

## Six Sigma Based Analytical Study on Positive Psychological Principles in English Learning of High School Students.



### EDUCATION

**KEYWORDS :** six sigma, analytical study, positive psychology, English learning

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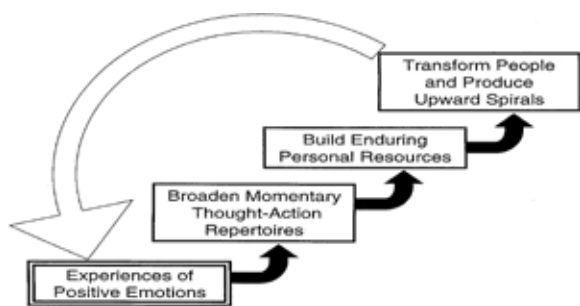
### ABSTRACT

*Positive psychology after World War II became a science largely devoted to healing. Its importance is revealed while learning the English by high school students. The main purpose of this analytical paper, is to elucidate the academic utility of six sigma methods which is widely used in the industrial units for the quality improvements. The six sigma – DMAIC method based experimental analysis was conducted on the high school students while learning the English. The pre-test – post-test –equivalent group design was adopted to conduct the experiment and to find the impact of ICT based teaching of positive psychological principles. Totally 30 students were allotted in each group through the purposive sampling. The major findings reveal that the sigma mean of the control group was lesser than the experimental group. Though the learning deficiencies are found in the both groups, the experimental group outdid the control group in the achievement test.*

### Introduction

Positive psychology almost pays an exclusive attention to pathology that neglected the idea of a fulfilled individual and a thriving community, and it also neglected the possibility that building strength which is the most potent weapon in the arsenal of therapy (Dweck, 2008). The essence of positive psychological principles are much realised in the present context and the current investigation focuses on the positive psychological elements of high school students for whom the life principles are taught to imbibe as they are in transitional stage of their life called adult. (Cervone, 2005)

The aim of positive psychology is to catalyse a change in psychological conditions from a preoccupation by repairing the worst things in life to also building the best qualities in life. To redress the previous imbalance, it brings the building of strength to the forefront in the treatment and prevention of mental illness (Sin, Lyubomirsky 2009).



**Figure: 1 – the positive psychological structure of human life**

According to Seligman, Rashid, and Parks, (2006) the field of positive psychology at the positive subjective level is to be experienced: well-being and satisfaction (past); flow, joy, the sensual pleasures, and happiness (present); and constructive cognitions about the future—optimism, hope, and faith.

At the group level it is about the civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic (Seligman & Csikszentmihalyi, 2000).

### SIX SIGMA

The six sigma DMAIC analysis was pioneered by Bill Smith in Motorola in 1986 to foster the industrial quality in all the ways. Now it has been widely used in industrial units. However, it is not much used in the academic setting. Hence, the research on

quality of academic service based on the six sigma strategy is very meagre.

The aim of this study is to analyse quality of student teachers' performance in the classroom via use of the DMAIC method of the six sigma methodology in the academic process underpinning the determination of advantages of the DMAIC method of the six sigma methodology in teacher education and training.

- ❖ The novel contribution of this paper is such advantages of use of the six sigma-DMAIC method of the six sigma methodology in secondary education for analysing the English learning for attaining the positive features of life.
- ❖ To develop the knowledge, skills and attitudes that is a significant aspect of the high school student.
- ❖ Promoting opportunities for each high school student's self-realization.

The essence of the DMAIC method is to reduce variation in a process and to achieve high conformance quality in customer's terms. The DMAIC principles are revealed by Swamydhas (Hariharan, Zaš erinska & Swamydhas, 2013) in Table 1.

**Table: 1– six sigma - DMAIC Principles Applied to the classroom learning system**

D	Define the positive psychological principles of life as prime objectives of academic outcome
M	Measure positive psychological principles while learning English by high school students
A	Analyse student learning in English by statistical process
I	Improve learning the principles of life based on the data analysis in the analyse phase
C	Control plans that institutionalize the improvements for the future to ensure that student learning stay at a desired level.

Further, the positive aspects like Meliorism, Resilience and Altruistic nature are taught through the teaching the story of carpenter who was given a new house by his contractor as a mark of love as well as for his laborious work. While teaching of such stories, poems or the prose the high school must adopt the concepts of the positive psychology which is newly emerging in the field of psychology in their respective classrooms. The positive psychological dimensions are:

Meliorism	: metaphysical thinking about the human welfare
Resilience	: the ability to become strong, healthy, or successful
Altruistic	: benefiting others without holdback

### Need for the study - Failure Mode Effect Analysis (FMEA) on the positive psychological characteristics

Failure mode and effect analysis, or FMEA, is an attempt to de-

lineate all possible failures, their effect on the system, the likelihood of occurrence, and the probability that the failure will go undetected (Pyzdek, 2010).

**Table: 2 - The FMEA of the private institution**

Mode of failure	Effect of failure	S.I	Causes of failure	O	Controls	D	R	Recommended action
Lack of good principles of life	Lack of learning attainments and knowledge construction	7	Lack of dynamic ability in moulding the students	8	Periodical inspection of authorities	5	240	Resourceful Training to and Payment as per the norms
Positive values are diminishing			Lack of parental care	7	Periodical visit of authorities	3	147	Creating infra-structural facilities
			Poor administrative academic practices.	7	Effective monitoring	4	196	Implementation of suitable strategies to Improve the leadership qualities
			Lack of skill training	6	Constant Motivation by feedback	4	168	Providing motivational programs-counseling
			Reluctance for continuous evaluation	4	Effective monitoring	4	112	Providing motivational programs-counseling
			Inadequate disciplined practices	8	Effective monitoring	8	448	Continuous and comprehensive assessment
			Lack of leadership quality	7	In service training and skill attainment	7	343	Proper Training for Changing the leadership style
			Lack of fund distribution	6	Efficient fund management system	6	252	Effective monitoring and assessment system
Responsibility	Authorities of nodal agencies, managements, fads of the institutions, Faculty and students							

(S.I – Severity Index; O – opportunity; D – Detection possibility; R- Risk priority number)

Since the positive psychological features of adult life are diminishing in this modern era, it is essential to acquire the positive habit formation as it is essence of life. Further the FMEA analysis shows that the Inadequate disciplined practices (448) are the most prevailing practise in the classrooms of high school students. Hence it is important to undertake the current study and it is entitled “six sigma based analytical study on positive psychological principles in English learning of high school students”.

### Study Design

The design of the present empirical study comprises the variables, research question and purpose, samples and methodology of the present empirical study.

The guiding question of the present empirical study is: Is there a difference between the quality principles of a high school student in the two groups namely control and experimental group?

The main variables were: The independent variable of the study is the teaching methodology. The dependent variables were:

1. The learning deficiencies and
2. The achievements of the students were assessed in terms of Defects per

Million opportunities (DPMO) and process sigma.

### The main objectives of this study are

1. To measure the sigma mean of the defective factors if any while in the teaching sessions,
2. To compare the significance of the difference between the high students of the three groups with respect to the dimensions of the positive psychological quality attained through English learning.

The population of study comprised of the high school students of Tirunelveli District and 30 students were purposively selected and 30 were allotted in each group – namely self - learning, Traditional and in ICT group.

Based on the objectives and variables, the following hypotheses were framed for the current study.

There is no significant difference between sigma mean of the control group and Experimental group in attaining the dimensions – Meliorism, Resilience and Altruistic while learning English. The table 3 shows the sigma mean of three groups.

dimen- sion	Group	N	Defective score Mean	DPU mean	DPMO mean	Sigma mean value
Melio- rism	Control Tradi- tional ICT	30	41	0.82	820000	1.2867
		30	28	0.56	560000	1.3569
		30	26	0.52	520000	1.4576
Resil- ience	Control Tradi- tional ICT	30	41	0.82	820000	1.2867
		30	24	0.48	480000	1.5604
		30	22	0.44	440000	1.6731
Altruistic	Control Tradi- tional ICT	30	46	0.92	920000	1.0030
		30	28	0.56	560000	1.3569
		30	25	0.47	470000	1.5731

(Defective score = failure score / total score)

The table 3 and 4 reveals the total sigma mean of the control group in pre-test and DPMO mean value show that the attainment is not optimum level in realising Meliorism, Resilience and Altruistic while learning English. The control group were adopting the self – learning process. There is no significant difference exists between the three groups as are not taught the concepts of positive psychology.

Table : 4 - Dimensional analysis of the Pre - test

Dimension	Group	N	Sigma Mean	S.D	Std. Error Mean	t' value	Sig. (2-tailed)	Remark
Meliorism	Control Traditional	30	1.2867	0.1368	.0352	1.687	0.103	NS
		30	1.3941	0.1387	.0358			
	Control ICT	30	1.2867	0.2473	0.0522	1.541	0.131	NS
		30	1.4576	0.2137	0.0456			
	Traditional ICT	30	1.3941	0.2139	0.1065	1.214	0.271	NS
		30	1.4576	0.1926	0.0961			
Resilience	Control Traditional	30	1.2867	0.1343	0.0242	1.442	0.163	NS
		30	1.5604	0.2918	0.0664			
	Control ICT	30	1.2867	0.1376	0.0253	1.585	0.139	NS
		30	1.6731	0.2520	0.0413			
	Traditional ICT	30	1.5604	0.132	0.0239	1.504	0.137	NS
		30	1.6731	0.2124	0.0395			
Altruistic	Control Traditional	30	1.0030	0.1373	0.0350	1.820	0.080	NS
		30	1.3569	0.1335	0.0343			
	Control ICT	30	1.0030	0.3671	0.1507	1.072	0.309	NS
		30	1.5731	0.2740	0.1122			
	Traditional ICT	30	1.3569	0.2199	0.09807	2.153	0.063	NS
		30	1.5731	0.1578	0.07042			

The table 4 and 5 reveals the total sigma mean of the three groups in post-test and DPMO mean value show that the attainment is optimum level in realising Meliorism, Resilience and Altruistic while learning English. The control group was less in sigma value and was adopting the self – learning process. There is significant difference exists between the three groups in the concepts of positive psychology.

Table: 5 – Six sigma analysis of the Post test

dimension	Group	N	Defective score Mean	DPU mean	DPMO mean	Sigma mean value
Meliorism	Control	30	41	0.82	820000	0.5695
	Traditional	30	30	0.78	780000	0.8306
	ICT	30	30	0.74	740000	
Resilience	Control	30	34	0.68	680000	1.0518
	Traditional	30	27	0.54	540000	1.6091
	ICT	30	27	0.54	540000	1.6091
Altruistic	Control	30	41	0.82	820000	0.5695
	Traditional	30	30	0.78	780000	0.7063
	ICT	30	30	0.74	740000	0.8306

The table 5 depicts the six sigma mean value of the high school students in attaining the Meliorism Resilience and Altruistic dimensions in English. The table 6 indicates the significant difference between the three groups in acquiring knowledge of positive psychological concepts. ICT group and Traditional learning group was exceeding better than the control group. However, the ICT group has attained more achievement score and they were taught by ICT enabled classroom.

Table: 6 – Dimensional analysis of the Post test

Dimension	Group	N	Sigma Mean	S.D	Std. Error Mean	t' value	Sig.	Remark
Meliorism	Control Traditional	30	0.5695	0.2002	.03655	5.741	0.00	S
		30	0.7063	0.1222	.02232			
	Control ICT	30	0.5695	0.2002	.03655	8.370	0.00	S
		30	0.8306	0.1015	.01854			
	Traditional ICT	30	0.7063	0.1222	.02232	8.686	0.00	S
		30	0.8306	0.1015	.01854			
Resilience	Control Traditional	30	1.0518	0.1472	.02688	9.719	0.00	S
		30	1.4041	0.2065	.03771			
	Control ICT	30	1.0518	0.1472	.02688	19.22	0.00	S
		30	1.6097	0.1495	.02729			
	Traditional ICT	30	1.4041	0.2065	.03771	7.603	0.00	S
		30	1.6097	0.1495	.02729			
Altruistic	Control Traditional	30	1.7259	0.1362	.02487	8.291	0.00	S
		30	2.0021	0.1377	.02514			
	Control ICT	30	1.7259	0.1362	.02487	17.49	0.00	S
		30	2.2085	0.1612	.02944			
	Traditional ICT	30	2.0021	0.1377	.02514	6.608	0.00	S
		30	2.2085	0.16125	.02944			

## Results and Discussions

The table 3 and 4 reveals the total sigma mean of the control group in pre-test and DPMO mean value show that the attainment is not optimum level in realising Meliorism, Resilience and Altruistic while learning English. The control group were adopting the self – learning process. The table 3 and 4 reveals the total sigma mean of the control group in pre-test and DPMO mean value show that the attainment is not optimum level in realising Meliorism, Resilience and Altruistic while learning English. The control group were adopting the self – learning process.

**Conclusion** The experimental findings based on the analysis of scientific literature allow drawing the conclusions on the relevancy of the six sigma -DMAIC method in education (Ramar Hariharan et al., 2015).

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