

A Study on the Problems Faced by Rural Tamil Medium Students in Professional Engineering College Using Cetd Matrix

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Abstract - Rural Tamil medium students face many problems after getting admission in Professional Engineering Colleges. Their problems were of academic, social, cultural and emotional in nature. The intensity of their worries varies from person to person and their ability to adjust to the new demands. Through a well framed questionnaire, information from rural Tamil medium students studying in professional engineering colleges located within Chennai was collected and studied using CETD Matrix. The solution obtained as a column matrix gives the associated number which is transformed into graph. The graphs depict the highest group of students who are considered to slow learners.

Keywords: CETD Matrix, ATD Matrix, RTD Matrix, Rural Tamil Medium students, engineering colleges

I. INTRODUCTION

This paper deals with issue faced by Rural Tamil medium students. Their problems are like adjusting with English speaking students, difficulty in learning the subjects and adjusting with city atmosphere and etc. This paper has three sections. In the first section we recall the methods of application CETD matrix. In section two, we describe the problems faced by the Rural Tamil medium students in professional engineering colleges. The sections three, we apply the problems faced by the Rural Tamil medium students to the CETD matrix and derive our conclusions.

II. FUZZY MATRICES

Matrix theory has become a very simple but an effective tool in the analysis of collected raw data, be from a student department or from rural areas about their studies and improvement in life. Fuzzy matrix or CETD matrix model is the one, which helps to analysis the raw data. The analysis is carried out in three stages. We take the data as it is and transform it into a raw time dependent data matrix by taking along the row the age group students (I and II year students) and along the columns the problems faced by rural Tamil medium. Using the raw data matrix we make it into the Average Time Dependent (ATD) matrix (a_{ij}) by dividing each entry of the raw data matrix by the number of years i.e., the time period.

The matrix represents a data, which is totally uniform. At the third stage we find the Average and Standard Deviation of every column in the ATD matrix. Using average μ_j of each j^{th} column and σ_j the S.D of the each j^{th} column we chose a

parameter α from the interval $[0, 1]$ and form the Refined time dependent (RTD) Matrix, using the formula

$$\begin{aligned} &\text{if } a_{ij} \leq (\mu_j - \alpha * \sigma_j) \text{ then } e_{ij} = -1 \\ &\text{else} \\ &\text{if } a_{ij} \in (\mu_j - \alpha * \sigma_j, \mu_j + \alpha * \sigma_j) \text{ then } e_{ij} = 0 \\ &\text{else} \\ &\text{if } a_{ij} \geq (\mu_j + \alpha * \sigma_j) \text{ then } e_{ij} = 1. \end{aligned}$$

We redefine the ATD matrix into the RTD matrix for here the entries are -1, 0 or 1. Now the row sum of this matrix gives the maximum age group, which is prone to socio and economic problems. We also combine these matrices by varying $\alpha \in [0, 1]$, so that we get the Combined Effective Time Dependent Data (CETD) matrix. The row sum is obtained for CETD matrix and conclusions are derived based on row sums. All these are represented by graphs and graphs play a vital role in exhibiting the data by the simplest means which can be even understood by a lay man.

2.1. Description of the Problem

As we see in media, it was said that boasts of an increasing number of students from Tamil medium schools joining engineering course are facing increasing difficulties in understanding and clearing papers without arrears. Second-year engineering students of a college, say almost 50 per cent of the class comprises students from Tamil medium schools.

In 2012 a 19-year-old student of Anna University committed suicide by hanging herself, said in the a popular media. Her classmates noted that she had attended a class in the morning, "But she kept saying that she was finding studies increasingly difficult," said one of her friend. Young people long for love and recognition. Incidents like these bring to the forefront the issue of Tamil medium student's struggle when they come for higher education.

A group of students were analyzed, particularly the students who are all doing B.E/B.Tech programs. These students from various colleges have gathered the information. The study includes their problems in class, lack of communication, lack of exposure, family background, fear to speak in English, their difficulty in studying, understanding and reproducing the subjects in English and difficulty in making friends to love and share their part of life.

2.2 Estimation of problems faced by rural Tamil medium students during their three years of study, using 3x10 matrices.

Now applying the problems faced by rural Tamil medium students to the CETD model and derive our conclusion by taking the year of study along the row and the attributes along the columns.

- P_1 : Lack of efficiency in communicating in English
- P_2 : Difficulty to translate their thoughts from Tamil to English. Most of them were Tamil-speaking, difficulty in translating their speech to English.
- P_3 : Difficulty in understanding the lectures in English
- P_4 : Difficulty in studying all the subjects in English
- P_5 : Difficulty in reproducing the subjects in English for their exams
- P_6 : Lack of Exposure to formal educational environment. The Students may come from families with low incomes or from middle- or higher-income families without a college-going tradition.
- P_7 : Fear to speak in English in front of others. The students may have fears about going to college and misconceptions about college and its costs
- P_8 : First generation students of their families to go to college
- P_9 : Adapting to city life
- P_{10} : Difficulty in making friends when every other speak in English not in your mother tongue.

Initial Raw Data Matrix

	P_1	P_2	P_3	P_4	P_5	P_6	P_7	P_8	P_9	P_{10}
17-18(I yr)	25	22	26	23	22	14	20	21	15	20
19-20(II yr)	20	18	19	19	30	13	15	20	15	10
21-22(III yr)	10	12	19	21	25	15	14	18	13	8

The ATD matrix

	P_1	P_2	P_3	P_4	P_5	P_6	P_7	P_8	P_9	P_{10}
17-18 (I yr)	12.5	11	13	11.5	11	7	10	10.5	7.5	10
19-20(II yr)	10	9	9.5	9.5	15	6.5	7.5	10	7.5	5
21-23(III yr)	5	6	9.5	10.5	12.5	7.5	7	9	6.5	4

The Average and the Standard Deviation

Avg	9.2	8.7	10.7	10.5	12.8	7.0	8.2	9.8	7.2	6.3
S.D	3.8	2.5	2.0	1.0	2.0	0.5	1.6	0.8	0.6	3.2

The RTD matrix for $\alpha = 0.2$ and the row sum matrix

$$\begin{bmatrix} 1 & 1 & 1 & 1 & -1 & 0 & 1 & 1 & 1 & 1 \\ 1 & 0 & -1 & -1 & 1 & -1 & -1 & 1 & 1 & -1 \\ -1 & -1 & -1 & 0 & 0 & 1 & -1 & -1 & -1 & -1 \end{bmatrix} \quad \begin{bmatrix} 7 \\ -1 \\ -6 \end{bmatrix}$$

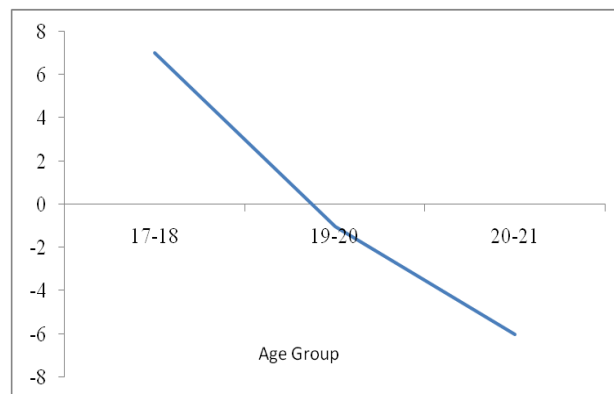


Fig. 1: The Graph depicting the maximum age group of Rural Tamil medium student's problems for $\alpha = 0.2$

The RTD matrix for $\alpha = 0.5$ and the row sum matrix

$$\begin{bmatrix} 1 & 1 & 1 & 1 & -1 & 0 & 1 & 1 & 1 & 1 \\ 0 & 0 & -1 & -1 & 1 & -1 & 0 & 0 & 1 & 0 \\ -1 & -1 & -1 & -1 & 1 & 1 & -1 & -1 & -1 & -1 \end{bmatrix} \quad \begin{bmatrix} 7 \\ -1 \\ -6 \end{bmatrix}$$

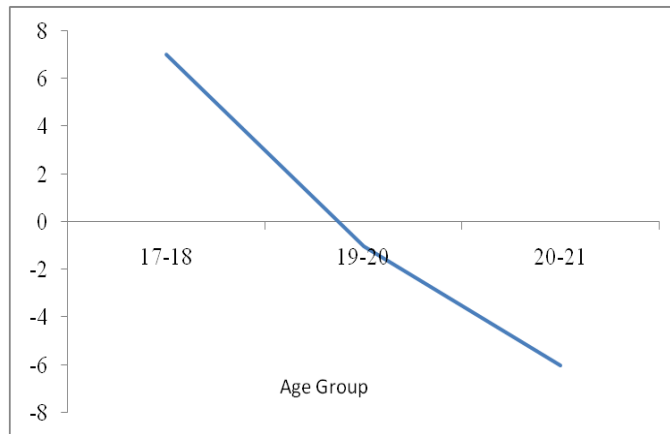


Fig.2: The Graph depicting the maximum age group of Rural Tamil medium student's problems for $\alpha = 0.5$

The RTD matrix for $\alpha = 0.7$ and the row sum matrix

$$\begin{bmatrix} 1 & 1 & 1 & 1 & -1 & 0 & 1 & 1 & 0 & 1 \\ 0 & 0 & 0 & -1 & 1 & -1 & 0 & 0 & 0 & 0 \\ -1 & -1 & 0 & -1 & -1 & 1 & -1 & -1 & -1 & -1 \end{bmatrix} \quad \begin{bmatrix} 6 \\ -1 \\ -5 \end{bmatrix}$$

The RTD matrix for $\alpha = 0.9$ and the row sum matrix

$$\begin{bmatrix} 0 & 1 & 1 & 1 & -1 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & -1 & 1 & -1 & 0 & 0 & 0 & 0 \\ -1 & -1 & 0 & 0 & 0 & 1 & 0 & -1 & -1 & 0 \end{bmatrix} \quad \begin{bmatrix} 4 \\ -1 \\ -3 \end{bmatrix}$$

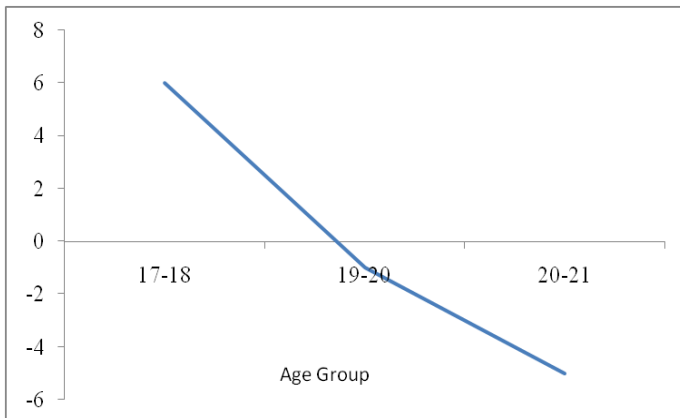


Fig.3: The Graph depicting the maximum age group of Rural Tamil medium student's problems for $\alpha = 0.7$

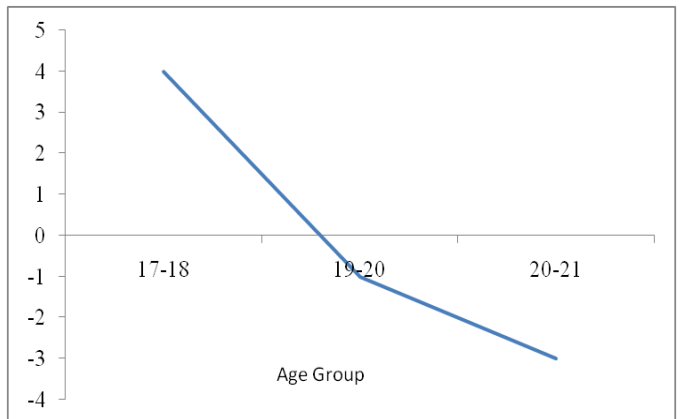


Fig.4: The Graph depicting the maximum age group of Rural Tamil medium student's problems for $\alpha = 0.9$

III. OBSERVATION AND CONCLUSION

From the CETD matrix analysis we see that in the first year of study, the students under 17-18 age group in engineering college are hyper sensitive and they are new to the college environment. In this study we are able to analyze clearly that most of the first year students faced problems in understanding, studying and reproducing due to lack of communication skills, even though they have secured very good marks in higher secondary examination. These problems get reduced when they come to second and third year of study, but it still continues even in the final year. Teachers can help the first year students to become independent by teaching strategies and making available appropriate motivating materials. Based on the results obtained from the study, we can conclude that to inculcate effective communication skills. At the beginning levels, choosing and implementing appropriate teaching/learning techniques in language classes is also essential.

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CETD Matrix Row sum of the CETD Matirx

$$\begin{bmatrix} 3 & 4 & 4 & 4 & -4 & 0 & 4 & 3 & 2 & 4 \\ 1 & 0 & -2 & -3 & 4 & -4 & -1 & 1 & 2 & -1 \\ -4 & -4 & -2 & -1 & 1 & 4 & -3 & -4 & -4 & -3 \end{bmatrix} \begin{bmatrix} 24 \\ -3 \\ -20 \end{bmatrix}$$

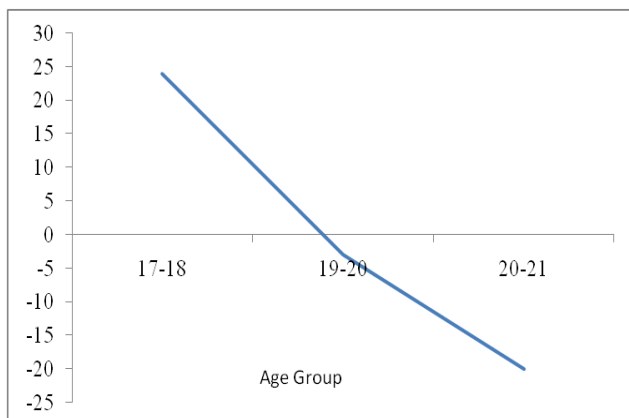


Fig.5: The Graph depicting the maximum age group of Rural Tamil medium student's problems for **CETD** Matrix