 4.49- Very Satisfied, 2.50- 3.49- Moderately Satisfied, 1.50- 2.49- Unsatisfied, 1.00 – 1.49- Extremely Unsatisfied*

Presented in the result above is the satisfaction level of the students towards the learning environment. It revealed that the learning environment as a component of satisfaction of the students gathered an overall mean of 3.82 with a standard deviation of 0.97, and interpreted as very satisfied. This only shows that the students' learning environment is suited for their study online. Students are contented with what the learning environment can give to them. The learning environment is also ideal for learning as it clean, bright, and safe for the learners which is an indicator that got a highest mean of 3.95 as a very satisfied. This kind of learning environment affect how the learning of the students as Verma (2019) said, one of the key elements influencing student learning is the classroom setting. Students should feel happy and supported in their classrooms, and it should be a place where they feel safe and secure. More than that, a learning environment should also enable the students to focus and concentrate on their study. It is important for the students to still focus in the learning to understand the lessons better. Despite having a lowest mean of 0.69, students are still very satisfied with the learning environment they are in. They still give enough focus and concentration that helps them in their performances. A quality environment minimizes the distractions for the students and far from multitasking that helps the students to be more productive.

**Table 12: The Respondents' Satisfaction Level Towards Learning Convenience**

| Statements | Mean | SD | Verbal Interpretation |
|---|---|---|---|
| 1. The lessons and activities are fitted to my learning style/s. | 3.75 | 0.77 | Very Satisfied |
| 2. Learning at home is much easier and less hassle for me. | 3.02 | 1.12 | Moderately Satisfied |
| 3. Activities and performance task are fitted on my schedule. | 3.17 | 0.99 | Moderately Satisfied |
| 4. Allotted time for activities is long time enough. | 3.20 | 0.90 | Moderately Satisfied |
| 5. Flexibility makes it possible for me to fit the course into my schedule. | 3.57 | 0.87 | Very Satisfied |
| **OVERALL** | **3.34** | **0.74** | **Moderately Satisfied** |

***Legend**: 4.50- 5.00- Extremely Satisfied, 3.50- 4.49- Very Satisfied, 2.50- 3.49- Moderately Satisfied, 1.50- 2.49- Unsatisfied, 1.00 – 1.49- Extremely Unsatisfied*

The data above shows that the students' overall satisfaction towards the learning convenience is only moderately satisfied with a mean of 3.34 with an SD of 0.74. This means that the learners are still aiming something to be able to give a higher satisfaction in learning convenience. Activity schedule and time allotment were the indicators that mostly affected the overall satisfaction. Certainly, hassle in learning at home resulted in the lowest mean of 3.02. This only implies that even though they are studying at home; they still feel a bit hassle with the convenience they get. However, it is also resulted that, in online learning the activities and provided in the lesson are fitted to their learning style/s with a mean of 3.75. Their satisfaction

towards this indicator means they are contented with the type of activities given to them. Course content and teaching method may also have a contribution on this perspective of the students. In fact, planning your teaching strategies is a crucial step in creating an effective course. Learning activities and content can be delivered in a variety of ways. Depending on the type of pupils you have, how you want them to learn, where they are (face to face or online), and what you want to teach, you will choose a certain teaching approach. You must choose the delivery strategy that is most appropriate for your pupils' needs. There is no design that works for everyone. The greatest strategy is to combine various tactics that fit your teaching style and your students' needs (Teaching Style & Content Delivery, n.d.). After carefully examining the teaching/learning environment, which includes your course goals, evaluation procedures and standards, as well as the types of students you are working with and their histories, you should decide how to convey this content. According to this, decisions concerning learning should be made before decisions about delivery.

**Table 13: Summary of The Respondents' Satisfaction Level Towards Learning Components**

| Learning Component | Mean | SD | Verbal Interpretation |
|---|---|---|---|
| Teaching Method | 4.16 | 0.70 | Very Satisfied |
| Course Content | 4.20 | 0.67 | Very Satisfied |
| Learning Environment | 3.82 | 0.97 | Very Satisfied |
| Learning Convenience | 3.34 | 0.74 | Moderately Satisfied |

***Legend**: 4.50- 5.00- Extremely Satisfied, 3.50- 4.49- Very Satisfied, 2.50- 3.49- Moderately Satisfied, 1.50- 2.49- Unsatisfied, 1.00 – 1.49- Extremely Unsatisfied*

The table above presented the satisfaction level of respondents towards learning component wherein course content was rated as Very Satisfied with a composite mean of 4.20, and some other categories also received the same rating of Very Satisfied, such as the teaching style with a weighted mean of 4.20 and the learning environment with a composite mean of 3.82. The final item, the Learning Convenience, received a mean score of 3.34 and was rated Moderately Satisfied.

It indicates that the students are content with the teaching method used in their respective classes. If teaching method employing in the class assures the appropriateness of method to meet the intended objectives and teachers provide assistance, the students feel satisfied. In relation to that a well-planned and organized course content as part of the teaching process satisfy the students wherein the alignment between activities and assessments helps respondents focus on skills relevant to the learning objectives, reducing wasted time. As it was mentioned by Jagger (2016), the efficient use of technology, well-written objectives, a diversity of possibilities for interpersonal interaction, and well-organized content were all aspects of high-quality courses that were linked to student learning and satisfaction. Moreover, with regards to learning environment, respondents as being on their home is satisfied to their surroundings. However, the satisfaction towards the learning convenience slightly drops because some of the respondents do not find the task given fitted to their schedule and allotted time is not enough. The time frame to accomplished given task, activities, and performances

that was given to the respondents is not enough to accommodate all those tasks. Being not fit to their schedule added minimal difficulty on them.

**Table 14:** The Relationship Between Motivational Factors and Academic Performance

| Motivational Factors | Grade |
|---|---|
| Intrinsic | -0.089 |
| Extrinsic | -0.134 |
| Personal Relevance | -0.040 |
| Self-Efficacy | -0.152 |
| Self- Determination | -0.066 |
| Assessment Anxiety | 0.070 |

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

Based on the result presented above, it is noticeable in the data that there is no significant relationship between the motivational factors and the academic performance of the students. All of the motivational factors resulted to be not correlated on how the students performed and get good grades. In fact, as for the respondents, being motivated or not has nothing to do with having good grades. This implies that the motivation of the students does not have any connection or association with the respondents' academic performance, what they are most likely looking forward was the final result of what they have done in certain subjects. Correspondingly, these results are supported by the study findings of Llabao, et,al., (2016)that there is no significant relationship between the intrinsic, task value, self-efficacy, test anxiety, and learning beliefs and the academic performances of their respondents in science subjects. Moreover, Cleary (2014) also asserts that there is uncertainty regarding the connection between motivation and academic success.

**Table 15: The Relationship Between Motivational Factors and Learning Component**

| Motivational Factors | Learning Component | | | | Remarks |
|---|---|---|---|---|---|
| | TM | CC | LE | LC | |
| Intrinsic | .157 | .212 | -.031 | .309* | Weak Association |
| Extrinsic | .119 | .109 | .164 | .527** | Moderate Association |
| Personal Relevance | .375** | .336** | .071 | .181 | Weak Association |
| Self-Efficacy | .216 | .173 | -.051 | .433** | Moderate Association |
| Self- Determination | .338** | .320** | .179 | .339** | Weak Association |
| Assessment Anxiety | .019 | .052 | .187 | .186 | No Association |

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

The finding shows that intrinsic motivation and extrinsic motivation has a weak and moderate positive association, respectively, with the learning convenience. This means that students get more satisfied in learning from home and having class synchronously when they are intrinsically and extrinsically motivated. One aspect of being at the students' convenience is

synchronous learning. When students are motivated, they are more likely to be satisfied with the educational process and continue to find it useful as they develop certain skills, such as speaking and writing. Deci and Ryan (2012) state that once someone is intrinsically accompanied by external motivation to complete a task or an activity, they eventually devote all of their time, energy, and attention to learning new things. The current study implies, students as being alone in their respective learning environment they tend to gather all of their motivation on their self and to the external factors like from their parents as well as to the rewards or punishment that may give to them since they are closely monitored by them. They use this to attend classes and gradually feel satisfaction towards what they are learning because of these motivations. In fact, Lui (2020) states that extrinsic mostly paired up to intrinsic as researcher findings revealed that they may appeared together when it comes to motivating students.

Moreover, the table above also indicate that there is a weak association between personal relevance and teaching method and course content. This means that the relevance of learning in science to life has something to do towards the level of satisfaction of the students in teaching method and course content used. Designing course content in the process determines the proper teaching method to be used to employ an effective teaching for the students. As the respondents perceived learning in science as important and relevant to their life, they develop strong courage to have an effective teaching and learning. As they the teacher strengthens their personal relevance motivation, they become contented to the strategies on how the lessons delivered and as the intended objectives are achieved. A study indicates, the best indicator of student satisfaction is personal relevance. This result suggests that students are more likely to be satisfied with remote learning when they can relate the course material to their own personal experiences (Ellis, n.d). Students need to feel a personal connection to the subject, whether that is done by emotionally engaging them or by making a connection between the new knowledge and what they have already learned. Relevance is a crucial component in creating a learning atmosphere where students can build their own conceptual frameworks for the course material (Briggs, 2014).

The study also reveals that self-efficacy is moderate association to learning convenience. Certainly, at this time of pandemic where the respondents are studying from home as they agreed that they are moderately motivated by self-efficacy (Table 8), they believe that they can do the task and performances on their own. With that, they are satisfied on what they can do even if they are only studying at home, which makes them satisfied with the learning convenience they experiencing. Aldahahi et.al (2022) argue on their study that the majority of students expressed satisfaction, demonstrating a link between self-efficacy in online learning domains and positive experiences with online learning. Further evidence points to the idea that a strong sense of self-efficacy in online learning improves students' satisfaction with the online learning environment. These results offer crucial hints that embracing students' self-efficacy can increase student satisfaction and build a better e-learning experience.

Like the other motivational factor, self-determination all have a weak association with the teaching method, course content, and learning environment. It suggests that students' levels of self-determination regarding their learning have an impact on how satisfied they are with the

aforementioned learning components. Self-determination is a powerful motivator for students to participate actively in the discussion. Because it is an internal drive, self-determination is essentially linked to autonomous motivation. Thus, this type of motivation positively impacts the students' satisfaction with the teaching style, the course material, and the ease of learning. Being committed on the learning students will highly encourage to start, continue, and resume the learning. It also implies that the students' decision-making skills impact how they interpret the teaching strategies or methods employed to carry out the written and designed course material in online learning.

## 5. Conclusion

Based on the findings of the study, the following conclusions have drawn.

1. Science students perceived motivational factors as agree to strongly agree which they are found motivated to strongly motivated with the help of these factors.
2. The performance of the science students is exemplary and in good state, however, there is one student who appears to be deviant in the group is identified.
3. There is a moderately to very satisfied level in the learning components according to the satisfaction of the science students.
4. There is no significant relationship between the motivational factors and academic performance of the students, so the hypothesis is supported.
5. There is enough evidence that supported the claim that motivational factors are significantly correlated with the satisfaction of the students towards learning components. However, it appears that the assessment in anxiety as motivational factors has no significant relation with any of the learning components. Likewise, the component learning environment, is also not associated with any motivational factors.

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