

A study: Perceived Availability of Opportunities for Enhancing “Personal Enrichment Skills” and Its Utilization

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ABSTRACT: *Engineering graduates of today are required to possess a blend of hard and soft skills to perform productively in a working environment. The soft skills namely creative thinking, work ethics and learning habits (all three grouped together and called as “Personal Enrichment Skills (PLES)” in this paper) are required to a great extent by the corporate world. This study focuses on assessing the extent to which students and faculty perceive that opportunity is available for the students to enhance their Personal Enrichment Skills and the perceived extent of its utilization. Research instruments with a 05 point Likert scale and 11 items were developed (separately for faculty and students), its reliability with Cronbach’s alpha measures and content validity were ensured. The data collected was analyzed using the software “Statistical Package for Social Sciences (SPSS)” by conducting two tests namely independent sample t-test and paired sample t-test, both item wise and dimension wise. Inferences were drawn and conclusions on the perceived availability of opportunities and the perceived utilization of the existing opportunities by UG engineering students to enhance their Personal Enrichment Skills were made.*

Key words: Soft skills, SPSS, creative thinking, work ethics, learning habits.

1. Introduction

Skills are of two categories name hard skills and soft skills, and a skill is something that one learns to do competently. Both skills are required to be possessed to work productively in today’s competitive world. Hard skills are the technical skills required to perform a certain type of task [1], whereas, “Soft skills are the cluster of personality traits, social grace, communication, language, personal habits, friendliness, and optimism that characterize relationships with other people. Soft skills complement hard skills[2].The skills of creative thinking, work ethics and learning habits have been combined and called as “Personal Enrichment Skills (PLES)” that has been the focus of research in this paper. Among the 12 Graduate Attributes (GAs) for under graduate engineering programmes listed by “National Board of Accreditation (NBA)” in India and the “International Engineering Association (IEA)”, the attributes of “ethics and lifelong learning” have been directly spelled out and “creative thinking” has been indirectly incorporated as an attribute [3].In this scenario this paper reports a study on the perceived extent of opportunities available for UG engineering students to enhance their Personal Enrichment Skills and their perceived utilization. This research paper is constructed in five parts. Following this introductory part are the literature survey,

the objective of the study, methodology with phases of the research and final part provides the concluding remarks.

2. Literature Survey

NoawaniSongkram[9] conducted a study to identify the need for possessing creative thinking.

Study by Zhiwei Yu and RajanAlex[10] in a study discusses a learning framework for innovation education systems.

EsenErssoya and Nese Baser [11] in their paper have investigated the higher order thinking skills and have indicated the need to have this skill.

Thomas Baumanna, Sarah Harfstb, Alice Swangerc, Deborah BayerdAmy Celle and William Boswell[12] in their paper have aimed to represent a paradigm shift in technical and professional education, as well as the collaborative processes utilized in creating and maintaining complex multi-stakeholder talent development systems.

Harlina H Siraj, RuzannaZamzam, Juriza Ismail and NabishahMohamad [13] have studied on facilitating students to lecture with Small Group Discussion(SGD) and understanding on diversified elements related to values and attitudes.

Julie A. Hogeland [14] in their paper have dealt with managing the uncertainty and expectations in strategic response behavior with reference to the work ethics in agriculture industries.

A study by TharrenosBratitsis and PetrosZiannas [15] showcases digital story telling coaching approach for fostering social empathy.

Meral and Handan Asude [16] have dealt with the impact of empathy education programme.

AmelAlica, Haris Ceric and SedinHabibovic [17] conducted a study on students and have emphasized the need to have empathy and its connection with life styles.

EmineHandeAydosandandBelmaTugrul [18] have made a study on learning habits in connection with personal safety management.

3. The Study

This study has been carried out with an objective to assess the perceived opportunities available for undergraduate engineering students to enhance their “Personal Enrichment Skills” and the perceived extent of its utilization.

3.1 Phase 1: Development of Research Instrument:

In the doctoral thesis titled “A comparative study of soft skills among engineering students from rural and urban domiciles” – Somashekar. P [4], 90 soft skills that were collected from the available body of literature were ranked by HR managers of corporate. Out of this list, the authors took the top 45 soft skills,

conducted factor analysis and grouped the soft skills resulting in 06 groups and one of the groups was titled as“Personal Enrichment Skills” [5]. Under the group “Personal Enrichment Skills”, soft skills namely creative thinking, work ethics and learning habitsgot listed”.

Research instruments with 11 items were prepared to collect data for the study from teaching faculty and students of UG engineering programmes.The research instruments developed are shown in table 1 (for teaching faculty) and in table 2 (for students).

Table 1: Research instrument (for faculty)

OPPORTUNITY'S AVAILABILITY RATING					OPPORTUNITY AVAILABLE/EXTENT OF USAGE OF OPPORTUNITY		EXTENT OF USAGE OF OPPORTUNITY RATING				
1	2	3	4	5	SL. NO	STATEMENT/QUESTION	1	2	3	4	5
DIMENSION : PERSONAL ENRICHMENT SKILLS											
					1.	For creative thinking activities (such as product development, etc.).					
					2.	For publishing technical papers (in workshops, conferences and journal, etc.).					
					3.	For participating in technical events such as design contests, technical writing contests, etc.					
					4.	To conduct technical events.					
					5.	To learning beyond what has been stated in the syllabus					
					6.	To attend seminars and workshops related to their field of study.					
					7.	To work with faculty on their research related work					
					8.	For understanding various career paths through career development programs					
					9.	To voice their opinion on matters that your students feel are counter-productive for the growth of the institution.					
					10.	To promote work ethics among students (such as stringent corrective measures For exam mal practices).					
					11.	To work on team projects.					

Table 2: Research instrument (for students)

OPPORTUNITY'S AVAILABILITY RATING					OPPORTUNITY AVAILABLE/EXTENT OF USAGE OF OPPORTUNITY		EXTENT OF USAGE OF OPPORTUNITY RATING				
1	2	3	4	5	SL. NO	STATEMENT/QUESTION	1	2	3	4	5
DIMENSION : PERSONAL ENRICHMENT SKILLS											
					1.	For creative thinking activities (such as product development, etc.).					
					2.	For publishing technical papers (in workshops, conferences and journal, etc.).					
					3.	For participating in technical events (such as design contests, technical writing contests, etc.).					
					4.	To conduct technical events.					
					5.	To learning beyond what has been stated in the syllabus					
					6.	To attend seminars and workshops related to your field of study.					
					7.	To work with faculty on their research related work					
					8.	For understanding various career paths through career development programs					
					9.	To voice your opinion on matters that you feel are counter-productive for the growth of the institution.					
					10.	To promote work ethics among students (such as stringent corrective measures For exam mal practices).					
					11.	To work on team projects.					

3.2 Phase 2: Data Collection

Generally the students undergoing a four year UG engineering programme take time to identify the opportunities available for them to enhance their skills and hence for this study data has been collected from the second, third and fourth year students

only. By random sampling, the data was collected from 60 teaching faculty handling UG engineering courses and 160 UG engineering students from various branches of study.

3.3 Phase 3: Reliability and validity analysis:

The research instrument was tested for its reliability and validity to ensure that it tests the basic hypothesis of the research. Bryman and Cramar [6] has mentioned that “it is generally agreed that when a

mean of measuring a concept is proposed, the measurement mean must be both reliable and valid”.

a. Reliability analysis:

A research instrument is said to be reliable if it gives the same results when it is used on different persons or different circumstances. Reliability is reflected by calculating a statistic known as Cronbach’s alpha which measures the reliability among a group of items combined to form a single scale or factor. Cronbach’s alpha reflects the homogeneity of the scale. In general, a reliability coefficient of 0.70 or more is considered good [7]. Although the generally accepted minimum alpha is 0.7, in an exploratory research such as this, an alpha coefficient of 0.6 or even 0.5 is sufficient. The reliability statistics has been shown in table 3 and is found to be acceptable.

Table 3: Reliability Statistics

Sl.No	Dimension	No. of Items	Cronbach's Alpha
1.	Opportunities available to enhance PLES (OPLES – by faculty)	11	0.818
2.	Utilization of the opportunities available to enhance PLES (UPLES - faculty)	11	0.760
3.	Opportunities available to enhance PLES (OPLES – by students)	11	0.748
4.	Utilization of the opportunities available to enhance PLES (UPLES - students)	11	0.778

b. Validity Analysis:

Reliability of research instrument is necessary but not sufficient. The research instrument should also prove to be valid. That is, it should really measure the concept it has been designed to measure. Validity refers to the degree to which a measure intensely represents what it is intended to measure. Here content validity is used and it is not evaluated numerically, it is subjectively judged [8]. A research instrument is said to have content validity, if researchers or a group of experts agree that the research instrument consists of a group of items that cover the issues to be measured. The research instrument has been given to twenty experts and their opinion was sought and the instrument was proved to be valid.

3.4 Phase 4:

Comparative study of opportunities available and extent of usage of “Personal Enrichment Skills”:

The data collected using the research instrument was used as input to the software “Statistical Package for Social Sciences(SPSS)” and two tests were conducted namely independent sample t-test and paired sample t-test.

a) Independent sample t-test:

An independent sample t-test assesses whether the means of two groups are statistically different from each other. Here the first group is ‘faculty’ and the second group is ‘students’. The alpha

level is set at 0.05. The statistical analysis carried out using 'SPSS' was analysed.

i) Inferences of independent sample t-test(item wise):

From the output of the software 'SPSS' the items with significant difference in perception (sig value < 0.05) have been tabulated for opportunities [table-(4)] and for utilization [table-(5)].

Table 4: Inferences of independent sample t-test (item wise):Opportunity

Dimensions	Item for which sig. (2 tailed) is less than 0.05	Opportunities related		Who perceives there is less opportunity
		For the items with sig. (2 tailed) less than 0.05		
		Mean		
		Students	Faculty	
Personal Enrichment Skills	9	2.26	2.77	Students
	10	3.15	3.53	Students
	11	3.05	3.43	Students

Table 5: Inferences of independent sample t-test (item wise):Utilization

Dimensions	Item for which sig. (2 tailed) is less than 0.05	Utilization related		Who perceives there is less opportunity
		For the items with sig. (2 tailed) less than 0.05		
		Mean		
		Students	Faculty	
Personal Enrichment Skills	7	1.71	1.45	Faculty
	10	2.19	2.73	Students
	11	2.18	2.58	Students

From the table 4 it is seen that the students perceive that opportunities available in the items 9,10 and 11 to be less in comparison with that being perceived by faculty which is reflected by comparing the mean values for students and faculty. Similarly from table 5 it is seen that the students perceive the utilization of the opportunities available in the items 10 and 11 to be less in comparison with that being perceived by faculty, and the faculty perceive the utilization of the opportunities available in the item 7 to be less in comparison with that being perceived by students, which is reflected by comparing the mean values for students and faculty.

ii. Inferences of the independent sample t-test (dimension wise):The independent sample test (dimension wise) assess whether the mean of variables in two different group are statistically different from each other. The first group is faculty and second group is students. The alpha level is set at 0.05.

From the output of the software SPSS the variables with significant difference in perception [sig. value <(0.05)] are tabulated in table [6(opportunity)] and table [7(utilization)].

Table 6: Inferences of the independent sample t-test (Opportunity)

Dimensions	sig. (2 tailed) value of dimension	Perceived opportunity
Personal Enrichment Skills	This value is not less than 0.05	Both faculty and students perceive availability of opportunity in the same manner

Table 7: Inferences of the independent sample t-test (Utilization)

Dimensions	sig. (2 tailed) value of dimension	Perceived Utilization
Personal Enrichment Skills	This value is not less than 0.05	Both faculty and students perceive utilization of available opportunity in the same manner

From table 6 it is seen that the perception of students and faculty on the dimension as a whole with reference to opportunities to have no significant difference. Similarly from table 7 it is seen that the perception of students and faculty on the dimension as a whole with reference to utilization of the available opportunities to have no significant difference.

b) Paired Sample t-test: The paired t-test assesses whether the mean of two variables with in a group is different to each other. The alpha level is set at 0.05. By determining the t-value it is used to determine whether it is large enough to be significant. If it is, it can be concluded that there is a difference in perception of the two variables in the group, the two variables being the perceived opportunities and extent of its usage. The statistical analysis carried out using SPSS was analyzed.

Inference of paired sample t-test (item wise):

From the output of SPSS the items with significant difference in perception (sig value < 0.05) have been tabulated for students in table (8) and for faculty in table (9).

Table 8: Inference of paired sample t-test (item wise): Students

Pair (Opportunity & Utilization)	Students related	Sig. (2 tailed) value	Mean of pair	
			Opportunity	For which mean is less (that is, which is perceived is less -opportunity or utilization)
			Utilization	
Pair 1	OPLES1	.000	2.66	U
	UPLES1		2.04	
Pair 2	OPLES2	.000	3.46	U
	UPLES2		2.37	
Pair 3	OWES3	.010	2.79	U
	UPLES3		2.50	
Pair 4	OPLES4	.000	3.34	U
	UPLES4		2.38	
Pair 5	OPLES5	.000	2.56	U
	UPLES5		2.02	
Pair 6	OPLES6	.000	3.24	U
	UPLES6		2.83	
Pair 7	OPLES7	.000	2.36	U
	UPLES7		1.71	
Pair 8	OPLES8	.000	2.65	U
	UPLES8		2.14	
Pair 9	OPLES9	.000	2.25	U
	UPLES9		1.70	
Pair 10	OPLES10	.000	3.15	U
	UPLES10		2.19	
Pair 11	OPLES11	.000	3.05	U

Table 9: Inference of paired sample t-test (item wise): Faculty

Pair (Opportunity & Utilization)		Faculty related			
		Sig. (2 tailed) value	Mean of pair		For which mean is less (that is, which is perceived is less -opportunity or utilization)
			Opportunity	Utilization	
Pair 1	OPLES1	.000	2.90	U	
	UPLES1		2.07		
Pair 2	OPLES2	.000	3.47	U	
	UPLES2		2.45		
Pair 3	OPLES3	.000	3.32	U	
	UPLES3		2.37		
Pair 4	OPLES4	.000	3.30	U	
	UPLES4		2.28		
Pair 5	OPLES5	.000	2.63	U	
	UPLES5		2.05		
Pair 6	OPLES6	.000	3.43	U	
	UPLES6		2.73		
Pair 7	OPLES7	.000	2.10	U	
	UPLES7		1.45		
Pair 8	OPLES8	.000	2.68	U	
	UPLES8		1.95		
Pair 9	OPLES9	.000	2.76	U	
	UPLES9		2.00		
Pair 10	OPLES10	.000	3.53	U	
	UPLES10		2.73		
Pair 11	OPLES11	.000	3.43	U	

It is perceived that there is less usage of opportunities available for all items by both students and faculty.

i. Inferences of paired sample t-test (dimension wise):

The paired sample t-test assesses whether the mean of two variables in the group are statistically different from each other. Here the two variables are opportunity and utilization. The alpha level is set at 0.05. The statistical analysis carried out using SPSS was analyzed. The inferences are tabulated in table 10 and 11.

Table 10: Inferences of paired sample t-test: (dimension wise): Students

Dimensions	Sig. value of Pair	Student related		Which is perceived less (opportunity or utilization)
		For the items with sig. (2 tailed) less than 0.05		
		Mean		
		Opportunity	Utilization	
Personal Enrichment Skills	0.00	2.9073	2.1873	Utilization

Table 11: Inferences of paired sample t-test: (dimension wise): Faculty

Dimensions	Sig. value of Pair	Faculty related		Which is perceived less (opportunity or utilization)
		For the items with sig. (2 tailed) less than 0.05		
		Mean		
		Opportunity	Utilization	
Personal Enrichment Skills	0.00	3.0515	2.2435	Utilization

From the paired sample t test it is found that there is a significant difference both by the faculty and students on the opportunities available and extent of usage. Both faculty and students perceive that there is less utilization of the available opportunity.

4. CONCLUSION

From the analysis, the following are concluded.

1. The UG engineering students perceived utilization of the opportunities perceived to exist is less with reference to enhancing their Personal Enrichment Skills.
2. Moreover, the study reveals that there are no significant differences in perception by both the student community and faculty community on opportunities available and their utilization, with negligible exceptions.

REFERENCES:

- i. AaimaoZhang , “Cooperative Learning and Sift Skills Training in an IT Course”, *Journal of Information Technology Education Research*, Vol.11, Jan 2012.
- ii. www.wikipedia.com, 2011
- iii. www.nbaindia.org, Jan 2013
- iv. Somasekar, “A comparative study of soft skills among engineering students from rural and urban domiciles” Ph.D. dissertation, Dept. Mech. Eng., VTU, India, 2010.
- v. S. Bhaskar and K.V.A. Balaji, “A study of the graduate attributes for under graduate engineering programmes emphasized by NBA-India and their correlation with the soft skills preferred by corporates in the Indian context”, *The Indian Journal of Technical Education*, Vol. 36, No.2, pp. 17 – 25. June, 2013.
- vi. Bryman.A and Cramer.D, “Quantitative Data Analysis for Social Scientists”, revised edition, Routledge, London and New York, April 1994.
- vii. Cooper.D.R, “Business Research Methods”, sixth edition, Mcgraw Hill publication, Singapore, Jan 1998.
- viii. Quazi.H.A and Padibjo.S.R, “A Journey toward TQM thorough ISO 9000- a study on SME’s in Singapore”, *International Journal of Quality and Reliability Management*, Vol.15, No.6, pp489-508, Apr 1998.
- ix. NoawaniSongkrama, “E-learning system in virtual learning environment to develop creative thinking for learners in higher education”, *Procedia - Social and Behavioral Sciences*, Vol. 174, pp. 674 – 679, Aug 2015.
- x. Zhiwei Yu, Rajan Alex, “A Share Learning Framework for Innovation Education: Improving Creative Thinking Capability from Daily Life”, *Procedia Computer Science*, Vol. 31, pp. 359-368, Aug 2014.
- xi. EsenErsoya, Neş’eBaşerB, “The effects of problem-based learning method in higher education on creative thinking”, *Procedia - Social and Behavioral Sciences*, vol.116, pp. 3494 – 3498, June 2014.
- xii. Thomas Baumanna, Sarah Harfstb, Alice Swangerc, Deborah Bayerd Amy Celle and William Boswellf, “Managing successful project teams in a diverse stakeholder environment: Merging industry best practices with an education system to address critical human factors”, *Procedia - Social and Behavioral Sciences*, vol. 194, pp. 20 – 32, May 2015.
- xiii. Harlina H Siraj, RuzannaZamzam, JurizaIsmail andNabishahMohamad, “Managing Diversity: A ‘Must-Have’ Skill for Medical Students”, *Procedia Social and Behavioral Sciences*, vol. 18, pp. 379–383, Jan 2011.
- xiv. Julie A. Hogeland, “Managing uncertainty and expectations: The strategic response of U.S. agricultural cooperatives to agricultural industrialization”, *Journal of Co-operative Organization andManagement* , vol. 3, pp. 60–71, Apr 2015.
- xv. TharrenosBratitsis andPetrosZiannas, “From early childhood to special education: Interactive digital storytelling as a coaching approach for fostering social empathy”, *Procedia Computer Science*, Vol. 67, pp. 231 – 240, April 2015.
- xvi. MeralTanerDerman , Handan AsudeBaşal, “The Impact Of Empathy Education Programme Which Was Performed On 10-11 Year Old Children From Different Socioeconomic Levels On The Aggression Level” *Procedia - Social and Behavioral Sciences*, vol. 141, pp. 1049 – 1053, Feb 2014.
- xvii. AmelAlica, HarisCerich andSedinHabibovicc, “The Connections of Empathy and Life Styles among Bosnian Students”, *Procedia - Social and Behavioral Sciences*, vol. 205, pp. 457 – 462, March 2015.
- xviii. EmineHandeAydosaa andBelmaTugrulb, “Development of Personal Safety and First Aid, Hygiene-Self-care, and Nutrition Subscales in Health Education Scale for Preschool Children”, *Procedia - Social and Behavioral Sciences*, vol. 186, pp. 337 – 343, June 2015.