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Science Teachers' Academic Optimism and Stages of Concern on the Content Enrichment Program of DOST-SEI Project STAR

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ABSTRACT

This study aimed to explore Science teachers' academic optimism, their stages of concern regarding the DOST-SEI Project STAR content enrichment program, and the relationship between these variables. The research utilized a descriptive design involving 353 public school Science teachers in the Philippines who attended the Project STAR Science Content Enrichment Webinar Series. Data were collected via a three-part survey distributed through Google Forms and analyzed using frequency and percentage distribution, weighted mean, and Pearson r correlation. Findings revealed that Science teachers exhibited high academic optimism across three dimensions: self-efficacy, trust in students and parents, and academic emphasis. Attendance in the content enrichment program significantly predicted teachers' academic optimism as a collective construct. Nearly all measures of academic optimism were high, with one very high indicator showing that teachers are adept at fostering student learning values. They are committed to bridging the gap between essential knowledge and its relevance to students' lives. Regarding the stages of concern, teachers showed high levels of implementing what they learned from the DOST-SEI Project STAR Content Enrichment Program, indicating practical application. This suggests that teachers are beginning to collaborate, coordinate implementation, and evaluate achievements collectively, learning from each other. Moreover, results indicated a significant positive correlation at the 0.01 level between teachers' academic optimism (self-efficacy, trust in students and parents, academic emphasis) and their stages of concern (self, task, impact). This underscores the interconnectedness between teachers' confidence, their collaborative efforts, and their focus on improving educational outcomes.

INTRODUCTION

The true goals of education are to equip individuals with skills for productive living and societal contribution in a constantly changing world. Its importance has grown in our modern, globalized society. According to studies, school effectiveness remains a primary concern due to ongoing accountability demands enforced on education. According to Teacher Certification Degrees (2023), Science teachers, in particular, play a vital role in nurturing the next generation of professionals in science and technology by igniting students' curiosity and promoting further inquiry into areas of interest. They must be creative and innovative and possess relevant skills that adapt to evolving educational environments. Effective teaching requires teachers to be competent, optimistic, inquisitive, and confident, capable of inspiring students and improving academic standards.

Professional teacher learning is increasing in demand as a way of supporting the increasingly sophisticated students who need to master it in order to achieve success in the twenty-first century. According to Darling-Hammond, Hyle, and Gardner (2017), advanced teaching methods are needed to develop students' skills including deep understanding of hard topics, critical thinking, complex problem-solving, effective communication and collaboration, and self-direction. To help teachers acquire and strengthen the instructional strategies they use, effective professional development is necessary. For that, professional development programs are necessary with the common vision and end goal, that is, to better prepare teachers and ultimately the learners for the VUCA world – volatile, uncertain, complex, and ambiguous.

On the other hand, teacher academic optimism refers to an educational environment comprised of three dimensions: self-efficacy, trust in students and parents, and academic emphasis. Teachers should develop academic optimism to be effectively prepared to handle the demands of the teaching profession. As cited by Safari and Soleimani (2019), teachers' sense of academic optimism inspires academic optimism in students. Donovan (2014) suggests employing a variety of instructional strategies, employing a variety of parent communication strategies, emphasizing the value of student work, setting clear and unambiguous rules and building humanistic connections with students, and believing all students can learn. Furthermore, according to Rimm-Kaufman (2015), high-quality academic instruction is designed to provide opportunities for thinking and analysis and is tailored to students' educational levels.

In light of current developments in the science and technology of learning, it is essential to maintain a learning environment that fosters continuous improvement in order to stay up with the fast-changing global environment. The Science Teacher Academy for

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the Regions (STAR), a project of the Department of Science and Technology - Science Education Institute (DOST-SEI), seeks to empower a critical mass of Science, Technology. Engineering and Mathematics (STEM) teachers across the country through high-impact training, webinars, and recognition. This program intends to act as a catalyst for the growth of professional learning communities that will maintain the capacity building of teachers and boost the quality of STEM education in the Philippines (SEI Annual Report 2021). The project conducted a series of webinars in science and mathematics to capacitate teachers with a focus on content enrichment in the year 2022.

Furthermore, modifications to teaching and learning methods are required by introducing technologies, curriculum, and school-wide goals. In connection, while some people are frightened and resistant to change, others are eager to embrace innovation.

It is in light of the above statements and arguments that as the Philippines' educational system and the mode of capacity building program changed because of the pandemic, it is intriguing to study the science teachers' level of academic optimism and their level on the stages of concern on the implementation of the DOST-SEI Project STAR content enrichment program. This study provides adequate information and the findings may be used as a foundation for developing future professional development programs that would equip teachers with the necessary competencies they need to succeed in 21st-century education and the VUCA world.

This research study aimed to determine the Science teachers' level of academic optimism and their level on the stages of concern on the implementation of the DOST-SEI Project STAR Content Enrichment Program. More specifically, it sought answers to the following questions:

1. What is the Science teachers' level of academic optimism along the following dimensions:
   1.1 Self-efficacy;
   1.2 Trust in students and parents; and
   1.3 Academic emphasis?
2. What are the Science teachers' level on the stages of concern in terms of:
   2.1 Self;
   2.2 Task; and
   2.3 Impact?
3. Is there a significant relationship between the science teachers' level of academic optimism and their level on the stages of concern?

LITERATURE REVIEW

Teachers' Skills in the K to 12 Curriculum

According to William and Marry School of Education (2023), a strong curriculum is essential to student success to meet the educational requirements. Teachers, at the forefront of the educational process, must possess a diverse set of skills and perform in a complex workplace where they must make hundreds of key decisions each day to enhance student learning. In addition, teachers need to acquire and hone abilities that will help in students' engagement with the content. Active learning will sharpen students' interest and help them retain the content while creating a stimulating learning environment (Meier, 2018).

Babu & Mendro (2003) in their study mentioned that to prepare children for this future world, teachers will need to combine traditional teaching abilities with newer attributes that will help students thrive in the twenty-first century. Five abilities are required of any potential educator, these are strong subject knowledge, being a facilitator, strong social skills, external focus, and data analysis. Strong subject knowledge involves more than just reciting information; teachers must help students understand and apply facts to develop lifelong learning skills crucial for future employment. Facilitating learning is vital for developing skills like critical thinking, communication, collaboration, and creativity, which are increasingly important as technology automates repetitive tasks. Another, social skills are critical for teachers as the workplace demands abilities in communication and collaboration that technology cannot replicate. Employers seek these skills, emphasizing teamwork, decision-making, and verbal communication (National Association of Colleges and Employers, 2015). An external focus involves applying learning to real-world scenarios and using methods like the flipped classroom to enhance engagement. This approach helps students understand practical applications beyond the classroom. Lastly, data analysis is crucial for identifying struggling students and providing necessary support. With increasing online learning, teachers must use technology to assess student performance data effectively.

The educational system faces unprecedented challenges, necessitating teachers to upskill and reskill more than ever. The shift to online learning during the COVID-19 pandemic has changed the educator's role from traditional methods to innovative teaching tailored to individual student needs (Saxena, 2020). This shift requires teachers to develop self-learning modules and online lessons, fostering an exciting learning process through collaboration.

The pandemic has driven educational innovation, compelling teachers to focus on transforming educational systems to address diversity and provide necessary resources. Despite the challenges, this shift has led to increased cooperation among key individuals to deliver quality education. Teachers play a vital role in inspiring and empowering students, which has become even more crucial during the pandemic. Great teaching requires the right personality and a teachable collection of skills that can be developed to improve educational outcomes.

As difficult as that mandate was, it represents the best-case scenario in what has proven to be an extremely inequitable landscape during the pandemic but has resulted in at least one positive outcome: cooperation between and among key individuals in the pursuit of

providing the best education possible to learners despite the pandemic. Teachers' key roles are essential for the development of learners' educational development, which inspires and empowers students to take control of their futures. With the onset of this global pandemic and the frequent occurrence of multiple crises in response to the imperative of delivering quality education, every teacher might ask, appreciate, and realize what it takes to be a teacher. To be a great teacher requires the right kind of personality, but also the right collection of skills. These skills are teachable, which implies that even if you struggle in certain areas, you can strengthen your teaching skills and become a better teacher.

Academic Optimism

Researchers have sought to identify school-level qualities beyond socioeconomic status that influence student achievement and define a successful school. Academic optimism, which encompasses academic emphasis, faculty trust, and self-efficacy, is a concept introduced by Hoy, Tarter, and Woolfolk Hoy (2006). It builds on positive psychology research, focusing on satisfaction, well-being, and hope(Beard *et al.*, 2010).

Academic optimism is theoretically grounded in Albert Bandura's ideas on social cognition and self-efficacy, James Coleman's social capital, Wayne Hoy and colleagues' work on culture and environment, and Martin Seligman's learned optimism. Teacher efficacy, the belief in their capacity to influence student learning, is highlighted by Hoy *et al.*, (2010) as critical to student achievement. Teachers with high self-efficacy set higher standards, exert more effort, and persist through challenges, making self-efficacy a cognitive component of academic optimism.

Trust, a key element within academic optimism, significantly affects student academic progress (Beard *et al.*, 2010). Teachers' trust in parents and students is based on perceived kindness, reliability, competence, honesty, and openness. Increased trust from students and parents boosts teachers' self-efficacy, leading to better classroom instruction (Hoy *et al.*, 2008). This trust enables teachers to improve classroom practices, fostering a positive learning environment (Beard *et al.*, 2010). Trust is thus the affective component of academic optimism.

Academic emphasis is the conviction in and works put forth by teachers to support student learning (Hoy *et al.*, 2008). According to Beard *et al.*, (2010), a teacher's academic emphasis is how well they can get students engaged in relevant academic tasks. A strong academic focus among teachers positively influences their efficacy and trust in students and parents, forming the normative and behavioral aspects of academic optimism (McGuigan & Hoy, 2006).

Since each component of academic optimism depends on the other in order to function, it is thought of as a triadic system of relationships. Hoy *et al.*, (2006) found a reciprocal and transactional relationship between teacher self-efficacy, trust, and academic emphasis. Self-efficacy tends to rise as parents and students' trust is cultivated and has grown among teachers. Teachers' relationships with students and parents are reinforced when they have high expectations for student's academic performance, a strong sense of self-efficacy, and trust in both the students and the parents. These three dimensions of academic optimism interact with one another to create a culture in the classroom that is optimistic about learning, academics, and school success (Forsyth *et al.*, 2011). Academic success can be achieved when teachers believe in every student's ability to learn and are willing to form partnerships with both the students and parents (Mitchell & Tarter, 2016). Thus, the three components work together to create a motivating force for learning. Hoy *et al.*, (2006) have proven that on a collective level that the three dimensions of schools work harmoniously to generate a conducive learning environment. These dimensions have a comparable nature and purpose as well as a strong and favorable impact on educational achievement.

A teacher performs a crucial function within a few hours in the classroom by providing the daily, specific planned content. Teachers' competencies, skills, and content knowledge are critical for understanding and improving educational processes. Numerous studies have revealed that teachers' expertise substantially influences students' enthusiasm to learn and succeed. Additionally, this is closely tied to teachers' academic optimism. Teachers would be more committed to their professions if they are confident in their competence, trust their students and parents, and emphasize the value of academic work.

Stages of Concern

Concerns are a crucial component of engaging with people participating in a change process (George *et al.*, 2006). Innovation is the umbrella term used in concerns research to refer to the thing or circumstance that is the focus of the concerns. Concerns can be viewed and described within the context of the innovation and its use. The innovation does not need to be new. It could be a new program, strategy, or practice or something that has been in use for a while. Even though there may be multiple worries about innovation at once, each person will prioritize different aspects of the innovation at different times.

Stages of Concern (SoC) outline how individuals feel about and engage with new programs or practices, particularly among teachers (Horsley & Loucks-Horsley, 1998; Hall & Hord, 2001). There are seven identified stages, reflecting a developmental progression from minimal concern to concerns about the impact of the innovation. This framework aligns with Frances Fuller's earlier research on teaching.

The Concerns-Based Adoption Model (CBAM) identifies three primary stages of concern: 1) self, 2) task, and 3) impact. Success in innovation adoption is linked to addressing these stages. Initial self-concerns include awareness (Stage 0), informational (Stage 1), and personal (Stage 2) stages, where individuals become aware of the

innovation, seek more information, and assess their roles and potential conflicts. The Management Stage (Stage 3) focuses on the practical aspects of using the innovation efficiently. The final stages address impact concerns: the Consequence Stage (Stage 4) focuses on the innovation's effects on students, the Collaboration Stage (Stage 5) emphasizes working with others, and the Refocusing Stage (Stage 6) seeks broader benefits and potential improvements.

All have a variety of concerns that range in intensity. Things that are more personally relevant and typically lead everyone to concern more deeply. It is critical to realize that one's views influence and form the way we worry. Even though there may be multiple worries about an innovation at once, each person will prioritize different aspects of the innovation at different times. For instance, various concerns will arise depending on how much a user knows about and has used the innovation. A person who has just started using a given innovation will have different concerns than someone who has never used it and at various intensities.

DOST-SEI Project STAR and its Professional Development Programs

Numerous factors contribute to the country's current predicament. To begin, the country is facing a teacher shortage in science and mathematics, likewise of taking an active teaching role. It is believed that improving the quality of teacher training and making continued professional development accessible to all teachers will enhance science and mathematics teaching. Teachers' pedagogical and technological skills should be strengthened.

The Department of Education and the Department of Science and Technology-Science Education Institute (DOST-SEI), have partnered to enhance science and mathematics education for teachers. Through the DOST-SEI Graduate Scholarship Programs, SEI provides opportunities for science and mathematics public school teachers across the country to pursue master's or doctoral degrees. Additionally, the SEI conducts training programs throughout the country for teachers to help them become more capable through increased content knowledge and improved competence in teaching and assessing their learning. Through this, teachers can make a difference by transforming science and mathematics into enjoyable subjects and refuting the belief that they are challenging and intimidating (Briones, 2013).

Project STAR, as discussed in its STAR Manual (2019), stands for Project Science Teacher Academy for the Regions. It is an organized scheme of capacity-building activities designed to improve teachers' instructional capacity and content knowledge with the end goal of enhancing the teaching and learning of science and mathematics education. Initiated by the Department of Science and Technology – Science Education Institute in 2011, it consists of teacher-training programs that are designed to blend the latest pedagogical approaches and strategies with scientific and mathematical content. Project STAR has two main objectives: (1) to increase the number of science and math teachers in the country (in-service); and (2) to advocate for innovative approaches and models for the teaching and learning of science and math (in-service/pre-service). In doing so, it intends to provide the Filipino teacher with the skills and content mastery to deliver lessons effectively and efficiently. Ultimately, it hopes that by equipping teachers with the appropriate know-how, students of science and math will grow into productive and conscientious citizens of the nation and the world. The scope of Project STAR is nationwide; it uses the cascade model to deliver training to teachers across the country. DOST-SEI works with 17 teacher-training institutions in all the regions of the country as well as 17 regional offices of the DepEd) to deliver training to teachers nationwide. One hundred and twenty-eight trainers, sixty-four each for science and mathematics, form a national trainer pool that assists DOST-SEI in its various training programs under Project STAR.

In July 2022, Project STAR launched a Content Webinar Series to enhance teachers' knowledge on challenging science and mathematics topics identified through needs assessments. There were four (4) sessions conducted during the webinar for each subject theme (Biology, Chemistry, Physics and Mathematics). During the content enrichment webinar series, a diverse range of topics in biology, chemistry, and physics which are hard to teach were covered, providing participants with valuable insights and knowledge.

In light of recent unpredictable situations, "survivability" has become a key focus, pushing teachers to adapt their methods. The education sector must develop professional and innovative programs to ensure teaching quality is maintained, upskilling and reskilling educators to enhance their job security and effectiveness. The demand for greater educational opportunities persists, driven by technological advancements and market changes. Professional development programs are essential for workforce competitiveness, ensuring stable employment and adaptability. As technology becomes more accessible, teachers must stay ahead of their students, necessitating continuous capacity building.

Many teachers recognize the importance of this program and are constantly working to enhance their skills. Simultaneously, schools and educational institutions must frequently conduct professional development programs for teachers to keep them up to date on a variety of innovative teaching strategies, concepts, and techniques. The following strategies can help ensure teachers have the necessary skills to impart the appropriate education to the new generation of learners in the most effective manner: 1) provide teachers with access to the latest tools; 2) integrate technology into teaching processes; 3) introduce teachers to 21st-century concepts; and 4) use technology to train teachers.

A new education initiative's effectiveness ultimately

depends on both the program itself and — more importantly — the role of the teachers who are the frontline in delivering these programs to students. Teachers, who are the final facilitators of educational programs, are therefore a key factor in the success of establishing a new program in schools. Teachers' teaching methods have become increasingly diverse. The internet has evolved into a space for them to pursue their interests and devote their time to learning new things for development. It has provided them with a platform to be engaged in rapid interaction and almost instantaneous knowledge building and development. This prompted academic institutions to consider how educational sectors could provide a quality learning experience to teachers worldwide. With the help of webinars, educational institutions have attempted to stay afloat.

MATERIALS AND METHODS

This study employed the descriptive research design as this is expected to generate a set of data that could describe the variables under study. It is descriptive because it described teachers' level of academic optimism and their level on the stages concern.

It likewise ascertained the relationships between science teachers' level of academic optimism in terms of their self-efficacy, trust in students and parents, and academic emphasis to their level on the stages of concern along with self, task, and impact concerns.

The study was undertaken on a nationwide scope, specifically in the different public schools of the country from the seventeen (17) regions. The focus of the study was the DOST-SEI Project STAR content enrichment program on Teaching and Learning in the New Educational System, which was made available to all teachers nationwide. The participating schools were selected randomly, with a specific emphasis on those schools where Science teachers were involved in the said program.

This study involved the public school Science teachers across the country, who participated in the DOST-SEI Project STAR Content Enrichment Program regardless of the grade level being taught. Considering the huge number of participants and diverse geographical locations, a random sampling technique was used in the determination of respondents in the online survey questionnaire using Slovin's formula. From a total population of 4,279 Science teachers, 353 were randomly selected as respondents. Table 1 shows the distribution of the population and sample.

The main tool for gathering the data was the Academic Optimism and Stages of Concern Survey (AOSCS). The survey questionnaire consists of three (3) parts. The first part contains teachers' personal information, age, sex, designation or position, and region. The second part determines the teachers' level of academic optimism and the third part determines the teachers' level on the stages of concern.

Part I intends to gather information about the teachers' personal information including age, sex, designation/ position, and region where they belong.

Part II, on the other hand, intends to measure the level of academic optimism as a collective construct and at an individual level which is comprised of three dimensions or measures. The first measure is the teacher's self-efficacy (items 1-23), the teacher's trust in students and parents (items 24-26), and the teacher's academic emphasis (items 27-29). The teachers were asked to rate their level of academic optimism using the five-point scale: Very High (5), High (4), Moderate (3), Low (2), and Very Low (1).

Part III of the questionnaire determines the level on the stages of concern of the respondents. This consists of 35 statements, each expressing a certain concern about the particular innovation. Five questions in the survey cover each of the seven SoC stages. The SoCQ measures the level of the seven stages of concern that reflect three dimensions: self-concerns (Awareness, Information, and Personal); task concerns (Management); and impact concerns (Consequence, Collaboration, and Refocusing). The SoCQ is adopted from Southwest Educational Development Laboratory (SEDL), 2006 used by Natividad (2022) and Ruiz (2022) in their respective studies. The purpose of this questionnaire is to determine who is using or considering utilizing various programs and what their concerns are at various stages of the adoption process. The instrument is in a format of a seven-point Likert Scale, which described their present concern on their involvement with the DOST-SEI Project STAR Content Enrichment Program with 1 as the lowest and 7 as the highest. The data gathered were treated using mean and Pearson r correlation coefficient statistics. In all tests of significance, the level of significance was set at 0.05 level.

RESULTS AND DISCUSSION

This section discusses the level of Science teachers' academic optimism as a collective construct and at an individual level which is comprised of three dimensions or measures namely: self-efficacy; trust in students and parents; and academic emphasis. The mean rating and descriptive interpretation of every indicator are shown in Table 1.

Table 1: Mean ratings of teachers on their level of academic optimism

Academic Optimism	**Mean Rating**	**Descriptive Interpretation**
Self-efficacy	4.13	High
Trust in Students and Parents	4.03	High
Academic Emphasis	4.24	High
Overall Mean	**4.13**	**High**

Table 1 reveals that the teachers have a high level of academic optimism, as indicated by the overall mean rating of 4.13. The result shows that attending a capacity building program that emphasizes content knowledge enrichment was a significant predictor of teachers' academic optimism as a collective construct. The result substantiates the recent study conducted by Alhendal, Alshatti, and Alnwaiem (2017) on teachers' academic optimism and effective learning environment, which found that a professional development program influences teachers' academic optimism. Remarkably, all of the indicators of the teachers' academic optimism are high. Indicator no. 15 with the highest mean rating of 4.33 among all indicators, shows how successful teachers are in fostering students' values of learning. Teach Middle East (2016), in its article, mentioned that one of the continuing challenges teachers face is engaging students in meaningful learning experiences. Based on the result shows that teachers are passionate about bridging the gap between required content and what is meaningful and relevant to students' lives. It enables students to not only determine the outcome but also see how the content relates to the world in which students live, as well as give them control of the learning process.

As noted by Beard *et al.* (2010), academic optimism is a collective construct that includes the cognitive, emotional, and behavioral dimensions of self-efficacy, trust in students and parents, and academic emphasis. Teachers' belief that students will be influenced by their efforts is known as self-efficacy, thus it is a cognitive anticipation. The teachers' perception of the students and their parents' goodness, dependability, competence, honesty, and openness is believed to be the basis of their confidence in both of them, according to earlier studies.

In Wagner and Dipaola's (2011) study, teacher trust in students and parents is an emotional dimension. Academic emphasis pushes for specific behaviors in schools while focusing on learning. Thus, academic optimism is seen as a triadic system of relationships, each of which is interdependent in some way.

Therefore, the results best corroborate with similar studies' above-mentioned results. Academic optimism, as a collective construct, works together cohesively to create a positive learning environment. In fact, the study conducted by Bevel (2010) found that teachers are comparable in nature and function, as well as in their potent and positive effect on student success.

Teachers' Level of Self-efficacy

The results revealed in Table 1 imply that the teachers have a high level of academic optimism in terms of their self-efficacy with an overall mean rating of 4.13. It shows that the teachers have a high level of confidence in their capacity to achieve the appropriate levels and desired outcomes of student engagement and learning, even with challenging or unmotivated students. Tschannen-Moran and Hoy (2004) in their study mentioned that if teachers believe they are able to affect student learning, they set higher expectations, exert greater effort, and are more resilient when things are difficult. As a result, it should not come as a surprise that teacher efficacy — one among a handful of teacher traits that are consistently connected with students' achievement, consistently and favorably relates to students' achievement.

Higher scores correspond to higher levels of self-efficacy. However having the lowest mean of all indicators of self-efficacy — the teachers' support for families in enabling their children to do well in school obtained a mean rating of 3.92. Establishing a connection between schools and home is one of the biggest challenges among teachers as mentioned by Delgado (2019), particularly true for families with low economic resources. It might be challenging for parents to feel at ease attending meetings or school activities when they cannot read or write or when their mother tongue is another language than the one that prevails in school. Nevertheless, studies have shown a direct connection between parents' involvement in their children's education and students' academic success. In addition, the earlier link between parents and their children's educational process establishes a stronger basis for the student's success.

Throughout the teaching and learning process, teachers employ a variety of assessment tools to assess their students' progress. Although exhibiting a high descriptive interpretation, indicator no. 1 - using a variety of assessment strategies, obtained a mean rating of 3.96, the lowest among all self-efficacy indicators. It demonstrates the necessity of giving teachers assessment strategies for improved teaching and learning.

Teachers' Level of Trust in Students and Parents

This measures the confidence that teachers have in parents and students to be supportive of the school and students. As cited in the study of Bevel (2010), a trusting relationship includes feelings of compassion, reliability, competency, honesty and openness.

In general, effective teachers must have trust in their students' readiness to learn and the capability to succeed. The overall mean score, as shown in Table 1 for this indicator is 4.03. Most of the teachers, who participated in this study are confident that parents and students are supportive of teachers and students. Therefore, similar to teachers with high self-efficacy, according to Tschannen-Moran (2004), teachers who trust students and parents are more likely to establish high but achievable expectations from their students a factor that not only encourages but also facilitates achievement. Trust is an essential component needed to cultivate and maximize for students to develop and benefit from positive relationships. When teachers foster a safe and trusting learning environment, students feel comfortable taking chances and learning from their mistakes, and parents start to think that teachers are motivated by the best interests of their children at heart.

Teachers who responded to this study may have a strong track record and experience in removing these

psychological and social obstacles to create environments where students of all academic abilities may give their all. By doing this, they foster a culture of trust among their students, which has been demonstrated to enhance interpersonal interactions, raise engagement, foster creativity and performance, and make them feel valued and included. Students may create connections with everyone in the room by developing relationships that are built on trust and open communication in an emotionally supportive and psychologically secure learning environment.

Teachers' Level of Academic Emphasis

As cited by Nelson (2012) from the study of Hoy, Gage, and Tarter (2006), academic emphasis refers to how much a school is motivated by the pursuit of academic excellence and an urge for academic achievement. Academic emphasis carries out a demand or pushes for excellence in student accomplishment. Additionally, Beard *et al.*, (2010) stated that teachers' academic emphasis is determined by how well teachers can involve their students in relevant academic tasks.

The overall mean rating for academic emphasis as shown in Table 1 is 4.24 (high). The academic emphasis of the teachers, who took part in this study maintains a high commitment to upholding high academic standards and encouraging academic success for all students. Moreover, this indicates that majority of the teachers go to great lengths in promoting a culture of academic excellence among their students and are confident in their ability to do so in their teaching practices.

Teachers' Level on the Stages of Concern in the Implementation on the DOST-SEI Content Enrichment Program

This section of the study presents the results of the survey on the teachers' level on the stages of concern as classified under CBAM in the implementation of the DOST-SEI Project STAR Content Enrichment Program attended. The results of the study show that teachers are at a high level in implementing what they learned in the DOST Project STAR Content Enrichment Program with an overall mean rating of 5.51 as shown in Table 2.

Table 2: Mean ratings of teachers' level on the stages of concern on the implementation of DOST-SEI Project STAR Content Enrichment Program

Stages of Concern	Mean Rating	Descriptive Interpretation
Self-Concern Stage	**5.43**	**Moderately High**
Awareness (Stage 0)	5.12	Moderately High
Informational (Stage 1)	5.53	High
Personal (Stage 2)	5.65	High
Task Concern Stage	**5.37**	**Moderately High**
Management (Stage 3)	5.37	Moderately High
Impact Concern Stage	**5.63**	**High**
Consequence (Stage 4)	5.73	High
Collaboration (Stage 5)	5.66	High
Refocusing (Stage 6)	5.51	High
Overall Mean	**5.51**	**High**

This essentially implies that the teachers show an interest in collaborating and coordinating the implementation with others and in comparing their performance to others potentially learning from one another.

The results also show that the teachers concentrate on how the innovation impacts the students in their direct circle of influence. Considerations include the relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and modifications required to enhance student outcomes.

Teachers' Level on Self-Concern Stage

The teachers' level of self-concern stage consists of three stages: awareness, informational, and personal. The self-concern stage emphasizes teachers recognizing their needs, seeking information, and taking personal responsibility for their professional growth and well-being. In this stage, the teachers scored moderately high with a mean rating of 5.43, as revealed in Table 3. The teachers prioritize their personal concerns regarding the impact of innovation or change, demonstrating a moderate level of worry about their skills, abilities, and workload. Recognizing the significance of self-concern, it becomes essential to enhance teachers' competencies and capabilities, enabling them to understand how the change influences their roles and responsibilities effectively.

As shown in Table 3, this study found that the teachers are at a moderately high level of awareness stage with an overall mean of 5.12. This result implies that the teachers are moderately highly concerned with change, aware of the program, and interested in its implementation. However, factors such as teachers being novice, limited time to review and apply the innovation, have attended few sessions of CEWS greatly affect their implementation

of such innovation.

In the informational stage, individuals show a general awareness of the innovation thus, sparks their first curiosity in learning more about the program and how it works. Any interest in the innovation is focused on its impersonal, substantial features, such as its overall traits, outcomes, and requirements. The teachers are at high level in this stage with an overall mean of 5.53, as shown in Table 3. It implies that the teachers, personally, are no longer self-conscious about innovation. Therefore, there is no need to provide open access to precise and quality information as the recommended course of action.

The personal stage is where teachers start to consider the direct impact of the innovation on their instruction capabilities. Teachers scored high in this stage with a mean rating of 5.65. This indicates confidence in meeting the innovation's expectations and their ability to fulfill these demands. Teachers are concerned about the personal impact but are willing to collaborate with others to optimize the innovation's effects. They recognize that their well-being and growth are linked to effectively implementing educational innovations.

Teachers' Level on Task Concern Stage

In this stage (management stage), the teachers' concerns are primarily focused on the specific tasks and activities related to educational innovation or change. Teachers become concerned with the actual application, thus they begin planning the implementation. The teachers' level of task concern stage is crucial because it addresses the practical aspects of implementing innovation in the classroom. Teachers' concerns at this stage often revolve around how the innovation aligns with their existing teaching practices, the impact on student learning, and the need for additional support or training to effectively carry out the new tasks.

At this stage, teachers demonstrate a moderate level of concern (mean rating of 5.37) regarding the integration of new tasks into their teaching responsibilities. They actively seek information and resources to understand and adapt to these changes, emphasizing the importance of managing time, developing skills, and balancing workloads for successful implementation.

Despite these challenges, teachers remain motivated to integrate innovations into their teaching practices. Participating in webinars provides them with practical examples and personalized insights into how innovations can be applied in their own teaching contexts, benefiting both themselves and their students.

Teachers' Level on Impact Concern Stage

The teachers' level of the impact concern stage consists of three stages namely: consequence; collaboration; and refocusing. It focuses on teachers' concerns and attitudes related to the perceived impact and consequences of an educational innovation or change.

In this stage, the teachers exhibit a significant level of engagement (high), with a mean rating of 5.63. This indicates that their attention shifts towards the broader implications of the innovation or change on the organization. The teachers become more attuned to evaluating the potential benefits, challenges, and consequences associated with the change to enhance overall effectiveness and ensure success. Teachers are concerned about how the change will directly affect students or their immediate area of influence in stage 4, which is called the consequence stage. As shown in Table 2, at stage 4, the teachers performed well with an overall mean rating of 5.73 (high), the highest mean rating among all stages of concern. They are highly aware of how the innovation relates to their students; the evaluation of student outcomes, including performance and competencies; and the changes needed to improve student outcomes. Overall, the teachers at this stage are highly motivated to ensure that the innovation positively impacts their students. Also, there is sharing of how this innovation can be effective, how it works, and/or has worked.

Collaboration stage is where teachers begin wanting to share ideas, strategies and consequences on how they implemented innovations in the classroom processes with others and want to see how they compare to others. Table 3 reveals that the teachers are high on the collaboration stage with an overall mean of 5.66, which equates to collaboration. This result shows that teachers are highly interested in collaborating with others and sharing their experiences with the innovation. They want to develop working relationships with both colleagues and outside faculty and coordinate efforts to maximize the innovation's effects. This is a positive outcome, as collaboration and sharing of ideas can lead to better implementation and outcomes.

In the refocusing stage, teachers reflect and explore ideas to see what worked and what could be made better and how the innovation could be used in different ways. With an overall mean rating of 5.51 (high) at this stage, the teachers are highly focused on exploring ways to reap more universal benefits from the innovation. Also, this indicates that they are actively reflecting on their use of the innovation and looking for ways to improve it or use it in different ways. The high ratings suggest that the teachers are open to revising their approach and adapting to the needs of their students. However, there is still a need to provide further resources on strategies and teachers must be allowed to share their struggles and successes with others.

The study of Alshammari (2000) stated that teachers who effectively accepted educational innovation are those who are at the four late stages of concern (management, consequence, cooperation, and refocusing), and which majority of teachers fall into this stage. However, teachers who express self-oriented concern (awareness, informational, and personal) are not using the innovation because they have not yet embraced it, and this is not true of any other teachers as shown.

Relationship between Teachers' Level of Academic Optimism and Level on their Stages of Concern

The result of the correlation analysis between factors related

Table 3: Summary of the correlation coefficient between teachers' academic optimism along the three dimensions and their stages of concern

Academic Optimism	Stages of Concern		
	Self	Management	Impact
Self-efficacy	.397**	.259**	.379**
Trust in Students and Parents	.313**	.368**	.324**
Academic Emphasis	.439**	.284**	.407**

**Significant at the 0.01 level*

to teachers' level of academic optimism namely: self-efficacy; trust in students and parents; and academic emphasis and to their level on the stages of concern according to CBAM classification namely: self-concern; management concern; and impact concern are presented in Table 4.

The results reveal that the academic optimism of teachers is positively correlated to their stages of concern at the 0.01 level of significance.

Self-efficacy, the belief in one's ability to succeed academically, shows positive correlations with three stages of concern: self-concern (r = .397**), management concern (r = .259**), and impact concern (r = .379**). This suggests that teachers with higher self-efficacy levels are more concerned about their performance, academic management, and the impact of their actions, indicating greater engagement in their teaching practice

Trust in students and parents, reflecting confidence in their abilities and support, also correlates positively with the three stages of concern: self-concern (r = .313**), management concern (r = .368**), and impact concern (r = .324**). This implies that higher levels of trust lead to increased concern among teachers regarding their own performance, academic management, and the impact of their efforts, fostering stronger teacher-student-parent relationships.

Academic emphasis, the importance placed on academic pursuits and achievements, correlates positively with self-concern (r = .439**), management concern (r = .284**), and impact concern (r = .407**). This indicates that individuals prioritizing academic success are more likely to be concerned about their own performance, academic management, and the implications of their decisions, potentially enhancing engagement in student learning outcomes

Overall, the correlations indicate that these factors of academic optimism (self-efficacy, trust in students and parents, academic emphasis) are associated with higher levels of concern in the different stages. This suggests that individuals who possess these optimistic factors are more likely to actively engage with and be invested in their well-being, the management of their work, and the potential impact of their actions on their academic pursuits.

These findings can have several implications in educational settings. Educators and institutions could focus on fostering self-efficacy beliefs among students to enhance their engagement and concern about their academic performance. Building trust and strong relationships with students and parents can contribute to students' increased concerns about their academic progress, management, and impact. Encouraging an academic environment that emphasizes the importance of learning and achievement may lead to higher levels of concern among students.

CONCLUSION

Participation in a professional development program that enriches content knowledge has led to high academic optimism among public school Science teachers across the Philippines. These teachers are passionate about bridging the gap between required content and what is meaningful to students, though they face challenges in connecting classroom learning with support from home.

Teachers are highly effective in applying what they've learned from the DOST-SEI Project STAR Content Enrichment Program, showing strong interest in collaboration and implementation. However, additional resources and opportunities to share experiences are needed for further growth.

There is a positive correlation between teachers' academic optimism in terms of self-efficacy, trust in students and parents, and academic emphasis and their stages of concern as outlined by the CBAM framework (self, task, and impact stages).

Adult Learning Theory principles, such as self-directed learning and collaboration, help teachers engage deeply in professional development, leading to significant growth and improved teaching practices that positively impact student outcomes.

CBAM principles are instrumental in assessing teachers' levels of concern during the implementation of knowledge gained from the Project STAR Content Enrichment Program. This analysis provides insights into teachers' current stages of concern and specific needs, informing targeted interventions and support strategies for successful implementation.

Finally, the Theory of Academic Optimism is vital for identifying factors that influence student achievement and for fostering a positive learning environment that promotes student success.

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