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Development of STMP Model: A Basis of Integrating Positive Education in Mathematics

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Abstract. This study aimed to develop a theoretical and practical model for integrating positive education based on existing theories related to pedagogical practices, human values and peace education. The STMP (Student, Teacher, Method, and Positive Education) model was developed as a framework for incorporating positive education into mathematics instruction through collaborative and active learning for students. Each of the components in the framework is closely interconnected, working together to create a comprehensive model. The development of the framework was based on a thorough analysis of various relevant literature within the field of positive behavioural systems, ensuring that it is grounded in established research and best practices. The STMP serves as a guide for teachers in integrating positive and moral education concepts into the mathematics curriculum and in designing specific activities in the classroom. Findings of the STMP model suggest that it would be a guiding principle for teachers implementing positive education interventions by ensuring an engaging classroom practice. The STMP model supports the Commission on Higher Education (CHED) of the Philippines with its Memorandum Order No. 42, Series of 2021, which outlines guiding principles and practices on peace as well as positive education. As the framework is still in its developmental stage, further research is recommended to refine its components and explore its effectiveness on a broader scale.

Keywords: library research; mathematics education; PERMA model; positive education; STMP model

1. Introduction

Positive education focuses on the study of contentment and well-being to instigate and support every student, educator, learning institution, and community to flourish. Camacho-Morles et al. (2021) stated that achievement emotions are connected to motivation, self-regulation, and thinking processes,

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all of which play a key role in students' academic success or failure. With this, schools should create tailored programs that meet the individualized need to enhance well-being. This is a central concept in positive education in which three known frameworks emphasized: PERMA (Positive feeling, Engagement, Relationships, Meaning, and Accomplishment) framework, Broaden and Build framework and the Geelong Grammar School framework. The three teach skills that help students enhance good relationships, foster positive emotions, build resilience, and maintain a healthy lifestyle.

The foundation of positive education is primarily rooted in the PERMA Model by Seligman et al. (2005), which focuses on positive emotions, engagement, relationships, meaning, and accomplishment to enhance quality of life through happiness, peace, and human values. Fredrickson's Broaden-and-Build Model (2001) further reinforces this concept by showing how positive emotions can shift one's perspective toward a more optimistic outlook. In contrast, the Geelong Grammar School Model illustrates how these programs can improve students' learning abilities and establish a strong basis for a positive life. Together, these theories and other undertakings for positive education shall be combined to foster a learning environment in schools which advocate positive education.

Benoit and Gabola (2021) identified the effectiveness of positive education in significantly enhancing students' well-being. Mukhlis et al. (2024) conducted a literature review on significance of psychological well-being in enhancing the performance of educational institutions. Strengthening instruction by incorporating positive values and well-being is essential, and schools should focus on creating meaningful lessons like in mathematics discipline. Thus, this study developed the STMP model which does not only emphasize character and moral strengths, but the involvement of students, teachers and methods.

This integrated approach focuses on student learning, teaching strategies, collaborative methods, and concepts of positive education, which can be applied through an intervention module designed for teachers. Using of cooperative learning strategies can improve academic performance while also creating a supportive classroom environment that helps reduce stress and enhance students' well-being regardless of age, sex or tribe. A study of Kovacevic et al. (2024) stated that interventions should be focused on fostering school belonging along with the development of positive disciplinary practices.

Therefore, it is essential to strengthen mathematics instruction by integrating positive values and well-being. Schools should prioritize constructing meaningful mathematics lessons. Collaborative learning methods, including games, mock-ups, problem-solving, and interactive approaches, can be used to foster academic attainment and support positive education. These methods are important for reducing student anxiety and depression, enhancing the learning experience.

This study examines the impact of incorporating collaborative and active learning activities in mathematics lessons. It introduces the STMP model (Students, Teachers, Methods, and Positive Education), an integrated approach focusing on student learning, teaching strategies, collaborative methods, and ideas in positive education. The STMP model can be applied through an intervention module which teachers can develop integrating positive education.

The Executive Order No. 570 issued in 2006 by the government of the Philippines and aimed at institutionalizing peace education in basic education and teacher education, started the implementation of peace and positive education to help achieve a flourishing school environment. However, peace and positive education have not yet been institutionalized due to a lack of accessible and relevant resources. Consequently, the Commission on Higher Education (CHED) of the country released its Memorandum Order No. 42, series of 2021, suggesting guiding principles and practices on peace as well as on positive education. This research was conducted in response to this existing gap in the literature.

Given the high levels of students' anxiety, reduced life satisfaction, and the need for positive emotional support in education, particularly in rural and conflict-affected communities in the Philippines, there is a clear need to address these issues and supply appropriate guide for teachers. This study, therefore, develops a model in mathematics lessons which can be employed in mathematics learning and teaching. It is noted, however, that this study is limited with the identified models in which the study is anchored on, the topics in which the STMP was applied, and the acceptance of the teachers with the methods. Thereby, this study is continuously on the developmental phase.

2. Literature Review

2.1. PERMA Model

Positive education focuses on the study of being happy in life and achieving good health, often utilizing Seligman's PERMA Model. Seligman's work integrates positive psychology into education to reduce depression among youth and enhance overall happiness. It emphasizes the importance of teaching that engages both the heart and the mind in schools. Kovich et al. (2022) studied the five elements the PERMA model has, reinforcing its relevance to the undergraduate students, emphasizing that education should not only prioritize academic success but also foster positive personality traits.

A positive psychological intervention based on the PERMA model can successfully reduce personal anxiety among a group of students in technical colleges and enhance the overall well-being of these students. The PERMA model, as illustrated in Figure 1, outlines five essential components of well-being and happiness that should be integrated into educational settings: positive emotions (feeling better), engagement (being fully absorbed in activities), relationships (genuine connections with others), meaning (having purpose in life), and achievement (a sense of accomplishment and fulfillment).

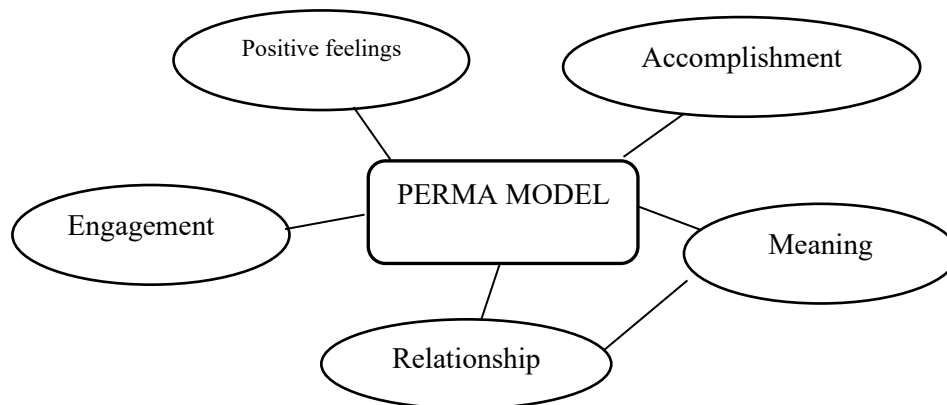


Figure 1: The Seligman's PERMA Model

Overall, the PERMA framework aims to help students develop and practice positive skills, fostering emotional states like gratitude, resilience, love, and encouragement. Started by Seligman within the framework of Positive Psychology, this approach seeks to understand and enhance what makes life fulfilling. It encompasses both traditional educational skills and the pursuit of happiness, aiming to broaden the understanding of positive emotions, traits, and supportive environments. Rather than merely viewing happiness as the absence of sorrow, Seligman's humanistic approach offers a more holistic perspective on one's learning. Key elements of positive education include "relationship, responsibility, gratefulness, optimism, strength, kindness, and implication."

Modern education increasingly prioritizes not only academic excellence but also well-being. The study of Parcon et al. (2025) aimed at assessing schools in their compliance of responsibilities to academic excellence and well-being of teachers and students. Positive education provides a practical framework to achieve this, backed by extensive research highlighting the advantages of well-being skills. Norrish (2015) underscored that positive well-being is fundamental to the principles of positive psychology and its application in educational settings. Despite increasing interest, positive education has not yet received comprehensive theoretical and empirical attention, especially regarding students in the Asian region, highlighting a significant research gap in this context.

2.2. Broaden-and- Build Model

The Broaden-and-Build framework incorporates theories to generate its model. According to Fredrickson (2001), when positive emotions are scarce, individuals feel stuck and lose their behavioural flexibility, becoming overly predictable. In contrast, when positive emotions are plentiful, people thrive, becoming more creative, productive, and resilient. Like the PERMA, the Broaden-Build framework employs that positive emotions expand individuals' perspectives and outlooks, leading to transformative effects on their well-being and behaviour. Positive emotions expand the range of possible thoughts and actions, thereby increasing personal resources, including physical, intellectual, social, and psychological aspects. In contrast, negative emotions narrow focus and restrict behavioural options. The Broaden-and-Build framework as shown in Figure 2, specifically addresses how certain positive emotions, such as joy,

interest, contentment, and love, contribute to the development of lasting personal resources. These expanded resources, in turn, help individuals adapt more effectively to future challenges and foster overall well-being.

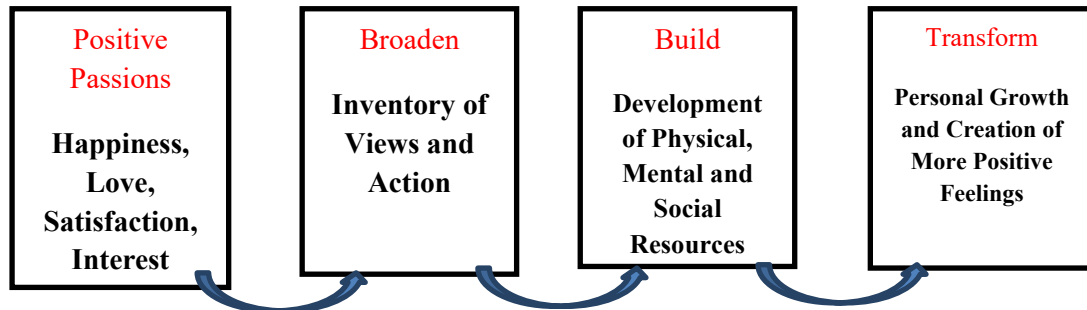


Figure 2: The Broaden-and-Build Theory

A key principle of the Broaden-and-Build model is that positive feeling widens an individual's immediate range of thoughts and actions. For example, joy inspires playful behaviour, interest encourages exploration, contentment fosters appreciation and integration, and love creates a continuous cycle of these behaviours in safe and close relationships. This broadening effect contributes to the development of various personal resources—physical, intellectual, social, and psychological. The model provides a fresh theoretical framework for understanding positive emotions in this growing field of positive psychology. It reviews initial observed indication supporting this theory and highlights areas where additional research is needed. The findings indicate that the ability to involve positive feeling is an essential individual strength for understanding the idea of individual flourishing.

2.3. Geelong Grammar School Model

Geelong Grammar School places a strong emphasis on the well-being of both students and staff. The widespread issue of depression among youth, the decrease in their satisfaction in life, as well as the connection in learning and positive emotions indicate the need of teaching well-being skills in schools. Empirical research supports the effectiveness of teaching resilience, positive emotions, engagement, and meaning to students, leading to significant improvements in these areas.

Norrish (2015) iterates that Martin Seligman who is a key figure in Positive Psychology, has collaborated with Geelong Grammar School on a project that has pioneered the field of positive education. The Geelong Grammar School theory, depicted in Figure 3, is grounded in the logical principles of positive psychology and is informed by practical experiences and observations.

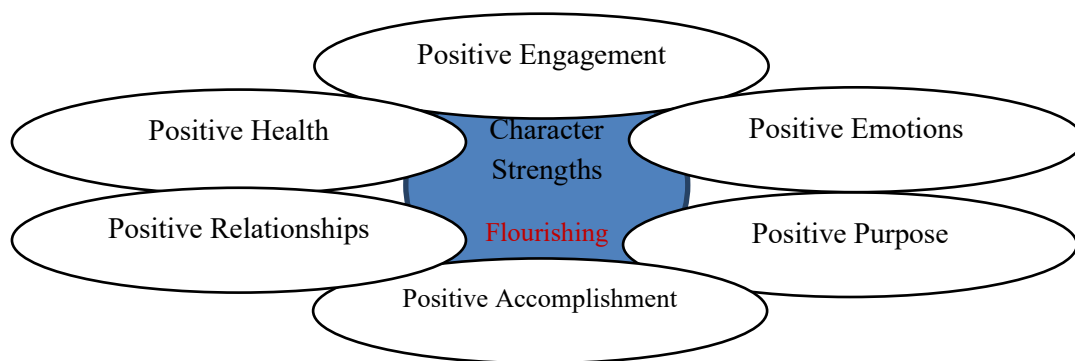


Figure 3: The Geelong Grammar School Model

At Geelong Grammar School, the positive education framework was implemented twice a week by the in-charge of ten school areas, many of whom were mathematics teachers. During their initial lessons, students first took the Values-in-Action signature strength test, which involved writing stories about moments when they felt they performed at their best. Most students highlighted two or three strengths in their narratives. Subsequent lessons included activities such as questioning members of the family to create a ‘family tree’ of strengths, determining how to use strengths to conquer life’s challenges, and emerging an unexpected strength. In the concluding topics, students identified leaders—either peers or teachers—whom they viewed as exemplars of various strengths. This approach provided both students and teachers with a shared language for discussing personal experiences and strengths.

2.4. Developmental Psychology and Positive Behaviour Support (PBS) Model

Elizabeth Hurlock (1898-1988) was a key figure in developmental psychology who investigated how positive psychology methods can assess the effects of positive reinforcement in educational settings. Hurlock’s research highlighted the superiority of praise over criticism, finding that praise serves as a more effective and lasting motivator. Her studies indicated that praise positively influences children's motivation across all ages, abilities, and genders.

Theory on behaviorism supported this by noting that praise enhances intrinsic motivation, particularly among ethnic minority students. While some studies question the effectiveness of praise, its careful application has been shown to correlate positively with self-confidence and academic success. Cognitive evaluation theory also suggests that praise enhances individuals' perceptions of their performance, with the positive emotions it generates leading to improved outcomes.

The Positive Behaviour Support (PBS) model offers tailored strategies for children who display challenging behaviours. It is organized in a pyramid format, featuring the most intensive interventions at the peak, followed by targeted social and emotional support, quality supportive environments, strong relationships, and a skilled workforce at the foundation. This layered approach is designed to meet a range of needs through an all-encompassing support system.

2.5. Positive Education's Impact on Mathematics Learning and Teaching

Mathematics instruction encompasses cognitive processes, but the affective component plays a crucial role in shaping students' perceptions of its value. Alford and White (2016) emphasized that growing evidence supports the integration of positive psychology into education, advocating for well-being and happiness as fundamental goals in schools. This approach is seen as essential for enhancing academic strategies, improving school retention rates, and increasing student engagement. Boaler (2013) stressed the importance of fostering open mindsets and incorporating open-ended tasks in math education, aligning with character traits like creativity and curiosity. Similarly, Jaffe (2020) explained that fostering a growth mindset in mathematics helps students develop resilience and a positive approach to learning, which contributes to their long-term academic success.

Positive education strategies can be reflected in mathematics teaching, incorporating models like Seligman's PERMA Model and Fredrickson's Broaden-and-Build theory. Positive education is a teaching approach that incorporates positive psychology by focusing on individual strengths and interests to enhance learning. Unlike traditional methods that cater to an "average" student and emphasize standardized testing, positive education tailors learning goals to each student's unique needs. Kucuksuleymanoglu (2025) argued that integrating well-being principles into education helps students build resilience, stay engaged, and find a greater sense of purpose in their learning.

This approach views learning as a collaborative process, where teachers facilitate and value student feedback. Another study by Suldo et al. (2019) examined the relationship between positive education and anxiety in students. They found that positive education can play a crucial role in helping students manage their anxiety and improve their overall mental health.

2.6 Student, Teacher, Method and Positive education

The framework talks with these four components:

2.6.1 Student

The student component involves how learners engage with mathematical knowledge through positive education, drawing on Dewey's progressivism, constructivism, Montessori learning, and ethnomathematics. Norrish (2015) described a flexible, science-informed positive education model designed to support student flourishing. Huang et al. (2019) also noted that teacher improvement in instruction boosts student achievement. Engagement in extra activities has been shown to improve academic performance and non-academic skills such as initiative and social interactions.

2.6.2 Teacher

Teachers play a crucial role in relating mathematical knowledge to positive education. They should possess instructional leadership skills and a positive outlook to maximize intervention outcomes. The teacher component is influenced by Dewey's progressivism, constructivism, Montessori learning, and ethnomathematics. Effective teaching practices include employing diverse

pedagogies, fostering student responsibility, maintaining high expectations, and building positive relationships. A successful positive education environment relies on both student perseverance and teacher commitment.

2.6.3 Method

Active and collaborative learning strategies are essential for motivating students. The study's modular approach emphasizes these strategies, including games, simulations, problem-solving, and cooperative learning. These methods are based on progressivism, collaborative theory, and constructivism. Aragón et al. (2024) investigated how teaching methodologies influence cognitive processes, demonstrating that instructional strategies have a notable effect on students' mathematical performance. The OECD report in 2014 as cited in Dossey and Funke (2016) that students who embrace problem-solving perform better academically. Solis et al. (2012) provided a model for evidence-based instructional decisions, while Johnson and Johnson (2008) suggest that a collaborative learning must be of a group of 2 to 4 students to be ideal.

2.6.4 Positive Education

The STMP model enables the integration of positive education into mathematics instruction. The intervention module emphasizes student engagement through collaborative and active learning activities, in line with the objectives of Positive Education at Geelong Grammar School, which seeks to foster student flourishing. Furthermore, the model effectively manages challenging behaviours in various settings. Integrating positive education strategies encourages the Seligman PERMA model and Fredrickson's theory, enhancing the affective domain in mathematics education.

Research indicates that implementing positive education principles enhances student engagement and motivation, which are vital for academic success. Positive and peace education have a positive impact to those who participate it (Nario-Galace, 2020). The integration of peace education aligns with the goals outlined in the Philippine constitution, which emphasizes renouncing violence and promoting a peaceful society. Duan and Bu (2017) explored the PERMA model in positive education, showing how interventions targeting positive emotions, engagement, relationships, meaning, and accomplishment lead to improvements in students' well-being and learning behaviours.

Studies indicate significant increases in subjective well-being and positive academic outcomes for students participating in such programs. Arenas et al. (2024) highlighted how character strengths like hope, curiosity, perseverance, and love are strongly correlated with life satisfaction and academic success. Incorporating these elements in educational practices enhances student engagement and reduces mental health issues.

3. Methodology

This study adopted the library research method which involves a systematic exploration of existing literature, documents, and information by incorporating various relevant literature. Library-based research in the social sciences involves locating and interpreting a range of secondary sources to

support the development of conceptual frameworks and analyses. Grounded theory analysis was also used to build the framework from the conducted library research. Unlike conventional research methods, which typically start with a hypothesis or theory to validate, grounded theory starts with the collection and analysis of data to inductively build theories. This method is especially useful for investigating novel or complex phenomena. Pulla (2014) noted that methodology for grounded theory studies is flexible, allowing researchers to adopt steps as needed until a theory is formulated and designed.

In this study, several theories were considered which prompted the researcher to develop the STMP (student, teacher, method, and positive education) theory in integrating positive education in high school curriculum. Using the STMP model helps teachers plan math lessons more effectively while also supporting students' well-being and motivation, leading to better teaching, more confident learners, and stronger results in mathematics. The coding and categorization of the concepts and themes from different models were done to build the STMP model. Although no empirical testing was performed, the framework is conceptual, and validation is still in progress.

4. Results

Through the PERMA model, Broaden-and-Build theory, Geelong Grammar School theory, Dewey's learning theory, constructivist learning perspectives, Maria Montessori approach, developmental psychology perspectives and Positive Behaviour Support (PBS) model, a model can be developed which all agree of the four elements needed to develop a good integration of positive education: Students (S), Teachers (T), Methods (M), and Positive Education (P), represented by the tetrahedron's vertices which is shown in Figure 4.

The result of the STMP model can be carried out in Mathematics lessons. Table 1 is an example of how it is done in Mathematics lessons of Grade 7 (2nd quarter coverage of national-based competency). When implementing the STMP model, it's crucial for students to grasp both mathematical concepts and principles of positive education. Teachers will link each mathematical teaching method to well-being and human values through a range of collaborative and participative activities.

First, they will present the lesson content, then guide students through collaborative activities and learning tasks. This is similar to the study conducted to measure the impact of Polya's four-step method on the students' performance in mathematics through interactive tasks (Gulam and Arenas, 2024). After these activities, teachers will connect each task to the principles of positive education as described in the STMP model. This method ensures that students gain both mathematical knowledge and positive education concepts at the same time.

Table 1: Applying the STMP model in Grade 7 lessons

Students	Teachers	Methods	Positive Education Concept
Students differentiate between constants and variables and recognize their relationship to unity and friendship	The teacher introduces the topic then explains that maintaining understanding, respect, and unity among friends is essential for sustaining friendships. Students are also encouraged to have as many friends as they desire, emphasizing that having more quality and trustworthy friends is beneficial. The teacher can elaborate on this based on her own experiences.	Cooperative learning	Strength in the Unity with Friends (Relationships, Positive Feelings). This unity should be constantly present in friendships.
Students differentiate between constants and variables and understand their connection to familial love.	The teacher explains that our feelings fluctuate based on our mood but emphasizes that the pursuit of happiness is a constant goal for everyone, especially finding joy in the love of family.	Cooperative learning	Family Love (Relationship, Positive Emotions). Love knows no variables.
Students can identify a term and understand how it relates to life satisfaction and familial love.	The teacher may explain that the concepts of variables are akin to the strength derived from family unity. Life satisfaction is assured when there is unity and love within the family, along with active participation in peace initiatives.	Games	Life Satisfaction with the Family, Peace Awareness through cooperation (Relationship, Positive Emotions). Long term relationship creates life satisfaction.
Students can define an algebraic expression and appreciate its importance for a sense of belonging within the family and serving the community.	The teacher may compare algebraic expressions to a term or group of terms working together like a family or community with a shared goal, where each member plays a crucial role in achieving success.	Simulation	Belongingness in the family and Civic Service (Broaden and Build, Engagement)
Students can convert mathematical	The teacher may draw an analogy between translating algebraic	Simulation,	Happiness and Contentment in Life (Positive

sentences into algebraic expressions and relate this skill to happiness and contentment in life.	expressions and showing respect and affirmation. For example, just as specific operations such as addition or subtraction are used to translate algebraic expressions, respect (which is added) is given to individuals with significant achievements.		Emotion, Transformation)
Students can also translate verbal phrases into algebraic expressions and recognize how this process relates to respect and affirmation.	The teacher may draw a parallel between translating verbal phrases into algebraic expressions and the opportunities we encounter each day. Despite life's challenges and struggles, we should remain grateful. Addition can symbolize the abundance we seek in life, while subtraction represents the removal of worries and stress. Emphasizing contentment, the teacher would encourage appreciating life even in simplicity.	Problem-solving	Respect and Affirmation (Positive Emotion, Broaden-and Build)
Students simplify algebraic expressions and understand their connection to personal responsibility.	Simplifying algebraic expressions involves streamlining terms; similarly, accepting responsibility requires considering both personal needs and those of others.	Game	Being responsible (positive emotion, transformation)
Students simplify algebraic expressions and recognize their connection to strong friendships.	The teacher may liken simplifying algebraic expressions to making life more manageable with the support of friends. True friends are always present, even during difficult and complex times.	Cooperative learning	Promotion of good friendship (relationship, transformation)

Table 1 shows how the STMP is applied in Grade 7 class. Positive education strategies, like those integrating elements of the PERMA model (Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment), help foster a positive school environment that supports motivation and academic success (Arenas et al., 2024). Zewude & Maria (2022) highlighted that

psychological capital, which includes hope, confidence, resilience, and optimism, contributes significantly to student motivation, well-being, and academic success. Linking student and positive education concepts with teacher factors and instructional methods is essential, as their interaction plays a crucial role in effectively integrating Positive Education within the STMP model.

5. Discussion

Through the different models identified in the literature review, concepts for the STMP were initialized using the following steps: identification of key concepts in positive education, themes of the concepts, coding and labeling of themes for the model and finalizing the conceptual model. With the help of external validators, themes emerged. The identified themes were Student, Teacher, Method and Positive education, which is coded as S, T, M, and P, respectively.

Basch (2011) stated that even the best-prepared teachers cannot drive educational progress if students lack motivation and the ability to learn, regardless of accountability measures or school governance structures. Mitchell and Bradshaw (2013) supported this perspective, suggesting that professional development should prioritize strategies that promote positive behaviour and reduce reliance on exclusionary discipline to enhance the school climate and learning environment. Effectively improving school learning requires the integration of students, teachers, methods, and positive education principles. The STMP model connects each element to fulfil the objectives of positive education in teaching and learning mathematics, as illustrated in Figure 4 below.

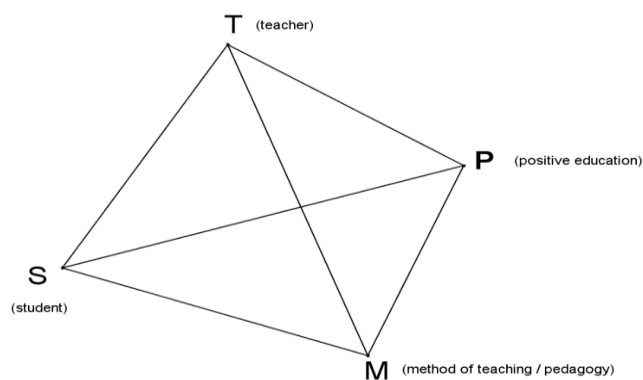


Figure 4: The Development of STMP Conceptual Model

The STMP Tetrahedron Framework comprises four main parts: Students (S), Teachers (T), Methods (M), and Positive Education (P), represented by the tetrahedron's vertices. The relationships between these components are as follows:

1. Teaching Process Relation (S-T): This link describes the interaction between students and teachers.
2. Learning Process Relation (S-M): This connection pertains to the relationship between students and the teaching methods or pedagogy employed.

3. Positive Education Integration Process Relation (T-P): This link describes the relationship between the teacher and the positive education theories or components being applied.
4. Teaching Method Adoption Process Relation (T-M): This indicates the connection between the teacher and the teaching methods used.
5. Positive Education Infiltration Process Relation (P-M): This relationship focuses on the blending of positive education theory with the teaching methods.
6. Positive Education Theory Intervention Process Relation (S-P): This link refers to the interaction between students and the positive education theories or elements that the teacher has adopted.

Each triangular side of the model demonstrates the interactions among three components. For example, the triangular face ΔTSM illustrates the dynamics between and among the teacher, student, and teaching methods in traditional settings without positive education elements. With positive education incorporated, three additional triangular faces— ΔPST , ΔPSM , and ΔPTM —emerge, highlighting new interactions. This model aids teachers in planning instructional materials, learning activities, and pedagogies systematically to integrate positive education effectively). Although no empirical testing was performed, the framework is conceptual, and validation is underway.

Although not all teachers are familiar with positive education principles or how to integrate them with structured planning, coaching, collaborative planning time, and access to STMP model exemplars can build teacher confidence and competence. The STMP model offers a holistic and impactful approach to math teaching, but effective implementation requires thoughtful training, institutional support, and a cultural shift toward valuing both academic and emotional learning. With the right systems in place, these challenges can be turned into opportunities for meaningful teaching. Further studies could also improve this developing STMP model.

6. Conclusion

This study presents a practical and effective approach to integrating positive education into mathematics instruction, particularly valuable for teachers in regions of the Philippines where students often experience high levels of anxiety and consistently perform below the national average in math. By applying the STMP model, which emphasizes the interconnected roles of the student, teacher, method, and positive education, teachers can create a more supportive and structured learning environment. This model not only enhances academic performance but also addresses the emotional and psychological barriers that hinder student engagement and achievement.

The scope of this study is limited with the theoretical models it anchors on, the specific mathematical topics where the STMP model was implemented, and the level of teacher acceptance of the instructional methods. As the model remains in its developmental stage, further research is recommended to refine this framework and explore its effectiveness on a broader scale.

7. References

- Alford, Z., & White, M. A. (2016). Positive school psychology: *Evidence-based approaches in positive education* (p. 93). https://doi.org/10.1007/978-94-017-9667-5_5
- Aragón, E., Menacho, I., Navarro, J. I., & Aguilar, M. (2024). *Teaching strategies, cognitive factors and mathematics*. *Heliyon*. <https://doi.org/10.1016/j.heliyon.2024.e29831a>
- Arenas, J., Cabotaje, J. P., Agao-agao, A. M., Samson, C., & Sam, S. (2024). The moderating role of positive education to the relationship of level of anxiety and academic achievement in mathematics. *Edelweiss Applied Science and Technology*, 8(5), 429–441. <https://doi.org/10.55214/25768484.v8i5.1698>
- Basch, C. E. (2011). Healthier students are better learners: A missing link in school reforms to close the achievement gap. *Journal of School Health*, 81(10), 593–598. <https://doi.org/10.1111/j.1746-1561.2011.00632.x>
- Benoit, V., & Gabola, P. (2021). Effects of positive psychology interventions on the well-being of young children: A systematic literature review. *International Journal of Environmental Research and Public Health*, 18(22), 12065. <https://doi.org/10.3390/ijerph182212065>
- Boaler, J. (2013). The Impact of a Positive Mindset on Mathematics Learning. *FORUM* 55(1):143 <https://doi.org/10.2304/forum.2013.55.1.143>
- Camacho-Morles, J., Slemp, G. R., Pekrun, R., Loderer, K., Hou, H., & Oades, L. G. (2021). *Activity achievement emotions and academic performance: A meta-analysis*. *Motivation and Emotion*. <https://doi.org/10.1007/s10648-020-09585-3>
- Dossey, J.A., & Funke, J., (2016). Canadian and United States Students' Performances on the OECD's PISA 2012 Problem-Solving Assessment. *Canadian Journal of Science, Mathematics and Technology Education*, <https://doi.org/10.1080/14926156.2015.1119332>
- Duan, W., & Bu, H. (2017). The role of character strengths in predicting life satisfaction, psychological well-being, and academic achievement. *Journal of Happiness Studies*, 18(6), 1755–1773. <https://doi.org/10.1007/s10902-016-9789-3>
- Fredrickson, B. L. (2004). *The broaden-and-build theory of positive emotions*. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 359(1449), 1367–1377. <https://doi.org/10.1098/rstb.2004.1512> “
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218–226. <https://doi.org/10.1037//0003-066x.56.3.218>
- Gulam, A. J. B., & Arenas, J. C. (2024). Mathematics performance and Polya's method in problem solving. *World Journal of Advanced Research and Reviews*, 23(3), 2156–2162. <https://doi.org/10.30574/wjarr.2024.23.3.2873>
- Huang, J., Tang, Y., He, W., & Li, Q. (2019). Singapore's school excellence model and student learning: evidence from PISA 2012 and TALIS 2013. *Asia Pacific Journal of Education*, 39(1), 96–112. <https://doi.org/10.1080/02188791.2019.1575185>
- Jaffe, E. (2020). Mindset in the classroom: Changing the way students see themselves in mathematics and beyond. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 93(5), 255–263. <https://doi.org/10.1080/00098655.2020.1802215>
- Johnson, R. T., & Johnson, D. W. (2008). Active learning: Cooperation in the classroom. *The annual report of educational psychology in Japan*, 47, 29–30. https://doi.org/10.5926/arepj1962.47.0_29
- Kovacevic, L., Trajkovic, M., Mijatovic, L., Popovic-Citic, B., Bukvic, L., Kovacevic, M., Marinkovic, P. A., & Radulovic, M. (2024). The relationship between teachers' disciplinary practices and school bullying and students' satisfaction with school: *The moderated mediation effects of sex and school belonging*. *PLOS ONE*, 19(5), Article e0303466. <https://doi.org/10.1371/journal.pone.0303466>

- Kovich, M.K., Simpson, V.L., Foli, K.J. et al. Application of the PERMA Model of Well-being in Undergraduate Students. *Int. Journal of Com. WB* 6, 1–20 (2023). <https://doi.org/10.1007/s42413-022-00184-4>
- Kucuksuleymanoglu, R. (2025). *Resilience in lifelong learning for individuals*. In Resilience, adaptability, and cultural awareness within the educational landscape (pp. 69–96). IGI Global. <https://doi.org/10.4018/979-8-3693-6040-8.ch00>
- Mitchell, M. M., & Bradshaw, C. P. (2013). Examining classroom influences on student perceptions of school climate: The role of classroom management and exclusionary discipline strategies. *Journal of School Psychology, 51*(5), 599–610. <https://doi.org/10.1016/j.jsp.2013.05.005>
- Mukhlis, H., Hariri, H., Riswandi, R., Haenilah, E. Y., Sunyono, S., Maulina, D., & Fitriadi, F. (2024). A current study of psychological well-being in educational institutions: A systematic literature review. *Journal of Education and Learning, 18*(2), 382–390. <https://doi.org/10.11591/edulearn.v18i2.21136>
- Nario-Galace, J. (2020). Peace education in the Philippines: Measuring impact. *The Journal of Social Encounters, 4*(2), 96–102. <https://doi.org/10.69755/2995-2212.1057>
- Norrish, Jacolyn M., (2015). *Positive Education: The Geelong Grammar School Journey*, Oxford Positive Psychology Series (Oxford, 2015; online edn, OxfordAcademic. <https://doi.org/10.1093/acprof:oso/9780198702580.001.0001>,
- Parcon, B. S., Alum, J. G., Nilong, J. B. D., Maulana, S. S., Manalao, A. M., Miagar, N. A., Arenas, J. C., & Cabotaje, J. P. A. (2025). Teachers' performance and experiences: An explanatory mixed method design in individual performance commitment and review form compliance. *Multidisciplinary Science Journal, 7*(8). <https://doi.org/10.31893/multiscience.2025365>
- Pulla, V. (2014). (7) *Grounded Theory Approach in Social Research*. <http://doi:10.20896/saci.v2i3.93>
- Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: empirical validation of interventions. *American Psychologist, 60*(5), 410–421. <https://doi:10.1037/0003-066X.60.5.410>
- Solis, M., Vaughn, S., Swanson, E., & McCulley, L. (2012). Collaborative models of instruction: The empirical foundations of inclusion and co-teaching. *Psychology in the Schools, 49*(5), 498–510. <https://doi.org/10.1002/pits.21606>
- Suldo, S. M., Thalji, A., & Ferron, J. (2019). Longitudinal academic outcomes predicted by early adolescents' anxiety and positive and negative affect: A person-centered approach. *School Psychology Quarterly, 34*(4), 488–498. <https://doi.org/10.1080/17439760.2010.536774>
- Zhao, Y., Gengfeng, N., Hanchao, H., Guang, Z., Liying, X., Kaiping, P., & Feng, Y. (2019). Growth mindset and grit in academic achievement: The mediating role of learning motivations in students. *Frontiers in Psychology, 9*, Article 456. <https://doi.org/10.3389/fpsyg.2018.02007>
- Zewude, G. T., & Maria, H. (2022). The role of positive psychological capital in the prediction of teachers' well-being mediated through motivation: A review of literature. *Athens Journal of Health & Medical Sciences, 9*(4). <https://doi.org/10.30958/ajhms.9-4-4>