

Emotional Intelligence Among Engineering Under-Graduates- A Phenomenological Study

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Abstract-Emotional Intelligence is the ability to recognize emotions in self and others. Now, Emotional Intelligence has become an established phenomenon. It is one of the basic components of quality education because it facilitates self-awareness; self-management; awareness of others and relationship management. The principal objectives of the current study were to appraise the Emotional Intelligence (EI) among Engineering under-graduates in terms of gender, class and group. The research employs a phenomenological approach which is qualitative and the cohort comprised 168 Engineering under-graduates of second and third year belonging to semester-II of Computer Science and Engineering (CSE) course at a prestigious Holy Mary Institute of Technology and Science located in a semi-sub-urban area of Hyderabad in Telangana State. The instrument is a slightly modified tool from Sarah Cook (2007) on a three-point scale. The data were analysed using frequencies and t-test. The main findings of the study indicate that the Engineering undergraduates possessed average levels of Emotional Intelligence. Further, a significant difference was found between the Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social awareness and Relationship management with reference to gender, class and group. The findings of the study holds a basketful of implications for Engineering under-graduates, Professors and implementing authorities. Directions for further research were also portrayed.

Index Terms- Emotional Intelligence; Engineering under-graduates; self-awareness; self-management; awareness of others and relationship management; phenomenological study.

I. INTRODUCTION

COVID-19 has turned the world *topsy-turvy*. Everything has been impacted. Fundamentally, today's adolescents have become more sulky, irritable, nervous, depressed and lonely. With both the parents working to meet the economic demands, families

becoming smaller, adolescents were facing a lack of social life. They were turning to smart phones and computers for entertainment and interaction and time spent with relatives and friends were on the downhill. Thus, the concept of harnessing and driving the crest of emotions towards a better life holds promise to the future (Gayatri,2013).

The concept '*emotional intelligence*' was coined first and used in literary writing by Peter Salovey and John Mayer in 1990 (Cherniss, 2000), the concept has become immensely popular as it explains and provides evidence on how people with a good IQ sometimes fail and those who were school dropouts are considered stupid go on to become the most successful ones in their fields (Goleman, 1995). Some of the forerunners in the research on emotional intelligence – John Mayer, Peter Salovey, David Caruso, David Goleman, Reuven Bar-On – list out various characteristics which decide a person's emotional intelligence. While Mayer and Salovey (1990) take Emotional Intelligence (EI) as a purely cognitive ability, Goleman and Reuven Bar-On view it as a personality trait. Goleman's contribution to the field of EI is *phenomenal* in the sense that he took the theory to a wider section of audience and popularized it. He believed that emotional competencies are not innate talents but those that can be learnt and developed. His four branch model included: a) Self-Awareness b) Self-Management c) Social Awareness and d) Relationship Management.

Need and significance of the study

Emotional intelligence is the key factor in the academic life of students. It deals with deviant behavior through self-awareness and self-motivation, regulates emotional and social skills, and converts emotional energy into positive energy.

A plethora of studies have discussed the theoretical and practical issues regarding student emotional intelligence. Cleary et al. (2018) explained, emotional intelligence guides the cognition drive in student academic life. Studies on emotional intelligence have received much attention over the last two decades (Javed Iqbal et al, 2022).

Further, umpteen studies have been conducted in different parts of the globe on Emotional Intelligence (EI), but research in India is still at embryonic stage, particularly with regard to Engineering graduates. Moreover, no studies have been reported in the State of Telangana on Emotional Intelligence among Engineering undergraduates. Hence, this study was taken up to achieve following

objectives:

1. The principal objective of the current study was to evaluate the levels of Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social awareness and Relationship management.
2. To appraise the Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social -awareness and Relationship management with reference to gender.
3. To understand the Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social awareness and Relationship management with reference to class.
4. To delineate the Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social awareness and Relationship management with reference to class.

In accordance with the objectives the following hypotheses were framed for the meaningful results:

1. There was no difference between the levels of Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social awareness and Relationship management.
2. There was no difference between the Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social awareness and Relationship management with reference to gender.
3. There was no difference between the Emotional Intelligence among Engineering under-graduates in

terms of Self-awareness ; Self-management ; Social awareness and Relationship management with reference to class.

4. There was no difference between the Emotional Intelligence among Engineering under-graduates in terms of Self-awareness ; Self-management ; Social awareness and Relationship management with reference to group.

II. REVIEW OF LITERATURE

Tekerek, Mehmet and Tekerek, Betül (2017) studied emotional intelligence levels of engineering students from different universities in Turkey. Findings of the study showed that there was no significant difference in students' emotional intelligence scores in terms of age and gender.

Tyagi and Gautam (2017) undertook a case study on the relationship between emotional intelligence and academic achievement of the students. It was reported that the academic achievement score of students is increasing with the increase of emotional intelligence score; there was a positive correlation between the two variables.

Jan, et al., (2018) studied the link between emotional intelligence, library anxiety and academic achievement among university students and reported that all three variables showed a significant positive correlation.

Ravi Kant (2019) studied emotional intelligence of students at Central University of south Bihar, Gaya, India. with twin objectives viz., to explore the level of Emotional Intelligence of University's students and to find out the difference between Emotional Intelligence on the basis of gender, locality, level of course and place of study. Results indicated that all university's students were having high level of emotional intelligence. Male and female students are significantly differed from each other. Female students found more Emotional Intelligent with high mean value. UG and PG students of were found not significantly differ from each other on Emotional intelligence. UG students were more emotionally intelligent . Residential location does not have any significant role but rural students were more emotionally intelligent in comparison to their counterparts.

Jan and Anwar (2019) examined emotional intelligence, library use and academic achievement of

university students and found that students with comparatively higher emotional intelligence scores frequently visited the library; they also reported a positive significant relationship between emotional intelligence and academic performance.

Pandey et al., (2019) studied the impression of emotional intelligence on the academic achievement of university students. The main findings of the study revealed a positive and strong correlation between each of the factors of emotional intelligence and ultimately, it leads that emotional intelligence has a positive influence on the academic performance of the students.

Manichander.T (2020) examined the emotional intelligence of graduate students of Karimnagar district in Telangana State. It was reported that there was a significant difference in emotional intelligence of graduate students with regard to gender, locality, and course of study. Further, it was indicated that there was no significant difference in emotional intelligence between government and private college graduate students.

Jiao, Lu; et al (2020) examined the effect of emotional intelligence on academic work performance (in research, teaching and service) in Australian business faculties of 15 universities. It was found that academics' ability to use emotion enhances performance across research, teaching and service, while ability to regulate emotion enhances performance for teaching and service only. It was also revealed that support for a process-based model of emotional intelligence in which appraisal of emotion is a necessary antecedent to emotion's use and regulation.

Mitrović Veljković, et al (2020) explored in a quantitative survey (Emotional Competence Inventory) through dimensions of emotional intelligence: self-regulation, self-awareness, and attitude towards changes. The results show that there are statistically significant differences between all three dimensions of emotional intelligence. Namely, self-regulation and attitude towards changes (both directly and indirectly through self-regulation) are positively affected by self-awareness, while attitude towards changes is positively affected by self-regulation.

Joy, Sona, Thomas, Sneha and Joy, Molly (2021) examined the relationship of Emotional Intelligence and Academic Stress among undergraduate students

from different colleges of Kerala. The result of study indicated that there is a significant relationship between emotional intelligence and academic stress. The results indicated statistically significant difference in emotional intelligence with respect to gender, in which males obtained higher emotional intelligence compared to females. And there was no statistically significant difference in academic stress with respect to gender.

Meher, Venkateswar, et al. (2021) conducted a descriptive study on emotional Intelligence and academic performance of Four-Year Integrated B.Ed. Trainees. The findings of the study revealed that about 6% of students had high emotional intelligence scores and 94% had above-average emotional intelligence scores. The study revealed no significant difference between the emotional intelligence scores of boys and girls. It was also found that the academic achievement scores of students having high emotional intelligence scores were more as compared to the students having low emotional intelligence scores. The study also reported a significant positive correlation between emotional intelligence and the academic performance of students.

Javed Iqbal et al (2022) examined direct and indirect relationships between emotional intelligence and study habits in blended learning environments. The results indicated that self-awareness and self-motivation have direct, significant, and positive connections with study habits. Similarly, the results indicate that all four dimensions of emotional intelligence (self-awareness, self-motivation, emotion regulation and social skills) had indirect, significant, and positive relationships with study habits using cognitive engagement as a mediator variable.

Patil, Shailendra (2023) evaluated the relationships between educational excellence and emotional intelligence (EI), which has four aspects: self-regulation, self-awareness, self-motivation, and social competence. The study found that the level of emotional intelligence and respondent's academic performance was significantly and positively associated. The study try to prove the strong link between educational performance, self-regulation, self-awareness, self-motivation, social skills and emotional intelligence among post-graduation learners in engineering and management discipline.

III RESEARCH DESIGN

Phenomenological research is a qualitative research approach that seeks to understand and describe the universal essence of a phenomenon. This is a non-experimental study with an emphasis on exploration of a phenomenon. This study utilizes descriptive statistics to provide information about the participant’s perception of Emotional Intelligence (EI) and correlational statistics to aid in the identification of possible relationships among study variables. This study utilizes a purposeful sampling design. The cohort of the study consists of *One hundred and sixty eight* (168) Engineering Graduates.

The instrument used in this investigation was developed by the researcher and items modified from a study conducted by Sarah Cook (2007). The survey questionnaire underwent jury validation and reliability testing to ensure validity and reliability. The survey was administered online as well as off line during December,2023 and consisted of four demographic questions and *forty closed-ended questions* spreading over four areas viz., a) Self-Awareness b) Self-Management c) Social Awareness and d) Relationship Management. Descriptive statistics viz., frequencies and t-test were used to organize and summarize data for exploring variable relationships.

IV. RESULTS AND DISCUSSION

4.1 Table showing demographic details of sample

Table 4.3 showing responses of the sample

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Awareness	Male	80	146.8125	20.85216	2.33134
	Female	88	147.5227	18.50876	1.97304

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	80	47.6	47.6	47.6
	Female	88	52.4	52.4	100.0
Class	B.Tech-III, Sem-II	126	75.0	75.0	75.0
	B.Tech-II, Sem-II	47	25.0	25.0	100.0
Group	CSE AI & ML	64	38.1	38.1	38.1
	CSE	104	61.9	61.9	61.9

It can be inferred from the table that more than half of the sample (52.4%) were female graduates, while the residual sample (47.6%) were male graduates.

With regard to class studying, a scintillating sample (75.0%) were from B.Tech-III, Semester-II, whereas, a quarter of the sample (25.0%) were from B.Tech-II, Semester-II.

As per Group of the sample is concerned, a good majority of the sample (61.9%) were from CSE group, on the other hand, (38.1%) were from CSE AI&ML group.

HO₁. There was no difference between the levels of Emotional Intelligence among Engineering undergraduates in terms of Self-Awareness ; Self-Management ; Social Awareness and Relationship Management.

4.2 Table showing levels of Emotional Intelligence

Awareness Level		Frequ	%	Valid %	Cum. %
Valid	High	51	30.4	30.4	30.4
	Average	116	69.0	69.0	99.4
	Low	1	.6	.6	100.0

The table demonstrate the levels of emotional intelligence among the sample. It was revealed that an overwhelming majority of the sample (69.0%) possessed average levels, while, (30.4%) found to at high level of Emotional Intelligence (EI).

Interestingly, just a meagre sample (.6%) were with low levels of Emotional Intelligence. This result is in consonance with the findings of Meher, Venkateswar, et al. (2021)

HO₂. There was no difference between the levels of Emotional Intelligence among Engineering undergraduates in terms of Self-Awareness; Self-Management; Social Awareness and Relationship Management with reference to gender.

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Awareness	Equal variances assumed	.234	166	.815	.71023	3.03687	6.70610	5.28565
	Equal variances not assumed	.233	158	.816	.71023	3.05418	6.74230	5.32185

The t-test demonstrates that the calculated p-value is significant at 5% level and the null hypothesis framed was rejected and it can be concluded that there was a significant difference between the levels of Emotional Intelligence among Engineering under-graduates in terms of Self-Awareness ; Self-Management ; Social Awareness and Relationship Management with reference to *gender*. This result corroborate the findings of Meher, Venkateswar, et al. (2021)

HO₃. There was no difference between the levels of Emotional Intelligence among Engineering under-graduates in terms of Self-Awareness ; Self-Management ; Social Awareness and Relationship Management with reference to class.

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Awareness	Equal Variances assumed	.797	166	.427	2.78571	3.49660	4.11782	9.68925

Equal Variances not assumed	.650	53.194	.519	2.78571	4.28899	5.81618	11.38761
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The t-test demonstrates that the calculated p-value is significant at 5% level and the null hypothesis framed was rejected and it can be concluded that there was a significant difference between the levels of Emotional Intelligence among Engineering under-graduates in terms of Self-Awareness ; Self-Management ; Social Awareness and Relationship Management with reference to *class*. The same trend can be visible in the findings of Ravi Kant (2019).

HO₄: There was no difference between the levels of Emotional Intelligence among Engineering under-graduates in terms of Self-Awareness ; Self-Management ; Social Awareness and Relationship Management with reference to group.

Table 4.5 showing responses of the sample

	Group	N	Mean	Std. Deviation	Std. Error Mean
Awareness	AI & ML	64	148.1719	20.94631	2.61829
	CSE	104	146.5769	18.80750	1.84423

Table 4.4 showing responses of the sample

	Class	N	Mean	Std. Deviation	Std. Error Mean
Awareness	III, Sem-II	126	147.8810	17.02074	1.51633
	II, Sem- II	42	145.0952	26.00076	4.01200

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Awareness	Equal variances assumed	.511	166	.610	1.59495	3.12131	4.56763	7.75753

Equal variances not assumed	.498	122.566	.619	1.59495	3.20259	-4.74461	7.93451
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The t-test demonstrates that the calculated p-value is significant at 5% level and the null hypothesis framed was rejected and it can be concluded that there was a significant difference between the levels of Emotional Intelligence among Engineering under-graduates in terms of Self-Awareness ; Self-Management ; Social Awareness and Relationship Management with reference to *group*. This finding is in tune with the results of Manichander.T (2020) .

V. MAJOR FINDINGS OF THE STUDY

1. The results of the study demonstrated that a great majority of Engineering undergraduates average levels of Emotional Intelligence.
2. It was revealed that there was a significant difference between the Emotional Intelligence of Engineering under-graduates in terms of gender, class and group.

VI. IMPLICATIONS OF THE STUDY

The current study holds a basketful of implications for Engineering under-graduates, professors and authorities.

The findings of the current study demonstrated that an overwhelming majority of the sample (69.0%) possessed average levels. It can be inferred that Emotional Intelligence is the predictor for excellence in their studies. It is more than possessing Intelligent quotient (IQ). Further, a significant difference was found between the Emotional Intelligence among Engineering under-graduates in terms of gender, class and group. Therefore the young minds are to be sensitized from time to time to instil in them a sense of resilience to face the world with courage and confidence, which in turn escalates their proficiency in their specific field of Engineering. Teaching is a profession with high emotional input. Therefore, the present study holds a good quantity of implications for professors. They should be equipped to inspire the undergraduates in proving the appropriate expertise, knowledge and learning

strategies for conducive learning environment. Of late, an increasing number of studies have shown that people with high EI are able to pay attention to emotions in their surroundings and develop strategies to manage and regulate their own emotions and those of others.

The implications for implementing authorities may include introduction of the concept of emotional intelligence for Engineering undergraduates as one of the chapter to be studied at the entry level , so that Engineering undergraduates may be well-equipped to manage their stress and burnout at the workplace in future.

VI. DIRECTIONS FOR FUTURE RESEARCH

The conclusion cannot represent the entire population of HITS since the sampling size only caters for the HITS Computer Science students. However, a more extensive sampling might help future research with different branches of the campus to ensure an in-depth knowledge on Emotional Intelligence. Further, a correlational study can be conducted to identify the relationship between emotional intelligence and other psychological concepts .

VII. CONCLUSION

It was clear from the study that success in the 4IR (Fourth Industrial Revolution) for Engineering undergraduates require developing not only technical competencies but also Emotional Intelligence. Emotional intelligence (EI) epitomizes the ability to comprehend and manage personal emotions and empathize with others. Thus, specific interventions based on Emotional Intelligence EI are sine qua non for developing Emotional intelligence (EI) in coping with challenges in their engineering specialization, even for their future endeavours too.

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ACKNOWLEDGEMENTS

The authors wish to thank immensely *Mr.A. Sidhartha Reddy, Chairman*, Holy Mary Institute of Technology and Science, Bogaram, Hyderabad, Telangana State for his unstinted encouragement in conducting this study.

Competing Interests

Authors declare that no competing interests exists