

Full Length Research Paper

Constructing an Emotional Intelligence Radar for Indian School Students

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Emotional Intelligence (EI) is now being recognized as an important field of research, development, and applications. This research puts forth an effort to synthesize and integrate some of the major findings of some studies on emotional intelligence and personal skills, as they relate to the goals of education and human development. The main goal of these studies is to provide a coherent and practical approach to human emotional behavior that students can learn and apply to stay healthy both physically and mentally, think of career progression, and enhance individual and collective productivity. This paper aims at constructing cluster based on the scores of EI, its factors, communication scores and many other variables for a student's data of 5464 (age group 9 – 14 years). Cluster analysis lead to formation of an EI radar and EI Competency ladder to increase the propensity of researchers, academicians, students and their parents to improve their EI scores.

Keywords: Radar, emotional intelligence; intrapersonal ability; interpersonal ability; adaptability; ability models; trait models.

INTRODUCTION

EI literature provides enough evidences that a number of empirical studies (Newsome, Day and Catano, 2000; Petrides and Furnham 2001, 2004; Rubin, 1999) are available to measure EI and testing its validity with business organizations. An attempt is made in this research study to model, measure and test the EI in the education sector of a society.

Educators have tried to predict academic achievement of students since the early days of standardization of group achievement and scholastic ability tests. Extensive studies at schools and organizational levels indicate that emotional intelligence skills are essential to achievement, leadership in senior level manager (Gardner and Stough, 2002; Dulewicz et. al., 2003) and personal health (Goleman, 1995, 1998). Further, Goleman indicates that when high levels of leadership are required, emotional intelligence is a much greater predictor of success than traditional measures of intelligence. In studying the world's best educational practices, Dryden and Vos (1994) reported that personal and emotional developments are at the very center of these programs.

In recent years, low-test scores and accountability standards have been the focus of education reform and criticism directed to public education at all levels. The broader mission of education becomes clouded when effectiveness is defined solely on the basis of performance on standardized assessment models (Low et al 2004). In addition to state and national academic performance indicators, there are several other issues that are indicators for change, reform, and renewal. School violence, physical - emotional safety, abuse and dropout and retention rates are current examples. A major challenge for education is to provide safe campuses, healthy learning climates, and rigorous academic curricula taught by qualified teachers for interested and motivated learners. Healthy and safe learning environments are necessary for students and teachers to perform at their highest levels. Researchers seem to agree that the best approach is comprehensive so as to develop a broad range of social and emotional skills that can be generalized to many settings (Fleming and Bay, 2004) and to integrate programs into the curriculum, not as an instructional unit but as a caring learning context that is a comprehensive, multiyear program. In short, learning and applying emotional intelligence skills contribute to academic and career

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success. This research puts forth an effort to synthesize and integrate some of the major findings of some studies (Malekar and Mohanty, 2009) on emotional intelligence and personal skills, as they relate to the goals of education and human development.

Leading educators have identified and emphasized the importance of a healthy academic climate for student learning and achievement (McQuary, 1983). Schools / Colleges are much more than settings for producing specific learning outcomes. A healthy climate is much more than an environment conducive for teaching academic content. It is also a learning environment for teaching personal and social development, successful career strategies, and healthy emotional development. Emotional intelligence skills and competencies are the important determinants to creating and maintaining a healthy and productive school climate.

A blending of academic (cognitive), behavioral (action), and affective (emotional) dimensions is needed to address the complex issues facing education (Low et al., 2004). To understand these issues and challenges of public education, there is a need to develop responsible and emotionally healthy students and teachers. Emotional skills development and personal responsibilities need to be embraced and examined with academic and behavioral dimensions.

The use of EI to aid the student development process can address non-academic life challenges. Fostering EI can assist students in adapting to the environmental demands (Sternberg, 1985) and pressures of the school environment. Investing in the emotional development of students also impacts leadership effectiveness, both on campus and in the future career.

We have observed from an extensive survey of literature that a lot of studies have been conducted to measure EI and testing its validity with business organizations. We find a very little evidence of EI application for students in the age group 9-14 years. Students, parents, academicians and researchers with a restricted view of EI could miss opportunities. A new framework of EI radar could help avoid that. Therefore, the objectives of this paper are as follows:

- To develop clusters of students with key factors of EI.
- To develop a new framework termed as EI to navigate students, parents and academicians in improving EI scores of students.
- To develop an EI Competency ladder

Measurement models of EI

Goleman (1995) identified 5 factors that affect EI. They are: self-awareness, self-regulation, motivation, empathy and social skills. Similarly, Bar-On (2000) has identified 5 factors, such as intrapersonal ability, interpersonal ability, stress management, adaptability and general mood. These five factors are further divided into 15 subscales.

It is presently unclear to what extent a number of specific competencies are nestled in each factor, as there are continuous additions in the Goleman's model. Thus placing all competencies such as achievement orientation, impulse control and adaptability are components of self-regulation, we can conclude that such concepts confuse rather than clarify the role of emotional competencies in the workplace. Since the field of EI remains relatively new many of these factors, which have been studied in organizational psychology for some time, now are much better understood than the concept of EI. Reconceptualisation of these factors as forms of EI may lead to further confusion and dealing with distinct interrelated competencies are more tractable for research and practical purposes.

Mayer (2000) described EI as a component of emotional perception, emotional facilitation of thought, emotional understanding and emotional management. Their concept has gained popularity, as they are performance oriented and empirically based. They have alternative scoring procedures in order to discriminate right from wrong answers on performance-based measures of EI.

Each of the EI pioneers founded their theories at different times and on a different platform. The first of the three major theories to emerge was that of Bar-On (1988). Salovey (2001) explained EI more specifically as the ability to perceive emotions, to access and generate emotions to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions to promote emotional and intellectual growth. Where Salovey and Bar-On framed their theories as general theories of social and emotional intelligence and emotional intelligence respectively, Goleman's theory is specific to the domain of work performance.

In an effort to bring order to the field Mayer, Salovey, and Caruso (2000) categorized models of EI into two types: (1) EI as a form of intelligence, involving cognitive processing of emotional information (referred to as "**ability models**" of EI); and (2) EI as partly or wholly a personality-like trait, or behavioral disposition (referred to as "**mixed models**" EI).

Generally, instruments following an ability-based theoretical model use an ability-based method of measurement (for example - involve questions where knowledge or skills are assessed by maximal performance) and instruments following a mixed model conceptualization use self-report rating scales. However, this characterization is somewhat imperfect – some self-report scales are constructed after ability-based models.

Evaluation of ability model of EI

The most commonly agreed-upon definition of emotional intelligence comes from a Performance-based model of

EI: the four-branch hierarchical model (Mayer and Salovey, 1997). Under this conceptualization, EI consists of four branches of abilities that increase in complexity from the first to fourth branch. The component abilities in the higher branches depend or build on abilities in the lower branches.

* At the simplest level (Branch 1), EI is the perception and expression of emotions (Perception).

* Branch 2 consists of the integration of emotions in thought processes (Facilitation).

* Branch 3 includes the understanding of emotion labels, relations between emotions, between emotions and circumstances and transitions among emotions (Understanding). * Finally, the highest branch involves managing emotions in order to moderate negative, and enhance positive, emotions (Management).

The first two branches are collectively defined as Experiential EI (expression, perception, and generation of emotions) and the last two as Strategic EI (the understanding and management of emotions; Mayer, Salovey, and Caruso, 2002). This division is supported empirically by factor analyses of instruments based on this model

Evaluation of Mixed models EI

The primary challenge to validity for self-report EI models is their overlap with personality and lack of relation to intelligence. Many researchers argue that EI ought to be part of the intelligence rather than the personality domain to justify the label "emotional intelligence" (Matthews, Zeidner and Roberts, 2002; Mayer et al., 2000; Roberts, Zeidner and Matthews, 2001). However, the view that trait EI may be a more fruitful direction for EI research has also been expressed (Petrides, and Furnham, 2006).

There are two major mixed-model conceptualizations of EI:

(1) Bar-On's (2000) Social and Emotional Intelligence; and

(2) Boyatzis, Goleman, and Rhee's (2000) Emotional Competence.

Bar-On's theoretical model forms the basis for the Emotional Quotient Inventory instrument (EQ-i) is a 133 item self report instrument that scores intrapersonal ability, interpersonal ability, stress Management, adaptability, and general mood. Boyatzis et al.'s theoretical model forms the basis for the Emotional Competence Inventory instrument (ECI-360) and focuses on four main areas - self-awareness, self-management, social awareness and social skills.

Factors affecting EI

According to ability models, EI is a form of intelligence involving cognitive processing of emotional information

and is defined as a set of cognitive abilities in emotional functioning. Ability models conceptualize intelligence that involves emotion (cited in Goldenberg et.al 2006). Such models define EI in a traditional sense (e.g. Mayer and Salovey 1997). They are a conceptually related set of mental abilities with emotions and processing of emotional information. Emotional perception and expression, emotional facilitation of thinking, emotional understanding and emotional regulation are the essential elements of the ability model. They contribute to logical thought and intelligence in general. Ability model proposes that emotions can make thinking more intelligent and can intelligently handle emotions. EI has a number of similarities to other types of intelligences and abilities and develop with age and experience. In comparison, mixed models have EI as partly or wholly a personality-like trait, or behavioral disposition. They define EI as a mixture of emotion related competencies and personality traits. Mixed models also make references to abilities in the processing and use of emotional information but combine these abilities with other traits and characteristics such as optimism, motivation and social relationships (Bar-On, 2000, 2001; Goleman 1995, 1998). Mixed models are important as they acknowledge the importance of multiple aspects of personality that may pertain to emotion. They do not relate to the concept of emotion specifically (Matthews et. al., 2003)

Identification of factors

Goleman (1995) identified 5 factors that affect EI. They are: self-awareness, self-regulation, motivation, empathy and social skills. Similarly, Bar-On (2000) has identified 5 factors, such as intrapersonal ability, interpersonal ability, stress management, adaptability and general mood. Here we are using factors outlined by Bar-On to find out the relationship of emotional intelligence with interpersonal ability, intrapersonal ability, stress management, adaptability and general mood with Indian students.

- **Intrapersonal ability:** It consists of related abilities like recognizing and labeling one's feelings. Intrapersonal ability includes emotional awareness and the ability to identify them correctly. Individuals scoring high on intrapersonal ability tend to understand their emotions and are able to express and communicate their feeling and needs.

- **Interpersonal ability:** It consists of related abilities like identifying emotions in others and having empathy towards others. Interpersonal ability deals with the relationship with peers, subordinates and superiors. High on the interpersonal ability are likely to have satisfying interpersonal relationships, are good listeners and are able to understand and appreciate the feelings of others.

- **Stress Management:** It consists of abilities like resisting or delaying an impulse. Those with high stress

Table 1. Criteria for Classification for Students (9 – 14 years)

Criterion	Type of school students
Examination pattern	SSC – ICSE - CBSE
Location	Urban – Rural
Ethnicity	Tribal – Non Tribal
Boarding	Residential – Non residential
Management of schools	Government aided – Privately managed trusts

Table 2. Criteria for classification based on parental characteristics

Criterion	Parent	Level	Category			
Literacy	Father	1	Upto 10 th standard			
		2	Graduate			
		3	Post graduates / professional education			
	Mother	1	Upto 10 th standard			
		2	Graduate			
		3	Post graduates / professional education			
Occupation	Father	0	Father has expired			
		1	Father in lowly jobs			
		2	Father in service			
		3	Father manages business			
			4	Father is a professional		
			Mother	0	Mother has expired	
				1	Mother in lowly jobs	
				2	Mother in service	
	3	Mother manages business				
			4	Mother is a professional		
			Family income	---	1	Upto 1 lakh (low income group)
				0	2	1 lakh to 5 lakhs (medium income group)
3					Above 5 lakhs (high income group)	

management are generally calm and work well under pressure; they are rarely impulsive and can usually respond to a stressful event without an emotional outburst.

- **Adaptability:** It consists of abilities like being to adjust one's emotions and behavior to changing situations or conditions. Adaptability involves skills related to management of change. Managing change involves the ability to manage stressful situations in a relatively calm and proactive manner. Individuals who score high on this dimension are impulsive rarely and work well under pressure (Bar –On, 1997, 2000, 2002). Individuals with high adaptability scores are flexible, realistic and effective in managing change; good at finding positive ways of dealing with everyday problems.
- **General mood:** It is be defined as the ability to feel and express positive emotions and remain optimistic (Bar –On, 1997). It represents the ability to enjoy life and maintain a positive disposition. Higher levels on general mood feel satisfied with their lives and maintain a positive outlook.

METHODOLOGY

Research Design

This exploratory research has been designed in the study involves the use of cluster analysis followed by development of an EI radar

to navigate, students, academicians and researchers to analyze and further improve on the EI scores.

Participants

Schools were based on Maharashtra State Board of Secondary and Higher Secondary Examination pattern {Secondary School Certificate Examination (SSC)} and Indian central board schools {Indian School Certificate Examination (ICSE) and Central Board of Secondary Education (CBSE)}. In Mumbai different school types like missionary, municipal, private trusts and government aided, exclusively boys, girl's convent was considered. Schools having Muslim trusts and Jewish trusts were also included. Similarly there were 3 tribal and 3 residential schools students too in our sample.

Data of students in schools of some rural areas and some cities of Maharashtra like Pune, Nasik and Nagpur were also considered. To summarize, schools of different ethnic groups are considered. Our various classifications included urban- rural students, residential - non residential students, tribal – non tribal students, Government – private schools and schools adhering to central – state board pattern as shown in Table 1. These students represent diverse socio – economic background characterized by upbringing of students in a rural /urban area, along with differing levels of parental literacy, parental occupation and family income.

These three parameters are also considered for classification of student type. Based on the data collected, parental categorizations are shown in Table 2. Literacy and occupation of each parent was considered. Based on the economic data for taxable incomes, categorisation of household income was done. As discussed earlier, purposive quota sampling technique was used for this study and the questionnaires have been administered amongst 5732 students.

Table 3. Classified Data of Students' (9 – 14 years) of 5464 samples

Criteria	Total	Urban Students	Rural Students	Non residential Students	Residential Students	Tribal students	Non tribal students	Government schools	Private schools
Male	3335	3035	300	3031	304	313	3022	1757	1578
Female	2129	2018	111	2101	28	211	1918	950	1179
Father's occupation									
0	20	18	2	17	3	1	19	8	12
1	1138	752	386	744	394	447	691	701	437
2	1661	1141	520	1535	126	44	1617	548	1113
3	2019	1735	284	1761	258	13	2006	450	1569
4	626	425	201	587	39	3	623	76	550
Mother's occupation									
0	9	6	3	9	0	1	8	2	7
1	4555	3446	1109	3904	651	502	4053	1640	2915
2	591	366	225	487	104	4	587	132	459
3	196	167	29	160	36	1	195	8	188
4	113	86	27	84	29	0	113	1	112
Father's Literacy level									
1	1403	992	411	1000	403	448	955	799	604
2	+3011	2416	595	2824	187	58	2953	833	2178
3	1050	663	387	820	230	2	1048	151	899
Mother's Literacy level									
1	2852	2179	673	2365	487	483	2369	1229	1623
2	2116	1595	521	1853	263	25	2091	546	1570
3	496	297	199	426	70	0	496	8	488
Family Income									
Upto 1,00,000	---	2261	961	2950	272	4041	1068	289	1782
1,00,000 to 5,00,000	---	1998	725	2068	655	34	1821	511	1351
Above 5,00,000	---	1455	1353	2411	397	0	2615	983	559

268 students did not complete the main battery of tests and hence the sample size reduced to 5464 (61.035% of respondents were male and 38.965% female) in the age group of 9-14 years representing 28 schools as depicted in Table 3. Participants were asked if they would volunteer to study "emotional intelligence and communication".

Participants completed the Bar-On Emotional quotient inventory: Youth Version Bar-On and Parker (2000) in the period between July - October 2006.

Students who participated completed the EQi-YV during a zero period and also completed the two communication questionnaires comprising 10 questions each in the premises of their school. In exchange for their participation, individuals were provided with a confidential feedback report on their results on each of the instruments.

4.2 Procedure

Participants were asked if they would volunteer to study on "emotional intelligence" Participants completed the Bar-

On Emotional quotient inventory: Youth Version (EQi YV) (Bar - On and Parker, 2000) or the Bar-On's (2000) Emotional quotient inventory (EQi) in July and August 2005 depending on their age.

School students who participated completed the EQi:YV during a zero period in the premises of their school. In exchange for their participation, individuals were provided with a confidential feedback report on their results of the instrument.

Table 4. Statistics for Students in the Age Group of 9 – 14 years

	Minimum		Maximum		Mean		Std. Deviation		Std. Error	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Age	9	9	14	14	12.41	12.55	1.550	1.630	0.204	0.301
EI	65	65	130	130	91.18	90.9	14.968	13.95	0.264	0.320
Intrapersonal EQ-i	65	65	130	130	97.85	96.32	14.425	14.025	0.241	0.308
Interpersonal EQ-i	65	65	125	125	90.06	90.88	16.949	17.989	0.291	0.360
Stress management EQ-i	65	65	126	126	88.31	87.55	13.474	12.543	0.229	0.286
Adaptability EQ-i	65	65	130	130	95.22	97.73	16.434	16.783	0.283	0.346
General mood EQ-i	65	65	122	122	87.92	88.54	15.094	15.876	0.265	0.315
Understanding Communication	0	0	10	10	4.09	5.06	1.877	1.077	0.035	0.038
Responsibility in Communication	0	0	10	10	6.19	7.34	2.432	2.54	0.041	0.053

Similarly professional college students were also asked to complete the EQi after their lecturing hours in the premises of their institute. In exchange for their participation, individuals were provided with a confidential feedback report on their results of the instrument.

Measures

The EQ-i;YV is a 60 item self-report measure of EI developed by Bar-On and Parker (2000). Children and adolescents between the ages of 9 and 14 are asked to respond to the statements which best describe the way they feel, think, or act in most situations. Responses are rated by the participant on four-point Likert scales, ranging from 1 for "very seldom or not true of me," to 4 for "very often true or true of me." The instrument has a 6-item intrapersonal scale, a 12-item interpersonal scale, a 12-item stress management scale, and a 10-item adaptability scale. Along with a total EI scale (the sum of the four previous scales), the EQ-i;YV also has a 14-item general mood scale and a 6-item positive impression validity scale. A high score on any individual ability scale (or the total score) reflects a high level of social and emotional competency. Bar-On and Parker (2000) report that the EQ-i;YV has a replicable factor structure (developed with a normative sample of 9172 school-aged children and adolescents); the various scales on the instrument correlate highly with comparable scales on the adult version of the inventory (the Emotional Quotient Inventory; Bar-On, 1997).

The EQ-i is a 133 item self-report measure of EI developed by Bar-On (1997). Professionals between the ages of 22 and 27 are asked to respond to the statements which best describe the way they feel, think, or act in most situations. Responses are rated by the participant on five-point Likert scales, ranging from 1 for "very seldom or not true of me," to 5 for "very often true or true of me." The instrument similar to its YV has an intrapersonal scale, interpersonal scale, stress management scale, adaptability scale and general mood scale.

Computation of EI scores

As per the technical manual of the EQi YV the scores of students were computed. On calculation of the raw scores of EI and its factors, the standardized scores were calculated based on the gender and age of the students. Data sheets were compiled in Microsoft excel sheets and finally data was analyzed using the SPSS 11.5 for MS Windows

Descriptive Statistics

In this step, scores were computed with the aid of SPSS[®] 11.5 for MS Windows. UC and RC had scores out of 10 for each of the questionnaire calculated with the methodology developed by Rozakis (1995). EI scores had to be calculated by the methodology developed by Bar-On and Parker (2000) for the youth version of the test. Table 4 describes the scores of the multiple factors along with EI. As per guidelines provided by the EQi YV the scores of EI (represented by total EQ) and its factors were computed. Some features of the statistics similar to the results obtained in Parker et al (2004a) are:

- 65 was lowest score in case of EI
 - For intrapersonal EQ-i and adaptability EQ-i - 130 is the maximum score.
 - In case of general mood EQ the maximum score is 122.
 - Stress management EQ-i and interpersonal EQ-i has maximum score of 126 each.
 - Understanding communication and responsibility in communication questionnaires had scores out of 10 and some students scored 0 points.
- Students ranged from 9-14 years of age; the mean age was 12.34 years (SD - 1.55) for males and 12.57 years (SD - 1.63) for females.

Cluster analysis

Cluster Analysis is a multi-variate procedure (Nargundkar, 2002) is a group of similar objects. Cooper and Schindler (2007) have identified five basic steps:

- Selection of sample to be clustered.
- Definition of the variables on which to measure the objects.
- Computation of the similarities through correlation.
- Selection of mutually exclusive clusters.
- Cluster comparison

Based on these steps EQ-i and its factor scores of students in the age group of 9 – 14 years were classified as:

- 65 – 89: low EI
- 90 – 110: high EI
- Above 111: very high EI

The intrapersonal EQ scores were classified as:

- 65 – 89: low intrapersonal ability
- 90 – 110: high intrapersonal ability
- 111 - 130: very high intrapersonal ability

The interpersonal EQ scores were classified as:

- 65 – 89: low interpersonal ability

Table 5. Number of Cases in each Cluster

Cluster	1	1127.000
	2	1887.000
	3	979.000
	4	1411.000
Valid		5404.000
Missing		60.000

Table 6. Final Cluster Centers

	Cluster			
	1	2	3	4
Categories of total EI	1	1	2	2
Age group	2	1	2	2
Category of intrapersonal ability	1.64	1.64	2.27	2.12
Category of interpersonal ability	1.26	1.31	2.12	2.10
Category of stress management	1.35	1.34	1.70	1.65
Category of adaptability	1.39	1.42	2.31	2.34
Category of general mood	1.24	1.24	1.95	1.90
Category of UC	1.37	1.41	1.33	1.49
Category of RC	2.13	2.13	2.13	2.29
Father's Occupation	0	3	2	3
Mother's Occupation	4	1	1	3
Father's Education	2	2	1	2
Mother's Education	3	2	1	2
Income	1	3	1	3
Gender	1	1	2	1

2. 90 – 110: high interpersonal ability

3. 111 - 125: very high interpersonal ability

The adaptability EQ scores were classified as:

1. 65 – 89: low adaptability

2. 90 – 110: high adaptability

3. 111 - 130: very high adaptability

The stress management EQ scores were classified as:

1. 65 – 89: low stress management

2. 90 – 110: high stress management

3. 111 - 126: very high stress management

The general mood EQ scores were classified as:

1. 65 – 89: low general mood

2. 90 – 110: high general mood

3. 111 - 122: very high general mood

The understanding communication (UC) scores were classified as:

1. 0 – 4: low UC

2. 5 – 7: high UC

3. 8 - 10: very high UC

The responsibility in communication (RC) scores was classified as:

1. 0 – 4: low RC

2. 5 – 7: high RC

3. 8 - 10: very high RC

The basic clustering methods (Nargundkar, 2002) used in computer packages are

a. Hierarchical clustering or Linkage methods

b. Non - hierarchical clustering or Nodal methods

In this study the second type including the K- means approach is considered where the number of clusters is specified in advance. The specified number of nodes and points closest to them are used to form initial clusters and through an iterative rearrangement the

final K clusters are determined by SPSS[®] 11.5 for MS Windows[®]. K-means procedure generally gives more stable cluster, since it is an interactive procedure compared with the single – pass hierarchical methods.

Table 5 depicts the number of cases in each cluster and signifies that each cluster is determined by significant number of cases. Final cluster centers describe the mean value of each variable for each of the 4 clusters.

The brief description of each of the 4 clusters as depicted in Table 6 is given below:

Cluster 1

Students belonging to this cluster are males in the age group - 13 to 14 years. They have low EQ-i, and low scores of intrapersonal EQ-i, interpersonal EQ-i, stress management EQ-i, adaptability EQ-i, general mood EQ-i and UC. They have high scores of RC. Unfortunately their father has expired but mother having undergone professional education results in family income below 1 lakhs per annum.

Cluster 2

Students belonging to this cluster are males in the age group of 9-12 years. They have low EQ-i score and low scores of intrapersonal EQ-i, interpersonal EQ-i, stress management EQ-i, adaptability EQ-i, general mood EQ-i, UC. They have high scores of RC. Their father's manage a business and mothers are housewives. Both

parents are graduates with total family income above 5 lakhs per annum.

Cluster 3

Students belonging to this cluster are adolescent females in the age group of 13- 14 years. They have high EQ-i scores and high scores of intrapersonal EQ-i, interpersonal EQ-i, adaptability EQ-i, and RC. The scores of stress management EQ-i, general mood EQ-i and UC are low. Their father is in service and mothers are housewives. Both parents are educated till the 10th standard with their family income below 1 lakh per annum.

Cluster 4

Students belonging to this cluster are adolescent males in the age group of 13- 14 years. They have high EQ-i scores and high scores of intrapersonal EQ-i, interpersonal EQ-i, adaptability EQ-i, and RC. The scores of stress management EQ-i, general mood EQ-i and UC are low. Both parents are graduates and are occupied in managing business. Their total family income is above 5 lakhs per annum.

RESULTS AND DISCUSSION

There are important issues and challenges facing education at the public school level. While academic achievement and scholastic performance have been the primary thrust of recent reform efforts, other equally important issues have taken center stage in education. Physical safety, healthy emotional development, standards of excellence and equalitarianism, a global economy and world perspective, changing workforce demands and the nature of work, multi-cultural and diversity issues, retention through graduation, and personal/career needs of students and educators are just a few examples. These important issues require a different and more balanced perspective of accountability and quality standards – to include emotional learning and affective domain.

EI radar and EI ladder were formulated to address the above-mentioned issues to some extent.

Cluster analysis is the means to one of these tools of discovery (EI radar). It may reveal associations and structure in data that, though not previously evident, nevertheless are sensible and useful once found. The results of cluster analysis may contribute to the definition of a formal classification scheme, such as indicating rules for assigning new cases to classes for identification and diagnostic purposes. Thus we could summarize that cluster analysis is an exploratory data analysis tool which aims at sorting different objects into groups in a way that the degree of association between two objects is maximal if they belong to the same group and minimal otherwise.

Clustering techniques have been applied to a wide variety of research problems. In general, whenever one needs to classify a "mountain" of information into manageable meaningful piles, cluster analysis is of great

utility. The EI construct has important clinical and therapeutic implications because it has emerged from an amalgamation of research findings on how people appraise, communicate and use emotion (Salovey and Mayer 1990). The ability to identify and describe internal mental states and the ability to link specific mental events with particular behaviors and situations are core dimensions in most models of emotional intelligence. Bar-On's model of emotional intelligence relates to the potential for performance and success, rather than performance or success itself, and is considered process-oriented rather than outcome-oriented (Bar-On, 2002).

Formulation of EI radar

Radar is "radio detection and ranging" (Wikipedia, 2008). Radar is a system that uses electromagnetic waves to identify the range, altitude, direction, or speed of both moving and fixed objects such as aircraft, ships, motor vehicles, weather formations, and terrain. In simple terms, a radar system is used to detect the position and / or movement of objects. Much like a map, our radar – EI radar displays the position of scores of EI and its factors for 4 clusters formed in cluster analysis. This tool presents and relates to all of the factors through which an individual can look for opportunities to increase EI. Based on the study conducted till date we have developed and applied a new framework called the EI radar.

The following are the objectives of EI radar

- a. **Understanding:** Broaden and deepen the construct of EI.
- b. **Managing:** Identify dimensions, which contribute to managing EI.
- c. **Improving:** Identify best practices to improve EI related to culture, ethnicity of students.
- d. **Institutionalising:** Develop framework for enhancing EI of students.

We have portrayed the 'why' and 'where' aspect of EI as well. Based on the review of literature as discussed earlier, various factors affecting EI helped to identify and define the radar's 5 dimensions which were:

1. Intrapersonal ability
2. Interpersonal ability
3. Stress management
4. Adaptability
5. General mood

We have identified 4 clusters and the cluster components are age, gender, father's occupation, mother's occupation, father's literacy, mother's literacy and income. Similar to a map, the EI radar consists of five factors that serve as anchors to guide academicians to identify a methodology that would surely increase EI.

We have identified 4 clusters and the cluster components are age, gender, father's occupation,

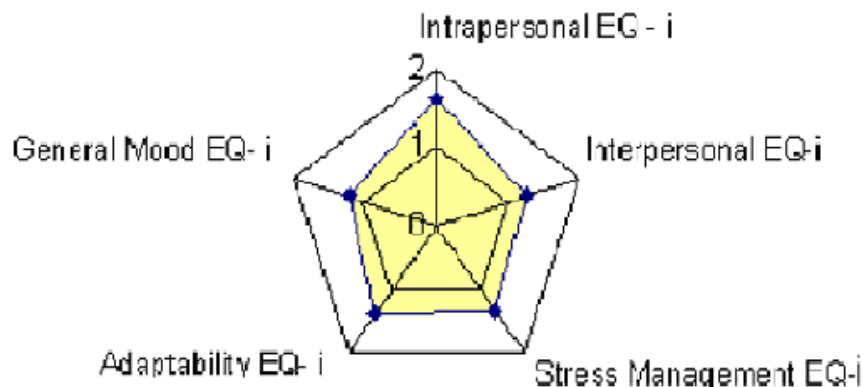


Figure 1. EI Radar for Students (9 – 14 years) in Cluster 1

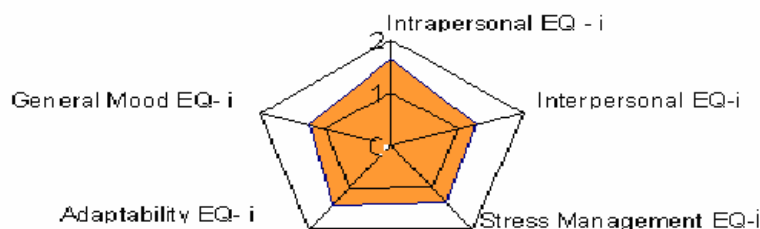


Figure 2. EI Radar for Students (9 – 14 years) in Cluster 2

mother's occupation, father's literacy, mother's literacy and income. Similar to a map, the EI radar consists of five factors that serve as anchors to guide academicians to identify a methodology that would surely increase EI. EI radar shown in Figure 1 is for students (age group 9-14 years).

Based on the empirical analysis, various factors affecting EI helped to identify and define the radar's 5 dimensions which were:

1. Intrapersonal EQ-i
2. Interpersonal EQ-i
3. Stress management EQ-i
4. Adaptability EQ-i
5. General mood EQ-i

We have identified 4 clusters and the cluster components are age, gender, father's occupation, mother's occupation, father's literacy, mother's literacy and income. Similar to a map, the EI radar consists of five factors that serve as anchors to guide academicians to identify a methodology that would surely increase EI. EI radars are shown in Figure 1 - 4 for students (age group 9- 14 years).

Radars 1 and 2 have low scores of all the five factors - intrapersonal EQ-i, interpersonal EQ-i, adaptability EQ-i and general mood EQ-i resulting in subsequent display in radar 1 and radar 2 (Figure 1 and 2).

Clusters 3 and 4 have high scores of intrapersonal EQ-i, interpersonal EQ-i, adaptability EQ-i and general mood EQ-i resulting in subsequent display in radar 3 and radar 4 (Figure 3 and 4).

We can use the EI radar as:

- a. To visualize holistically and systematically
- b. To brainstorm and explore the dimensions of EI in a systematic manner
- c. To diagnose and identify students with low scores.
- d. To prescribe and suggest a curriculum for EI development.

We are also investigating how academicians and EI practitioners can use the EI radar to construct a strategic approach to improve EI of students. Specifically, the radar could help identify the strengths and weaknesses of each student as well as any promising capabilities, those overlooked by their parents and teachers.

This radar may facilitate, develop and navigate the position of each individual student to identify the strengths and weaknesses. This radar will promote a thorough understanding of EI. As discussed earlier, prior research has taken views on EI that tend to focus on what constitutes EI. We need to consider the how, who and where of EI applications. This EI radar

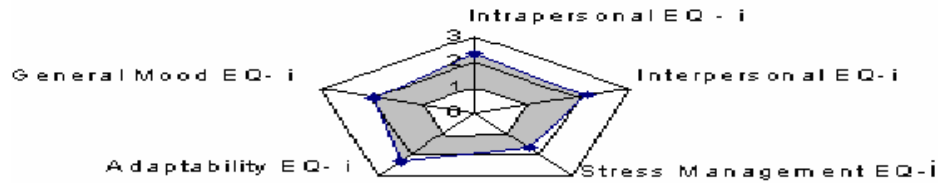


Figure 3. EI Radar for Students (9 – 14 years) in Cluster 3

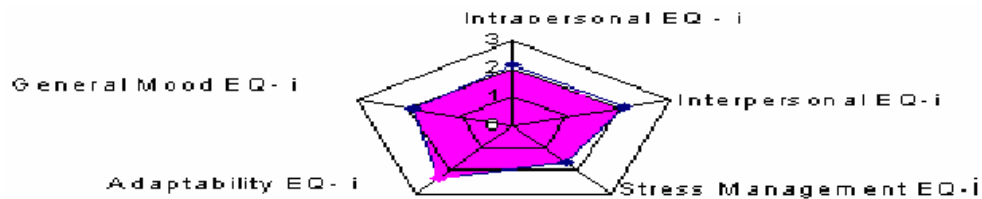


Figure 4. EI Radar for Students (9 – 14 years) in Cluster 4

operationalises each factor of EI and is a pragmatic methodology for creating EI maps for each and every individual student. We have created a holistic conceptual framework through construction of radar to visualize, diagnose and improve the EI of an individual student. Ultimately, the EI radar could guide the way academicians manage the increasingly complex student behavior and add value by building HC. In doing so, the framework of EI radar then EI ladder discussed in the consequent section could become an important tool for students, EI trainers and EI practitioners — anyone seeking development through EI.

EI Competency Ladder

Spencer and Spencer (1993) defined competency as an underlying characteristic of an individual that is causally related to criterion – referenced effective and / or superior performance in a job or situation. Underlying characteristic means the competency is a fairly deep and enduring part of a person's personality and can predict behavior in a wide variety of situations and job tasks. "Causally related" means that a competency causes or predicts behavior or performance. "Criterion referenced" means that the competency actually predicts who does something well or poorly as measured on a specific criterion or standard. Boyatzis (1982) defines a competency as an underlying characteristic of a person, which results in effective or superior performance. Competence is also defined as a set of behavior patterns that an incumbent needs to bring to a position in order to

perform its tasks and functions in the delivery of desired results and outcomes. (Bartram et al, 2002). A competency is a characteristic of an individual, which can be measured. It differentiates between superior and average or between effective and ineffective performances. To summarize competencies are certain characteristics and abilities that enable an individual to perform appropriate actions. To increase the EI of students a competency ladder is constructed based on the degree of association found between EI and its factors with correlation analysis. Goleman (1995) identified EI as a set of competencies by Goleman (1995). Similarly, our research has identified 5 competencies of EI: intrapersonal ability (IP), interpersonal ability (INT), stress management (SM), adaptability (AD) and general mood (GM).

An EI competency ladder is constructed as presented in Figure 5 that discusses the steps of the ladder, which one needs to master one by one.

Each competency identified earlier is further characterized by specific skills.

- To master the competence of IP one needs to master the art of assertive communication (step 1) and build high self-esteem (step 2).
- To master the competence of INT one needs to master the self independence (step 3) and empathetic listening (step 4). Building social skills and strengthening relationships (step 5) is also crucial if one needs to master the competence of INT.
- To master the competence of SM, which discusses methodology of tolerating and managing stress, we need to climb step 6 and step 7, which are stress tolerance and

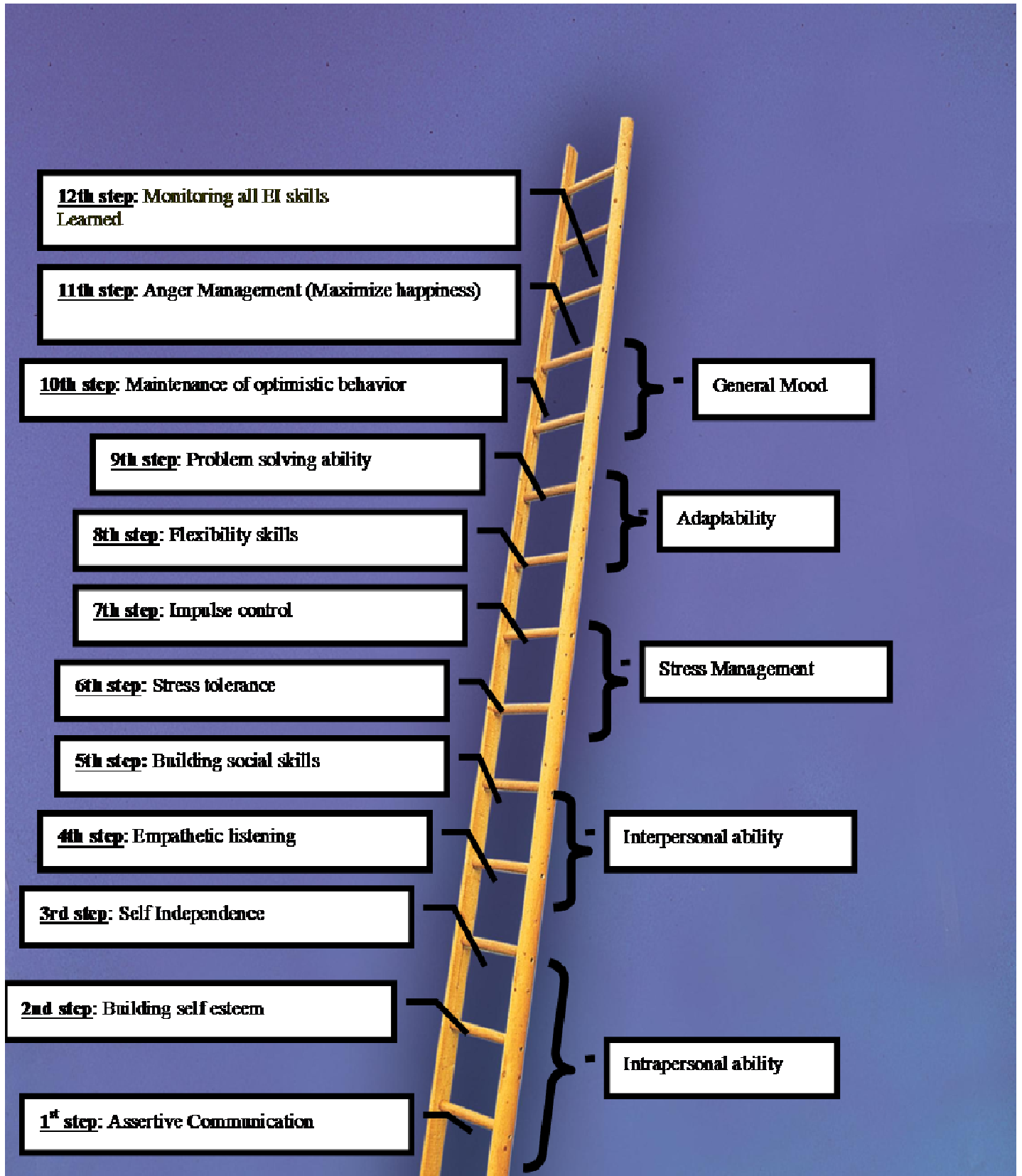


Figure 5. EI Competency Ladder

impulse control respectively.

- To master the competence of AD we need to climb step 8 – flexibility skills and step 9 – problem solving ability.
- To master our last competence – GM we need to maintain optimistic behavior (step 10) and manage anger (maximize happiness) (step 11).
- The last step analyzes the level of incorporation of the 11 steps in an individual and thus monitors the level attained with practical suggestions. The EI radar and the EI ladder in conjunction form different curricula, which are student specific.

CONCLUSION

EI radar is a structural framework for navigating and positioning the students of diverse backgrounds and classes. Specifically, the radar could help identify the strengths and weaknesses of each student as well as any promising capabilities, those overlooked by their parents and teachers.

This radar will promote a thorough understanding of EI. This EI radar operationalizes each factor of EI and is a pragmatic methodology for creating EI maps for each and every individual student. We have created a holistic conceptual framework through construction of radar to visualize, diagnose and improve the EI of an individual student. This presents and relates all of the factors through which a college can look for opportunities to navigate the position of a student from time to time. This study also concludes that EI is the aggregation of the innate characteristics and the knowledge and skill that individuals acquire and develop throughout their lifetime. There is undoubtedly evidence-identifying EI as important in predicting personal and school success, and this has potential implications for students. However, educators need to be cautious in making claims until more research evidence is available from the scientific community. The study highlighted to develop students in ways that are personally meaningful, as well as constructive and meaningful for society. Education, training, and counseling approaches aimed at developing personal excellence in individuals will provide a widely applicable model for making the world a better place, by improving individual health emotionally.

In efforts to create institutional success it seems that outstanding leaders remain mindful that healthy, successful organizations and cultures are not possible without the individual health of the people who comprise them. By focusing on excellence, emotionally intelligent students will help the country in healthy ways – raising the HDI of India, developing the Human Capital. The main goal of these studies is to provide a coherent and practical approach to human emotional behavior that students can learn and apply to stay healthy both

physically and mentally, think of career progression, and enhance individual and collective productivity.

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