

Enhancing Positive Thinking Skills in English Literature Learners through the Application of TRIZ Theory

تعزيز مهارات التفكير الإيجابي لدى متعلمي الأدب الإنجليزي من خلال تطبيق نظرية تريز

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تاريخ القبول: 2024-4-27

تاريخ الإرسال: 2024-4-15



Abstract

This study has demonstrated that TRIZ methodologies have significantly impacted Grade 10 students' positive thinking abilities in English literature education. The study utilized a mixed-methods approach and qualitative data collected from 40 students through Likert Scale questionnaires. The results indicated that TRIZ interventions have a positive relationship with improvements in critical reading skills, problem-solving strategies and creative insight throughout students' analysis of literature materials. Further, the integration of TRIZ principles in the curriculum and subsequent use in TRIZ-based interventions abated most challenges that hindered academic participation, increasing satisfaction in learning outcomes. As a result of the findings curriculum development should incorporate TRIZ as a fundamental pedagogical methodology in order to foster collaborative learning processes and improve students' cognitive abilities. Long-term effects on academic performance and cognitive development should be investigated further according to suggested research.

Key words: TRIZ, Positive thinking, Grade 10, English literature, Curriculum integration

الملخص

تستكشف هذه الأطروحة تأثير منهجيات تريز على مهارات التفكير الإيجابي لدى طلاب الصف العاشر في تعليم الأدب الإنجليزي. باستخدام نهج الأساليب المختلطة، جمعت

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مرشحة للدكتوراه في كلية الدكتوراه في الآداب والعلوم الإنسانية والاجتماعية في الجامعة اللبنانية - قسم اللغة الإنكليزية

إمكانات تریز كأداة تعليمية قيمة، وتوصي بدمجها في تطوير المناهج الدراسية لتعزيز أنشطة التعلم التعاوني، وتعزيز المهارات المعرفية لدى الطلاب. يُقترح إجراء المزيد من الأبحاث لاستكشاف التأثيرات طويلة المدى على الأداء الأكاديمي والتطور المعرفي.

الكلمات المفتاحية: تریز، التفكير الإيجابي، الصف العاشر، الأدب الإنجليزي، تكامل المنهج

Chapter 1: Introduction.

1 Introduction.

In the ever-evolving field of education developing students' capacity for positive thought has taken on paramount importance. Fostering positive thinking can significantly improve students' educational experiences especially in the field of English literature studies where critical analysis and creative interpretation are crucial. This study examines how the TRIZ (Theory of Inventive Problem Solving) theory might be used as a catalyst to enhance the positive thinking abilities of English literature-taught Grade 10 students.

TRIZ developed by Genrich Altshuller in the mid-1900s offers an organized approach to problem-solving through the identification of conflicts within a system and the

البيانات من 40 طالبًا باستخدام استبيانات مقياس ليكرت. تكشف النتائج وجود علاقة إيجابية كبيرة بين تدخلات تریز والتحسينات في التحليل النقدي للطلاب، وقدرة حلّ المشكلات، والتفسير الإبداعي للنصوص الأدبية. أدى دمج مبادئ تریز في المناهج الدراسية، والتدخلات القائمة على تریز إلى تخفيف التحديات بشكل فعال، وتعزيز المشاركة الأكاديمية والرضا عن نتائج التعلم. تؤكد هذه النتائج على

application of innovative thinking to resolve them (Kuznetsov Kudryavtsev and Zaverkin 2017). Despite its historical use in engineering settings recent research has shown that it is adaptable to other fields and effective at solving complex problems (Kynia Dorozhkin & Semyonov 2017). Using TRIZ approaches to help students develop stronger analytical and critical thinking skills English literature teachers can increase their student's engagement with literary works.

Furthermore, research in psychology indicates that enjoyable activities are essential for maintaining mental health (Layous Chancellor and Lyubomirsky 2018). It has been demonstrated that incorporating TRIZ concepts into English literature instruction enhances students problem-solving abilities and cultivates an optimistic outlook that

is advantageous for both academic success and personal growth. The aim of this study is to elucidate the potential benefits and outcomes of combining TRIZ theory with positive thinking in the context of teaching English literature to 10th grade students.

This research aims to clarify the transformative effect of TRIZ theory on the cognitive and affective aspects of learning English literature through a thorough examination of pertinent literature case studies and empirical evidence. In order to improve the educational experience and results of Grade 10 English literature students this study aims to provide insightful information for educators curriculum developers and policymakers by clarifying the theoretical foundations and real-world applications of TRIZ in promoting positive thinking skills.

2 Study Objectives.

The objectives of this study are interrelated and include:

- 1 .Analyze the theoretical foundations of the TRIZ theory and their application to English literature education particularly in Grade 10 schools.
- 2 .With a focus on critical analysis creative interpretation and problem-solving discover how TRIZ approaches can support English

literature-loving students in Grade 10 in strengthening their positive thinking skills.

- 3 .Examine the effects of incorporating TRIZ concepts into English literature instruction on students' cognitive development academic achievement and engagement with literary texts.
- 4 .Choose effective teaching strategies and approaches to incorporate TRIZ theory into the Grade 10 English literature curriculum while taking into account different learning environments and learning styles.
5. Examine the efficacy and durability of TRIZ-based interventions in enhancing critical thinking abilities and creating a supportive atmosphere for learning in English literature classrooms.

In order to better serve educators researchers and other educational stakeholders who are interested in improving students' academic experiences and positive thinking abilities this study aims to address these goals and add to the body of knowledge already available on the subject of the relationship between TRIZ theory and English literature education.

3 Significance of the study.

The results of this study will have a substantial theoretical and practical

impact on the field of English literary education. TRIZ theory integration into Grade 10 classrooms is examined in this study which offers a novel approach to promoting positive thinking in students. The results of this work will enhance vision to instructional strategies that help open up opportunities for teachers to acquire key insights into how they may apply the TRIZ approach in assisting students to increase their skills in creative interpretation, critical thinking, and problem-solving in their study of literature. Further, this study aims to explore the revolutionary effect of a TRIZ-based intervention on cognitive development and academic engagement of the student, which does contribute to the emergent body of knowledge in innovative pedagogies and their influence on the student learning process. In other words, knowledge derived from these findings has potential impacts on general programs of professional development, instructional strategies, and curriculum design within English literature classrooms for the improvement of the all-around learning experience of the student.

4 Study Importance.

This study holds great significance in the current educational context as

the cultivation of positive thinking skills is recognized as a crucial factor for both student success and overall well-being. Consequently, focusing on Grade 10 students is a pivotal point where students are in a critical stage of development and are refining their abilities in analytics and literary interpretation competencies.

A groundbreaking project that transcends disciplinary boundaries and expands the scope of innovative pedagogy is the investigation of TRIZ theory within the context of teaching English literature. Thus, this study can be realized in a wider context than only influencing the nature of English literature classrooms to promote interdisciplinary practices supporting holistic development for students. Ultimately, the findings of this study raise hope that it is indeed possible to assist educators in fostering, within their students, a climate of critical thinking and intellectual curiosity providing them with the skills and perspectives needed for success in academic and personal pursuits.

5 Research problems.

1. Recognizing the theoretical underpinnings of TRIZ theory and its applicability to teaching English literature especially with regard to students in Grade 10.

2. defining the particular difficulties and constraints that Grade 10 students encounter when trying to build positive thinking abilities within the context of their studies of English literature.

6 Hypothesis.

- **H1:** The integration of TRIZ methodologies into Grade 10 English literature curricula will significantly enhance students' positive thinking abilities, as evidenced by improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.
- **Dependent Variable:** Students' positive thinking abilities, specifically improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.
- **Independent Variable:** The integration of TRIZ methodologies into Grade 10 English literature curricula.
- **H2:** The implementation of TRIZ-based interventions in English literature classrooms will mitigate the identified challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.

- **Dependent Variable:** Mitigation of challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.
- **Independent Variable:** The implementation of TRIZ-based interventions in English literature classrooms.

Chapter 2: State of the art.

2.1 Previous Studies

“Overcoming Resistance to Change in Education through TRIZ Principles”, by Miller and others, 2018:

Miller and others (2018) examined how to use TRIZ concepts in educational settings to overcome resistance to change. Their study demonstrated the ability of TRIZ approaches to support creative approaches to problem-solving helping teachers to negotiate and get past obstacles when bringing about changes in their ways of teaching. Miller and colleagues suggested methods for encouraging an environment of transparency and flexibility in education by utilizing TRIZ principles which ultimately improved the learning experiences of students. **“Exploring TRIZ-Based Instructional Design: Enhancing**

Divergent Thinking in the Classroom”, by Robinson, 2020:

To encourage divergent thinking in the classroom Robinson (2020) carried out research on the incorporation of TRIZ-based instructional design. Robinson further showed that the approaches of TRIZ were very effective in inspiring students to solve problems creatively through a range of various interventions and evaluations. TRIZ-based instructional design has further proved useful in eliciting an attitude to learning that can support divergent thinking and innovation through encouraging alternative views and even and investigating unorthodox solutions.

“The Relationship between Positive Thinking and College Students’ Coping Strategies: Moderating Role of Coping Style”, by Liu and others, 2017:

Liu et al. (2017) research investigated how coping strategies used by college students relate to positive thinking with a particular emphasis on the moderating effect of coping style. Their findings shed light on the important role that positive thinking plays in helping students learn how to deal with stress and hardship. Furthermore Liu et al. found that coping style played a significant role in determining the association between

coping strategies and positive thinking highlighting the complex interaction between cognitive functions and adaptive behaviors in the face of obstacles in higher education settings.

2.2. Literature review.

The methodical approach for innovation and problem-solving which is Theory of Inventive Problem Solving is appealing to many different academic fields. According to Kuznetsov, Kudryavtsev, and Zavertkin (2017), TRIZ tools such as the Contradiction Matrix and the Inventive Principles can be employed to solve complex engineering problems. Moreover, they relied on several case studies from different industries to show that TRIZ is effective in solving engineering problems. Kynia, Dorozhkin, and Semyonov (2017) emphasize TRIZ’ perception as one of the best problem-solving techniques because it is flexible and able to surpass technological barriers.

Apart from its engineering uses TRIZ has demonstrated potential to promote favorable results in other fields. According to Layous, Chancellor, and Lyubomirsky (2018) TRIZ principles have the ability to enhance psychological well-being by investigating the role of positive activities as protective factors against

mental health conditions. Furthermore the correlation between optimistic thinking and coping strategies among university students as examined by Liu, Liu and Zou (2017) highlights the role that cognitive processes play in adaptive behavior and TRIZ may provide a framework for improving coping mechanisms.

The application of TRIZ goes beyond problem-solving to include instructional design and organizational innovation. In 2005 Robinson offered an international viewpoint on how TRIZ fosters innovation and in 2018 Robinson stressed how it helps companies develop an innovation culture. Additionally, Robinson (2020) investigated the use of TRIZ-based instructional design to foster divergent thinking in the classroom indicating that it has the ability to inspire students' creativity and critical thinking. All of these studies highlight how versatile TRIZ is and how it can be used to stimulate creativity problem-solving and favorable results in a variety of settings.

Chapter 3: Thesis Body.

3.1 Research Methodology.

This study uses a quantitative research design in order to accomplish its goals. Using a Likert scale questionnaire intended to assess

different facets of students positive thinking abilities in the context of teaching English literature will be the main method of gathering data. Criticism problem-solving skills and creative interpretation—all crucial elements of positive thinking—will be evaluated by means of a structured questionnaire. In order to collect quantitative data that can be statistically analyzed participants will be asked to rate their agreement with statements on a Likert scale. In order to investigate correlations between variables and find patterns in the data, statistical methods including descriptive statistics regression analysis and possibly correlation analysis will be employed. This study approach guarantees a methodical and rigorous investigation of the influence of TRIZ theory on improving positive thinking abilities among Grade 10 English literature students by concentrating on quantitative data collection and analysis.

2.2 Data Collection.

A structured questionnaire incorporating a Likert scale will be the primary data collection tool. Specifically, the researchers will design a questionnaire to be answered by the involved students whose course will cover English literature to measure

positive thinking skills in multiple dimensions. Subsequently, the students' level of agreement or disagreement with a set of statements on critical analysis-problem solving skills and creative interpretation will be measured using a pre-established Likert scale. Thus, the quantitative analysis of the results is made possible by the structured format of the questionnaire which ensures uniformity in data collection. The students will be provided with detailed instructions to promote accuracy and reliability of the questions. Significantly, a thorough analysis of the effects of TRIZ theory on positive thinking abilities among Grade 10 English literature students will be made possible by the systematic collection of data on students' perceptions and experiences through the use of the Likert scale questionnaire.

2.3. Participants.

Thirty Grade 10 students taking English literature courses made up the study's participants. To choose participants who were willing to take part in the research activities and were actively involved in the study of English literature a purposive sampling technique was used. The desired degree of confidence in the results and statistical power were taken into account when determining the sample

size. Furthermore, measures including gender academic standing and previous exposure to TRIZ theory were taken to guarantee diversity in participant demographics. Participants and their legal guardians informed consent was acquired stressing the voluntary nature of participation and the privacy of answers. Subjects were free to leave the study at any time without incurring any fees and participation was completely voluntary. This study sought to understand the effects of TRIZ theory on positive thinking abilities in Grade 10 students during a crucial period of their academic development.

2.4 Material and Instruments.

This study will mostly use a structured questionnaire for data collection as its primary source of materials and instruments. Standard survey software that works with SPSS 21 will be used to create the questionnaire making data entry and analysis simple. The main tool for data management statistical analysis and result interpretation, including the use of linear regression techniques, will be SPSS 21.

2.5 Ethical Considerations.

This study will adhere to ethical guidelines and standards to ensure the protection of participants rights and welfare throughout the research

process. Before any data is collected ethical permission from the relevant institutional review board will be sought in order to ensure that standards of behavior are followed. Informed consent which includes a detailed explanation of the procedures purpose and voluntary nature of participation will be requested from each and every participant. The consent of the persons legal guardians is also required if the person is under the age of 18. Participants will be assured of their privacy their responses will be kept anonymous and only aggregated data will be shared in publications or presentations. It will also be communicated to participants that they have complete freedom to end the study whenever they choose.

2.6 Processing and Data Analysis.

Building a model and testing the hypothesis with linear regression are the goals of this research in terms of processing and data analysis. The data imported into SPSS 21 will first be cleaned and organized to ensure accuracy and consistency. We will use descriptive statistical methods to summarize the key features and trends identified in the dataset. The developed hypotheses will then be put to the test and linear regression analysis will be used to look at the correlations between

the variables. After interpreting the results of the linear regression analysis conclusions and recommendations will be made in accordance with the study's objectives.

2.6.1 Reliability Assessment

For dependability to be determined, Cronbach's alpha must be higher than 0.7. The following result was confirmed when the calculations were finished:

Table 1: Reliability analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
.960	18

A Cronbach's Alpha coefficient of 0.960 was obtained from the reliability analysis indicating high internal consistency among the questionnaire's items. This coefficient indicates strong reliability of the instrument for measuring the constructs of interest with a significant number of items (18) contributing to this value. A Cronbach's Alpha value of more than .70 is usually regarded as appropriate for research purposes a value of 0.960 highlights the validity and consistency of the questionnaire in evaluating the relevant variables concerning positive thinking abilities in English literature students in Grade 10.

2.6.2 Demographic variables.

Gender:

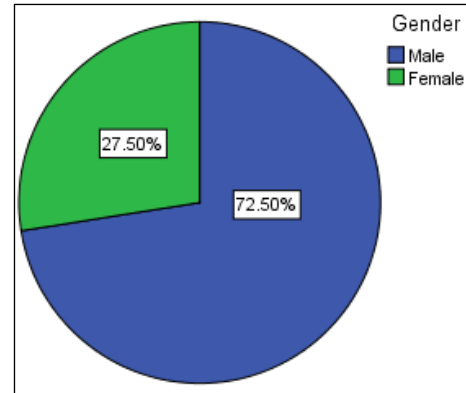
Table 2: Gender

		Count	Column N %
Gender	Male	29	72.5%
	Female	11	27.5%

The gender distribution among the participants is shown by the data in Table 2. Of the forty Grade 10 pupils that were part of the research eleven were female and represented 27.5% of the sample while 29 were male and made up 72.5% of the sample as a whole. When compared to female students this distribution indicates that there were

more male students in the study. Such gender disparities in study samples should be taken into account when interpreting the results as they may affect how broadly the findings can be applied.

Figure 1: Gender



2.6.3 Descriptive statistics.

Table 3: Students' positive thinking abilities, specifically improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I feel that the integration of TRIZ methodologies in English literature class has helped me improve my critical analysis skills.	40	1	4	1.70	.853
TRIZ-based activities have enhanced my ability to solve problems creatively in the context of literary texts.	40	1	5	1.63	.868
I believe that learning TRIZ principles has positively impacted my interpretation of complex literary themes and motifs.	40	1	4	1.78	.920
TRIZ techniques have made me more confident in my ability to analyze and interpret literature critically.	40	1	4	2.28	1.037
The incorporation of TRIZ methodologies has encouraged me to think more creatively when approaching literary texts.	40	1	5	1.80	1.067

I find that TRIZ activities have helped me develop strategies to overcome challenges encountered in understanding difficult literary concepts.	40	1	5	1.68	.971
TRIZ-based interventions have enhanced my overall engagement with English literature coursework.	40	1	4	1.63	.979
I perceive that my positive thinking skills have improved as a result of incorporating TRIZ principles into my English literature studies.	40	1	4	1.63	.807
Valid N (listwise)	40				

In the context of English literature studies, the descriptive statistics shed light on how students perceive the effects of TRIZ methodologies on their capacity for positive thought. The participants generally had positive perceptions as evidenced by the mean scores for each statement which range from roughly 1 point 63 to 2 points 28. Students specifically indicated

moderate to high agreement with statements that indicated growth in their ability to analyze literature critically confidence in their ability to do so and the beneficial effects of TRIZ principles on their understanding of intricate literary themes. The standard deviations however show that there is variation in the responses pointing to variations in personal experiences and perceptions.

Table 4: Mitigation of challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I believe that TRIZ-based interventions have helped me overcome challenges encountered in understanding complex literary concepts.	40	1	5	1.43	.984
TRIZ activities have improved my ability to approach challenging aspects of English literature with confidence.	40	1	4	1.43	.931
I feel that TRIZ-based interventions have positively influenced my engagement with English literature coursework.	40	1	4	1.33	.694
TRIZ techniques have provided me with effective strategies to address difficulties encountered in analyzing and interpreting literary texts.	40	1	5	1.73	1.062
I perceive that TRIZ interventions have enhanced my satisfaction with learning outcomes in English literature class.	40	1	4	1.68	.829

The implementation of TRIZ methodologies has made me more motivated to actively participate in discussions and activities related to English literature.	40	1	5	1.60	.871
TRIZ-based interventions have helped me develop a deeper understanding of literary themes and motifs.	40	1	4	1.65	.834
I find that TRIZ techniques have made learning English literature more enjoyable and rewarding for me.	40	1	5	1.63	.868
Valid N (listwise)	40				

Through TRIZ-based interventions students' perceptions of the challenges and limitations they face in developing positive thinking skills are illuminated by the descriptive statistics. For all statements the average score falls between roughly 1 and 73 points suggesting that participants had generally positive opinions. Particularly students expressed moderate to high agreement

with claims that TRIZ interventions have enhanced their engagement and satisfaction with learning outcomes helped them overcome obstacles and given them more confidence to tackle difficult parts of English literature. The standard deviations however show that there is variation in the responses pointing to variations in personal experiences and viewpoints.

2.6.4 Correlation analysis.

Correlations				
			Students› positive thinking abilities, specifically improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.	Mitigation of challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.
Spearman's rho	Students› positive thinking abilities, specifically improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.	Correlation Coefficient	1.000	.907**
		Sig. (2-tailed)	.	.000
		N	40	40
	Mitigation of challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.	Correlation Coefficient	.907**	1.000
		Sig. (2-tailed)	.000	.
		N	40	40
**. Correlation is significant at the 0.01 level (2-tailed).				

The results of the correlation analysis show a strong positive correlation between the development of students positive thinking skills—more specifically improvements in their critical analysis problem-solving abilities and creative interpretation of literary texts—and the reduction of obstacles and constraints that Grade 10 students must overcome in order to advance their positive thinking abilities which in turn promotes higher levels of academic engagement and satisfaction with learning outcomes. Using a two-tailed test the Spearman's rho correlation coefficient between these two variables is 0.907** which is highly significant ($p < 0.01$). This suggests that using TRIZ-based interventions to mitigate difficulties in English literature studies has a strong positive relationship with students' capacity for positive thinking.

According to this research students report higher levels of engagement and satisfaction with their learning outcomes in English literature classes when they demonstrate improvements in positive thinking skills like critical analysis and problem-solving abilities. The aforementioned highlights the possibility for TRIZ-based interventions to improve students' cognitive abilities while also augmenting their overall academic journey and achievement.

2.6.5 Multiple Linear regression.

- **H1:** The integration of TRIZ methodologies into Grade 10 English literature curricula will significantly enhance students' positive thinking abilities, as evidenced by improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.999 ^a	.997	.997	.04094

Coefficients ^a						
Model B		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Std. Error	Beta			
	(Constant)	-.024	.020		-1.206	.237
	I feel that the integration of TRIZ methodologies in English literature class has helped me improve my critical analysis skills.	.123	.013	.148	9.291	.000

1	TRIZ-based activities have enhanced my ability to solve problems creatively in the context of literary texts.	.130	.016	.159	8.098	.000
	I believe that learning TRIZ principles has positively impacted my interpretation of complex literary themes and motifs.	.132	.011	.172	11.891	.000
	TRIZ techniques have made me more confident in my ability to analyze and interpret literature critically.	.134	.007	.197	19.471	.000
	The incorporation of TRIZ methodologies has encouraged me to think more creatively when approaching literary texts.	.117	.010	.176	12.053	.000
	I find that TRIZ activities have helped me develop strategies to overcome challenges encountered in understanding difficult literary concepts.	.131	.011	.180	11.415	.000
	TRIZ-based interventions have enhanced my overall engagement with English literature coursework.	.134	.010	.185	12.970	.000
	I perceive that my positive thinking skills have improved as a result of incorporating TRIZ principles into my English literature studies.	.108	.012	.123	9.008	.000
a. Dependent Variable: Students' positive thinking abilities, specifically improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.						

Regression analysis results show that the model has a very high level of explanatory power with an adjusted R square of 0.997 meaning that the inclusion of TRIZ methodologies in Grade 10 English literature curricula can explain 99.7 percent of the variance in students' positive thinking abilities specifically improvements in critical analysis problem-solving skills and creative interpretation of literary texts. Upon examining the coefficients, it can be observed that every independent variable which pertains to TRIZ methodologies

has statistically significant positive coefficients ($p < 0.001$). This suggests that each of these variables plays a significant role in augmenting students' abilities to think positively. The standardized coefficients (Beta) specifically span from 0.123 to 0.197 indicating the relative strength of each variable's contribution to the others. Thus, based on the findings of the regression analysis we can draw the conclusion that incorporating TRIZ methodologies into English literature curricula for Grade 10 students greatly improves their capacity for

positive thinking as demonstrated by gains in their capacity for critical analysis problem-solving and creative interpretation of literary texts. This lends credence to the hypothesis H1.

- **H2:** The implementation of TRIZ-based interventions in English

literature classrooms will mitigate the identified challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.995a	.990	.988	.08038

Coefficients ^a						
Model B		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Std. Error	Beta			
1	(Constant)	-.038	.033		-1.126	.269
	I believe that TRIZ-based interventions have helped me overcome challenges encountered in understanding complex literary concepts.	.137	.023	.185	5.994	.000
	TRIZ activities have improved my ability to approach challenging aspects of English literature with confidence.	.119	.027	.152	4.456	.000
	I feel that TRIZ-based interventions have positively influenced my engagement with English literature coursework.	.143	.031	.137	4.589	.000
	TRIZ techniques have provided me with effective strategies to address difficulties encountered in analyzing and interpreting literary texts.	.110	.024	.161	4.620	.000
	I perceive that TRIZ interventions have enhanced my satisfaction with learning outcomes in English literature class.	.297	.061	.336	4.864	.000
	The implementation of TRIZ methodologies has made me more motivated to actively participate in discussions and activities related to English literature.	.264	.107	.315	2.471	.019
	TRIZ-based interventions have helped me develop a deeper understanding of literary themes and motifs.	-.048	.067	-.055	-.715	.480
	I find that TRIZ techniques have made learning English literature more enjoyable and rewarding for me.	-.008	.106	-.010	-.078	.938

a. Dependent Variable: Mitigation of challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.

With an adjusted R square of 0.988 the model demonstrates a high level of explanatory power based on the results of the regression analysis. This means that the use of TRIZ-based interventions in English literature classrooms can account for 98.8 percent of the variance in the way that Grade 10 students' challenges and limitations in developing positive thinking skills are mitigated increasing their academic engagement and satisfaction with learning outcomes. By looking at the coefficients it can be seen that a number of independent variables (statements pertaining to TRIZ-based interventions) have statistically significant positive coefficients ($p < 0.001$) meaning that they play a significant role in helping students overcome obstacles and limitations. In particular the range of the standardized coefficients (Beta) is 0.137 to 0.336 this indicates the relative strength of each variable's contribution to the others. Therefore, based on the regression analysis results we can conclude that the implementation of TRIZ-based interventions in English literature classrooms significantly mitigates the identified challenges and limitations faced by Grade 10 students in developing positive thinking skills leading to greater academic engagement and satisfaction

with learning outcomes. This lends credence to the hypothesis H2.

Chapter 4: Conclusion and Recommendations.

4.1 Findings.

In summary, the findings of this study present valuable new insights into the impact of TRIZ approaches on the critical thinking and academic engagement of Grade 10 students in English literature classes. Regression analysis empirically confirms that critical analysis problem-solving and imaginative interpretation of literary texts among students significantly improved when TRIZ methodologies were incorporated into the curriculum. In a similar vein, the application of TRIZ-based interventions in classrooms successfully reduced the difficulties students faced in the learning process, fostering greater academic engagement and satisfaction with learning outcomes. These results highlight TRIZ's potential as a useful tool for teachers to improve their students' cognitive abilities and overall educational experience.

4.2 Conclusion.

To conclude, this study's results provide extensive evidence that TRIZ approaches improve grade ten students' positive thinking

abilities and academic engagement in English literature instruction. The importance of incorporating creative problem-solving techniques into the curriculum is highlighted by the positive correlations found between TRIZ interventions and students' cognitive skills. The study's results indicate that TRIZ has potential as a useful teaching tool when it comes to teaching English literature to students which is encouraging as educators look for ways to help them think critically and creatively.

4.3 Recommendations.

Several suggestions for teachers and curriculum developers can be made in light of the findings:

1. Integrate TRIZ methodologies into the English literature curriculum for Grade 10 to enhance students' abilities in critical analysis,
2. Provide opportunities for professional development for educators to become proficient in TRIZ, enabling them to efficiently implement TRIZ-based interventions in the classroom.
3. Encourage group projects that utilize TRIZ concepts, giving students the opportunity to practice problem-solving strategies in a supportive environment.
4. Further investigate the long-term effects of TRIZ integration on students' academic performance and overall cognitive development.
5. Share the findings of the study with educational stakeholders to promote the adoption of innovative pedagogical strategies aimed at enhancing students' critical thinking skills and academic engagement.

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Appendix.

Questionnaire.

PART A: Demographic Information

Gender

- o Male
- o Female

Part B: The integration of TRIZ methodologies into Grade 10 English literature curricula will significantly enhance students' positive thinking abilities, as evidenced by improvements in critical analysis, problem-solving skills, and creative interpretation of literary texts.

	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I feel that the integration of TRIZ methodologies in English literature class has helped me improve my critical analysis skills.					
2	TRIZ-based activities have enhanced my ability to solve problems creatively in the context of literary texts.					
3	I believe that learning TRIZ principles has positively impacted my interpretation of complex literary themes and motifs.					
4	TRIZ techniques have made me more confident in my ability to analyze and interpret literature critically.					
5	The incorporation of TRIZ methodologies has encouraged me to think more creatively when approaching literary texts.					

6	I find that TRIZ activities have helped me develop strategies to overcome challenges encountered in understanding difficult literary concepts.					
7	TRIZ-based interventions have enhanced my overall engagement with English literature coursework.					
8	I perceive that my positive thinking skills have improved as a result of incorporating TRIZ principles into my English literature studies.					

Part C: The implementation of TRIZ-based interventions in English literature classrooms will mitigate the identified challenges and limitations faced by Grade 10 students in developing positive thinking skills, leading to greater academic engagement and satisfaction with learning outcomes.

	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I believe that TRIZ-based interventions have helped me overcome challenges encountered in understanding complex literary concepts.					
2	TRIZ activities have improved my ability to approach challenging aspects of English literature with confidence.					
3	I feel that TRIZ-based interventions have positively influenced my engagement with English literature coursework.					
4	TRIZ techniques have provided me with effective strategies to address difficulties encountered in analyzing and interpreting literary texts.					
5	I perceive that TRIZ interventions have enhanced my satisfaction with learning outcomes in English literature class.					
6	The implementation of TRIZ methodologies has made me more motivated to actively participate in discussions and activities related to English literature.					
7	TRIZ-based interventions have helped me develop a deeper understanding of literary themes and motifs.					
8	I find that TRIZ techniques have made learning English literature more enjoyable and rewarding for me.					