Acquisition of Communication Skills for Employability among Engineering Students in Namakkal District, Tamilnadu

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ABSTRACT *In this competitive world engineering graduates are expected to be highly resourceful for employability. Majority of the students in the engineering colleges of Namakkal District are from rural areas. They do possess necessary intelligence for getting admission into higher education but they do lag behind in possessing communication skills. This leads them to face problems during academics and in career. To be successful in studies and in the workplace, the educators and learners need to make united efforts in improving teaching – learning method which includes Question Answer Sessions, Role-plays, Group-Discussions and Language Lab Sessions. Therefore, the aim of this study is to analyse the acquisition of communication skills by engineering students for employability in industry. Seven statements related to communication skills are focused in this study. A descriptive research was conducted and the findings of this study would be beneficial to the learners to enhance their communication skills.*

INTRODUCTION

India's higher education system is the third largest in the world after China and the United States. Technical Education aims primarily at equipping a man for work in the practical sense of getting him fit for a job. In India, the number of graduates coming out of technical colleges increased to over 700,000 in 2011 from 550,000 in 2010. However, 75 per cent of technical graduates are unemployable by India's high-growth global industries, including information technology. In the context of India, the success of an engineering student in the recruitment process is mainly based on his display of communication skills. According to Karnik, President of NASSCOM (National Association of Software and Services Company), only 25 per cent of technical graduates are suitable for employment in the outsourcing industry because they lack communication skills.

This shows that employers look for effective communication skills as a way of predicting success in the workplace. The recent survey conducted by the American Society of Mechanical Engineers also indicates that the engineers believe in communication skills like business writing, technical writing, public speaking and presentation preparation that are crucial for success as they work in and among more wide-ranging groups. Thus, it is important that classrooms must provide multiple opportunities for students to learn and practice communication skills to increase their employability while searching for meaningful employment. Many educationalists and employers have also emphasized the need to improve technical students' communication skills for their employability.

REVIEW OF LITERATURE

According to the Malaysian Government survey on Malaysian graduates, about 60,000 Malaysian graduates were unemployed due to poor English and lack of communication skills (Rajes K. M. Rajan, 2010). To excel in career, students have to grow passion for learning and inculcating communication skills. (Yeddu Vijaya Babu, 2013). According to ACM & IEEE (2008), communication skills include an ability to make good presentation about technical problems and their solutions to a range of audience. According to World Bank (2011) study, 64 per cent of the employers said that the performance of the engineering graduates in India is not up to the level of satisfaction (Andreas Blom, 2011). According to National Employability Report (2011), only 17.45 per cent of the engineers are employable in the IT sector. As per the National Employability Report of India (2011), the KPO (Knowledge Process Outsourcing) industry is able to recruit only 9 out of 100 engineers as nearly 78 per cent of the engineering graduates lack communication skills. For the success of engineers in corporate world, communication skills are being considered as important as technical skills (Deepshikha Mehra, 2013). English speaking countries like UK and USA have an increasing demand for Indian Engineers (Deepshikha Mehra, 2013). According to the survey conducted by P' Rayan (2011) on Anna University engineering graduates, all the respondents agreed that 'speaking' as an important skill, 97 per cent identified 'listening' as an important skill and 80 per cent agreed that 'interpersonal skill' as an important skill and nearly 70 per cent found that 'written skill' as an important skill. Engineers coming from metro cities have better communication skills comparing to engineers from non-metro cities and this shows the large variation exists in basic competencies of students who join engineering colleges in India (P'Rayan and Shetty, 2008). The McKinsey Global Institute survey indicates that India produces 3,60,000 engineering graduates but only 25 per cent of them are employable (Rao, 2010). Riemer (2007) rightly points out that there is a growing need worldwide for developing employability skills of engineers both by industry and academia. Communication is not just speaking but it also involves various aspects like listening, writing, visual, intercultural and interdisciplinary aspects (Riemer, 2007).

OBJECTIVE OF THE STUDY

To study the acquisition of communication skills among engineering students in Namakkal District for employability.

STATEMENT OF THE PROBLEM

In engineering education, students need to acquire communication skill as it is essential for them to obtain professional career. After securing the job, they are required to work in groups and to co-operate and communicate with different people from different parts of the world. In order to co-ordinate with the colleagues, engineers have to have good communication skills. Many of the engineering students in the Namakkal district are not only from rural areas but also from Tamil medium schools. Due to lack of communication skills, even a meritorious gold medallist from this district fails to achieve success during group discussions and personal interviews. No doubt that as they have entered into the engineering colleges, they do possess intelligence but lack of communication skills becomes an obstacle in their

career. So, this paper examines whether they have acquired such communication skills during their academic life and made them ready for employability in the industries.

RESEARCH METHODOLOGY

The study is descriptive in nature. Only primary data have been used for the purpose of analysis. Primary data have been collected through a field survey with the help of questionnaire. The questionnaire covers 7 statements like 'Able to deliver idea clearly, effectively and confidently', 'Able to practice active listening skill and respond to others', 'Able to present the topic clearly and confidently', 'Able to use technology in presentations', 'While facing problems able to arrive at a consensus', 'Able to communicate with the students from different cultural background' and 'Able to expand own communicative skills in difficult situations'. For the selection of the sample respondents, the researcher approached 18 engineering colleges in and around Namakkal District. The sample size of the study was 260 respondents. The researcher has used simple random sampling for this study. The sample area is Namakkal district, Tamil Nadu. The sample unit is the students of engineering colleges in Namakkal district. A five point Likert Scale was used and the respondents were required to give score of '5' for 'Always' or '4' for 'Very Often' or '3' for 'Sometimes' or '2' for 'Rarely' or '1' for 'Never' for each statement in the questionnaire. The Multiple Regression Analysis has been used to analyse the collected data.

Validity and Reliability

Reliability and validity of the questionnaire was evaluated by the value of Cronbach's Alpha as in the Tables 1 and 2. Overall Alpha value for all the statements are considered high (0.806) and hence, this instrument is considered to have high reliability and validity.

Table.1 : Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.806	.809	7

Table.2 : Item Total Statistics

S. No	Acquisition of Communication Skills	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	Able to deliver idea clearly, effectively and confidently	22.57	18.887	.663	.761
2	Able to practice active listening skill and respond to others	22.33	19.280	.633	.767
3	Able to present the topic clearly and confidently	22.58	17.943	.556	.779
4	Able to use technology in presentations	22.97	17.513	.617	.766
5	While facing problems able to arrive at a consensus	22.36	18.718	.536	.781
6	Able to communicate with the students from different cultural background	22.24	20.769	.422	.799
7	Able to expand own communicative skills in difficult situations	22.42	20.631	.388	.806

DATA ANALYSIS AND INTERPRETATION

In this section, an attempt has been made to examine the acquisition of communication skills among engineering students in Namakkal district. To examine this, the researcher has used Multiple Regression Analysis. The results of this analysis are as follows:

Predicting 'Acquisition of Communication Skills' based on the combination of 'Gender' and 'Field of Study'

Multiple Regression is a statistical technique that allows us to predict someone's score on one variable on the basis of their scores on several other variables. Hence, the researcher is interested in predicting the 'Acquisition of Communication Skills among Engineering Students' with the help of Multiple Regression Analysis and for this purpose the researcher has framed the following hypotheses:

H_0: $\beta_1 = \beta_2 = 0$

H_1: At least one $\beta_i \neq 0$

Where, β_1 = Gender and β_2 = Field of Study

The table given below (Table.3) discloses the variation in the 'Acquisition of Communication Skills' (dependent variable) with the combination of 'Gender' and 'Field of Study' (independent variables):

Table.3
Variation in 'Acquisition of Communication Skills' explained by the combination of 'Gender' and 'Field of Study'

Category	Type of Communication Skills	R	R Square	Adjusted R Square	Std. Error of the Estimate	Variance (%)
	Acquisition of Communication Skills among Engineering Students:					
1	Able to deliver idea clearly, effectively and confidently	.236[a]	.056	.048	.917	5.6
2	Able to practice active listening skill and respond to others	.386[a]	.149	.143	.846	14.9
3	Able to present the topic clearly and confidently	.323[a]	.104	.097	1.160	10.4
4	Able to use technology in presentations	.476[a]	.226	.220	1.064	22.6
5	While facing problems able to arrive at a consensus	.287[a]	.082	.075	1.080	8.2
6	Able to communicate with the students from different cultural background	.352[a]	.124	.117	.870	12.4
7	Able to expand own communicative skills in difficult situations	.097[a]	.009	.002	1.005	0.9

Model Summary
Source: Computed from Primary Data;

a. Predictors: (Constant), Gender and Field of Study.

The model summary table above (Table.3) clearly states that, out of seven categories of communication skills, the highest co-efficient of multiple determinations are 0.226, 0.149, 0.124 and 0.104. This indicates that, about 22.6 per cent, 14.9 per cent, 12.4 per cent and 10.4 per cent of the variation in the communication skills categories like 'Able to uses technology in presentations', 'Able to practice active listening skill and respond to others', 'Able to communicate with the students from different cultural background' and 'Able to present the topic clearly and confidently' is explained by the variables 'Gender' and 'Field of Study'. The table given below (Table.4) provides the statistical inference for predicting the 'Acquisition of Communication Skills' based on the combination of 'Gender' and 'Field of Study':

Table.4

Predicting 'Acquisition of Communication Skills' based on the combination of 'Gender' and 'Field of Study' ANOVA[b]

Category	Regression & Residual	Sum of Squares	df	Mean Square	F	Sig.	Statistical Inference
	Acquisition of Communication Skills among Engineering Students:						
1	Regression	12.739	2	6.370	7.574	.001[a]	$F_{(2, 257)} = 7.574$, $p < 0.05$ Significant
	Residual	216.122	257	.841			
	Total	228.862	259				
2	Regression	32.260	2	16.130	22.544	.000[a]	$F_{(2, 257)} = 22.544$, $p < 0.05$ Significant
	Residual	183.878	257	.715			
	Total	216.138	259				
3	Regression	40.245	2	20.123	14.948	.000[a]	$F_{(2, 257)} = 14.948$, $p < 0.05$ Significant
	Residual	345.970	257	1.346			
	Total	386.215	259				
4	Regression	85.113	2	42.557	37.591	.000[a]	$F_{(2, 257)} = 37.591$, $p < 0.05$ Significant
	Residual	290.948	257	1.132			
	Total	376.062	259				
5	Regression	26.906	2	13.453	11.539	.000[a]	$F_{(2, 257)} = 11.539$, $p < 0.05$ Significant
	Residual	299.632	257	1.166			
	Total	326.538	259				
6	Regression	27.524	2	13.762	18.188	.000[a]	$F_{(2, 257)} = 18.188$, $p < 0.05$ Significant
	Residual	194.460	257	.757			
	Total	221.985	259				
7	Regression	2.483	2	1.242	1.230	.294[a]	$F_{(2, 257)} = 1.230$ $p > 0.05$ Not Significant
	Residual	259.378	257	1.009			
	Total	261.862	259				

Source: Computed from Primary Data;

a. **Predictors: (Constant), Gender and Field of Study;**
b. **Dependent Variable: Acquisition of Communication Skills.**

The ANOVA table above (Table.4) insisted us to reject null hypothesis for the first six categories as their p-values are < 0.05 and it is clear that at α = 0.05 level of significance, there exists enough evidence to conclude that at least one of the two predictors is useful for predicting these six categories and therefore the model is considered useful. The table given below (Table.5) helps us to determine the usefulness of variables 'Gender' and 'Field of Study' in predicting the 'Acquisition of Communication Skills':

Table.5

Determining the usefulness of variables 'Gender' and 'Field of Study' in predicting the 'Acquisition of Communication Skills' Coefficients[a]

Category	Variables	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Statistical Inference
	Acquisition of Communication Skills among Engineering Students:						
1	(Constant)	3.673	.226		16.231	.000	
	Gender	.268	.143	.128	1.878	.062	Not Significant
	Field of Study	-.157	.040	-.265	-3.891	.000	Significant
2	(Constant)	2.948	.209		14.123	.000	
	Gender	.851	.132	.418	6.457	.000	Significant
	Field of Study	-.171	.037	-.297	-4.591	.000	Significant
3	(Constant)	2.911	.286		10.167	.000	
	Gender	.841	.181	.309	4.651	.000	Significant
	Field of Study	-.239	.051	-.311	-4.683	.000	Significant
4	(Constant)	3.861	.263		14.703	.000	
	Gender	.329	.166	.123	1.986	.048	Not Significant
	Field of Study	-.394	.047	-.519	-8.415	.000	Significant
5	(Constant)	2.989	.266		11.215	.000	
	Gender	.781	.168	.312	4.639	.000	Significant
	Field of Study	-.154	.048	-.217	-3.232	.001	Significant
6	(Constant)	2.806	.215		13.070	.000	
	Gender	.799	.136	.387	5.896	.000	Significant
	Field of Study	-.060	.038	-.103	-1.567	.118	Not Significant
7	(Constant)	3.452	.248		13.921	.000	
	Gender	.232	.157	.103	1.480	.140	Not Significant
	Field of Study	-.010	.044	-.015	-.216	.829	Not Significant

Source: Computed from Primary Data;

a. **Predictors: (Constant), Gender and Field of Study.**

The Co-efficient table above (Table.5) clearly states that, the variable 'Gender' is useful for predicting 'Communication Skills' categories 2, 3, 5 and 6 as their p-values are < 0.05. In the same way, the variable 'Field of Study' is useful for predicting 'Communication Skills' categories 1, 2, 3, 4 and 5 as their p-values are <0.05. This shows that, the variable 'Gender' is a good predictor of the categories 'Able to practice active listening skill and respond to others', 'Able to present the topic clearly and confidently', 'Able to arrive at a consensus while facing problems' and 'Able to communicate with the students from different cultural background'. The variable 'Field of Study' is also a good predictor of the categories, 'Able to deliver idea clearly, effectively and confidently', 'Able to practice active listening skill and respond to others', 'Able to present the topic clearly and confidently', 'Able to use technology in presentations' and 'While facing problems able to arrive at a consensus'. The sign of the co-efficient of the variable 'Gender' is positive in the categories 2, 3, 5 and 6 and the sign of the co-efficient of the variable 'Field of Study' is negative in categories 1, 2, 3, 4 and 5. This helps us to predict the following equations based on the unstandardized co-efficient:

$$DIC_i = 3.673 + 0.268 \, Gender_i + (-0.157) \, Major_i \; ;$$

$$PALS_i = 2.948 + 0.851 \ Gender_i + (-0.171) \ Major_i \ ;$$

$$PTCC_i = 2.911 + 0.841 \ Gender_i + (-0.239) \ Major_i \ ;$$

$$UTP_i = 3.861 + 0.329 \ Gender_i + (-0.394) \ Major_i \ ;$$

$$WFPC_i = 2.989 + 0.781 \ Gender_i + (-0.154) \ Major_i \ ;$$

$$CDCBS_i = 2.806 + 0.799 \ Gender_i + (-0.060) \ Major_i \ .$$

Where $i = 1…..260$, Gender = 1 for female and 2 for male and Major = 1 for 'BE – Mech.', 2 for 'BE – EEE', 3 for 'BE – ECE', 4 for 'BE –Civil', 5 for B.Tech (IT)' and 6 for 'BE-CSE'. The constant is predicted value of the dependent variable (DV) when all of the independent variables (IVs) have a value of 1. In the context of this analysis:

The predicted 'DIC - Able to deliver idea clearly, effectively and confidently' for female with 1 'Field of Study' score is 3.673. The slope of 'Field of Study' is (-0.157). This means that every one unit decrease in 'Field of Study', predicted 'DIC' decrease by 0.157, after controlling for 'Gender'. This has confirmed that BE-Mechanical and BE-EEE students are able to deliver their idea clearly, effectively and confidently compared to other students.

The predicted 'PALS - Able to practice active listening skill and respond to others' for female with 1 'Field of Study' score is 2.948. The slope of 'Field of Study' is (-0.171). This means that every one unit decrease in 'Field of Study', predicted 'PALS' decrease by 0.171, after controlling for 'Gender'. The slope of 'Gender' is 0.851. This means that, every one unit increase in Gender (i.e.) male, predicted 'PALS' increase by 0.851, after controlling for 'Field of Study'. This shows that BE-Mechanical and BE – EEE male students are able to practice active listening skills and respond to others properly than other students.

The predicted 'PTCC - Able to present the topic clearly and confidently' for female with 1 'Field of Study' score is 2.911. The slope of 'Field of Study' is (-0.239). This means that every one unit decrease in 'Field of Study', predicted 'PTCC' decrease by 0.239, after controlling for 'Gender'. The slope of 'Gender' is 0.841. This means that, every one unit increase in Gender (i.e.) male, predicted 'PTCC' increase by 0.841, after controlling for 'Field of Study'. This indicated that BE-Mechanical and BE – EEE male students are good at presenting their topic clearly and confidently compared to other students.

The predicted 'UTP - Able to use technology in presentations' for female with 1 'Field of Study' score is 3.861. The slope of 'Field of Study' is (-0.394). This means that every one unit decrease in 'Field of Study', predicted 'UTP' decrease by 0.394, after controlling for 'Gender'. This implied that BE-Mechanical and BE – EEE students are good at using technology in presentations compared to other students.

The predicted 'WFPC - While facing problems able to arrive at a consensus' for female with 1 'Field of Study' score is 2.989. The slope of 'Field of Study' is (-0.154). This means that every one unit decrease in 'Field of Study', predicted 'WFPC' decrease by 0.154, after controlling for 'Gender'. The slope of 'Gender' is 0.781. This means that, every one unit increase in Gender (i.e.) male, predicted 'PTCC' increase by 0.781, after controlling for 'Field of Study'. This has highlighted that BE - Mechanical and BE – EEE male students are able to arrive at a consensus while facing problems compared to other students.

The slope of 'Gender' is 0.799. This means that, every one unit increase in Gender (i.e.) male, predicted 'CDCBS - Able to communicate with the students from different cultural background' increase by 0.799, after controlling for 'Field of Study'. This shows that male students are good at communicating with the students from different cultural background compared to female students irrespective of their field of study.

FINDINGS OF THE STUDY
BE - Mechanical and BE – EEE students are able to deliver their idea clearly, effectively and confidently and they are good at using technology in presentations compared to other students. BE - Mechanical and BE – EEE male students are able to practice active listening skills and respond to others properly, are able to arrive at a consensus while facing problems and they are good at presenting their topic clearly and confidently compared to other students. Male students are good at communicating with the students from different cultural background compared to female students irrespective of their fields of study.

SUGGESTION
This research clearly shows that the communication skills are crucial for the career success. Problem solving, delegating, motivating and team building are much easier if they possess good communication skills. This study clearly points out that the BE - Mechanical and BE - EEE students have acquired necessary communication skills to some extent when compared to other major students. This shows that there is far less training provided to the engineering students than hard skills in the institutions where they study. Thus, it is suggested for the engineering students as well as the educational institutions to focus much on communication skills development as they do on hard skills.

CONCLUSION
The critical issue that was researched into is the extent to which the engineering students have acquired necessary communication skills for employability in industries. The study concludes that in addition to academic activities, co-curriculum also could be organized to help learners to develop their communication skills. Findings of this research would help the educators to be aware of the required communication skills in engineering industry and draw some measures to improve communication skills among learners. Mastery in communication skills determine quality of graduates for employment and it also build positive perception among public and parents on engineering education. Therefore, Higher Education Ministry, engineering colleges, educators and learners may cooperate in order to enhance communication skills in teaching and learning process. In short, the study would be highly useful to researchers, planners and policy makers in overcoming the problems of engineering students in acquiring communication skills and in formulating strategies for their communication skill development in Tamilnadu in general and particularly in Namakkal District.

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