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USING DISCRIMINANT ANALYSIS TO CLASSIFY SOCIODEMOGRAPHIC VARIABLES BASED ON LEXICAL COMPETENCE AND TEACHER BEHAVIOUR OF SECONDARY LEVEL ENGLISH LANGUAGE TEACHERS

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ABSTRACT :

The aim of the study is to find out the differential effect of selected socio-demographic factors on lexical competence and teacher behaviour of secondary level English language teachers. The normative survey method has been adopted by the investigator. The study was on a stratified random sample of 1046 secondary school English language teachers were selected from the schools of six districts namely Salem, Karur, Coimbatore, Krishnagiri, Madurai and Chennai. The data was collected by the researcher from the government, government aided, and private schools in Tamil Nadu. Data pertained to the English language anxiety was collected by administering the lexical competence inventory, teacher behaviour questionnaire and the socio-demographic information by a personal data sheet. Analysis of the data revealed that while gender, locality, type of schools, marital status and academic qualification. Result revealed that the discriminant analysis, prefix-suffix and syllables highly discriminate lexical competence and teacher behaviour of secondary level language teachers.

KEYWORDS : *: Lexical Competence, Teacher Behaviour, Socio-Demographic Variables, Secondary Level English Language Teachers.*

INTRODUCTION

Education is that conductive approach which draws a person from darkness, rareness and despair by developing his personality in all aspects viz, physical, mental, social, emotional, cultural and holy. Education develops the individual like a flower which distributes its fragrance all over the surroundings. Education makes the individual to be fit in their environment both by natural and socio-cultural ways through the development of their abilities. Lexical competence is the aspect of communicative competence that deals with knowledge of lexical or vocabulary items and their meaning and the ability to use them appropriately. It is generally well known that without grammatical accuracy, an utterance may be understood, but without precise vocabulary, it is indeed difficult. Lexis belongs to the level of language which concerns lexical items or content words in a language. Generally, while grammar deals with closed word classes such as the preposition, pronoun, determiner, conjunction and the primary and modal auxiliaries, lexis involves the four open word classes which are the noun, adjective, lexical verb and adverb. Lexical word classes are known as open classes because new words can continually be added to them (HajaMohideen Bin Mohamed Ali 2012). For learner's lexical competence to be developed, two essential components need to be available, first, knowledge of vocabulary items and the lexical relationships of different types that exist between them. Second,

specific directions on how to select and use vocabulary learning strategies, which can be done in relation to the first element that is knowledge of lexical relations (Ghusoon Mehdi 2008).

Teacher behaviour is a behaviour normally performed by a teacher related to the students in a different situation. The teacher plays a major role in a classroom so the teacher behaviour depends mainly on students. In the case of the learning process, the teacher has to take over a proper responsibility towards students. The interaction with students in the classroom relates to teacher behaviour. Even teacher behaviour manipulates the relationship with students and the activities performed by the teacher can react in the classroom. A teacher performs many reactions and observation while teaching in the classroom. It makes interaction with the students to achieve the goals of education. So, all those activities which a teacher performs in the classroom are known as the teacher's classroom behaviour. Teacher behaviour may be considered as the role which a teacher plays for all over development of his pupils. With this role (behaviour) he also tries to modify the student's behaviour derivable (Precious Sheoran 2012). According to M.C. Nergency and carner "Teacher behaviour may be regarded as a function of the characteristics of the teacher his situation and the tasks in which the teacher engages."

OBJECTIVES OF THE STUDY

The following are the main objectives of the study

- To know the variables which significantly discriminate the respondents of one group from the other *The select background variables/subsamples are gender, locality, type of schools, marital status and academic qualification.*

HYPOTHESES OF THE STUDY

Following hypotheses are formulated based on the main objectives that are to be tested in the present study.

- There is no prediction of lexical competence on the teacher behaviour and its dimensions of secondary level of language teachers

METHODOLOGY

The normative Survey method was adopted for the present study. A Stratified random sample of 1046 secondary level English language teachers selected from the schools six districts (Salem, Karur, Coimbatore, Krishnagiri, Madurai and Chennai) constituted the sample for the present study. The lexical competence tool was developed by the investigator of secondary level English language teachers containing fifty items about lexical competence and five dimensions viz, Prefix & Suffix, Sentence Pattern, Tenses, Adverb and Idioms. The estimated reliability of the inventory in the present study is very high (Cronbach's alpha 0.753).

The tool was administered on the sample under standardized conditions and the data collected were analyzed using appropriate discriminant analysis manually as well as with the help of SPSS (Windows 16.0).

VARIABLES USED IN THE STUDY

Independent variable

The following are the independent variable used for the present study.

- Lexical competence

Dependent variable

The following is the dependent variable used for the present study.

- Teacher behaviour

ANALYSIS AND INTERPRETATION

The aim of the study is to understand the lexical competence and teacher behaviour of secondary level English language teachers and how selected socio-demographic variables influence it.

Discriminant analysis statistical method used to classify the dependent variable between two or more categories. Discriminant function analysis is employed to see that continuous variables discriminate between two ormore naturally occurring groups. Discriminant function analysis is the multivariate analysis of variance(MANOVA) inverted. In MANOVA, the independent variables arethe groups and also the dependent variables are the predictors. In Discriminant analysis, the independent variables are the predictors and also the dependent variables are the groups. Usually, many variables area unit enclosed in a very study to examine which of them contribute to the discrimination between groups. Discriminant analysis conjointly includes a regression technique,which is employed to predict the value of the dependent categorical variable. Once the category of a dependent variable is more than two, it will simply be an extension of the simple discriminant analysis called the multiple discriminant analysis. Discriminant operates analysis is broken into a two-step process: testing significance of a collection of discriminant function and classificationcomputation wise, the primary step ends up in a matrix of pooled within-group variances and co variances. The two matrices area unit compared via multivariateF tests in order to determine whether or not there are any significant differences (with regard to all variables) between groups. One first performs the multivariate test, and, if statistically significant, proceeds to see which of the variables have significantly different means across the groups (Poulsen & French, 2004).

STEP WISE SELECTION

In the method of constructing Discriminant Function once deciding about usingMahalanobis Min. D Squared technique, the kind of computation is additionally to be set. Simultaneous Method and the other one is Stepwise Method. The Simultaneous Method involves computing the Discriminant Functionso allthe Independent variables are considered concurrentlyregardless of the discriminating power of each independent variable. TheStepwise technique is an alternative to the above discussed method.In involves getting the independent variables within the Discriminant Function one at a time on the premise of their discriminating power. The stepwise approach begins by selecting the single best discriminating variable. The first variable is then paired with each of the other independent variables one at a time and a second variable is chosen. The second variable is that the one that is best able to improve the discriminating power of the function together with the first variable. The third and any future variables areaunit designated in a very similar manner. As further variables are included, somealready selected variablesmay be removed ifthe knowledge they contain about group differences is available in some combination of the other already enclosed variables (Multicollinearity). By sequentially selecting the next best discriminating variable at every step variables that aren't helpful in discriminating between the groups are eliminated and a reduced set of variables is identified. The reduced set generally is sort of nearly as good as and sometimes better than, the complete set of variables.

Group Statistics

Demographic variable	Group I (N=157)		Group I (N=724)		Group III (N=165)		Total (N=1046)	
	LA=1		LA=2		LA=3			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Prefix suffix	8.35	1.258	8.14	1.320	7.98	1.315	8.14	1.313
Sentence pattern	4.03	0.797	3.95	0.843	4.00	0.792	3.98	0.825
Tenses	4.05	0.838	3.95	0.878	3.83	0.935	3.94	0.885
Adverb	4.01	0.893	4.01	0.906	4.00	0.851	4.01	0.892
Idioms	3.92	0.921	3.74	0.944	3.90	0.898	3.80	0.934

Phrasal verb	3.63	1.050	3.42	1.049	3.54	1.098	3.48	1.061
Clauses	3.57	1.016	3.48	0.933	3.58	1.009	3.51	0.963
Syllables	4.21	0.780	4.14	0.746	4.00	0.857	4.13	0.777
Noun verb adjective	3.91	0.949	3.86	1.013	3.91	0.923	3.88	0.984

This table shows the group means and standard deviation for each of the independent variables identified for analysis based on the sample size of 1046.

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
Prefix suffix	0.993	3.786	2	1043	0.023
Sentence pattern	0.999	0.743	2	1043	0.476
Tenses	0.995	2.837	2	1043	0.059
Adverb	1.000	0.008	2	1043	0.992
Idioms	0.992	4.155	2	1043	0.016
Phrasal verb	0.994	2.936	2	1043	0.053
Clauses	0.998	1.277	2	1043	0.279
Syllables	0.992	3.974	2	1043	0.019
Noun verb adjective	0.999	0.360	2	1043	0.698

In the table 'Tests of Equality of Group Means' the results of univariate ANOVA's, carried out for categorical variables are presented. All the dimensions do not show any significant impact in teacher behaviour of secondary level language teachers.

Variables in the analysis			
Step	**Tolerance**	**F To Remove**	**Min. D Squared**
Idioms	0.946	0.008	0.986
Syllables	0.980	0.021	0.985
Prefix suffix	0.955	0.031	0.984

Table gives the list of variables considered for analysis at each step, with corresponding F to remove and D^2 values to examine the possible inclusion of variables in the equation. This can be identified by using stepwise discriminant analysis. The discriminant analysis shows that idioms syllablesand prefix suffix are the important discriminating factor.It reveals that the entry criterion has eliminated the variables sentence pattern,tenses,adverb,phrasal verb,clausesand noun verb adjective.

WILKS' LAMBDA								
Number of Variables	**Wilks' Lambda**	**Df1**	**Df2**	**Df3**	**Exact F**			
					Statistic	**Df1**	**Df2**	**Significance**
1	0.992	1	2	1043	4.155	2	1043	0.016
2	0.984	2	2	1043	4.258	4	2084	0.002
3	0.977	3	2	1043	4.001	6	2082	0.001

The maximum discriminated variable between the three groups can be identified from the variable that was entered first. Here it was idioms score. At each step a variable was entered, the significance of the function was tested using Wilks' Lamda and D2 values arrived for this function.

Summary Table					
Entered	**Min.D Squared Statistics**	**Exact F Statistic**	**Df1**	**Df2**	**Significance**
Idioms	0.992	4.155	1	2	0.001
Syllables	0.984	4.258	2	2	0.000
Clauses	0.977	4.001	3	2	0.000

From the above table it is inferred that the out of nine variables consider for the analysis, only three variables (Idioms, Syllables and Clauses)were highly significant of the study.

[A] CANONICAL DISCRIMINANT FUNCTIONS

Summary of Canonical Discriminant Functions				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	0.977	23.891	6	0.000
2	0.993	7.649	2	0.022

Wilks' Lambda is one of the multivariate statistics calculated by SPSS. It is the product of the values of (1-canonical correlation^2). In this example, our canonical correlations are 0.165 and 0.049, so the Wilks' Lambda testing both canonical correlations is (1- 0.124^2)*(1-0.086^2) = 0.977, and the Wilks' Lambda testing the second canonical correlation is (1-0.086^2) = 0.993

The value of Wilks' Lambda is 0.977. This value is between 0 and 1 and a value indicates very good discriminating power of the model.

Canonical Discriminant Function Standardized Coefficients		
	Function 1	**Function 2**
Prefix suffix	0.618	0.375
Idioms	-0.543	0.835
Syllables	0.698	0.091

The standardized canonical discriminant function coefficient is used to calculate the discriminant score. It is inferred that values 0.618, -0.543&698 in the function 1 of standardized coefficients table indicates that teacher behaviour influences more than prefix suffix.

Canonical Discriminant Function UnstandardisedCoefficients		
	Function1	**Function 2**
Prefix suffix	0.472	0.286
Idioms	-0.583	0.897
Syllables	0.901	0.117
(Constant)	-5.345	-6.224

Canonical Discriminant Function Unstandardised Coefficients using the values in Function 1 of the above table:

Most influencing variable **(Z)**=-5.345 + 0.901(Syllables) – 0.583 (Idioms) +0.472(Prefix suffix).

B) GROUP CENTROIDS

Functions at Group Centroids		
Teacher Behaviour	**Function 1**	**Function 2**
Low	0.106	0.178
Moderate	0.050	-0.055
High	-0.248	0.028
Unstandardised canonical discriminant functions evaluated at group means		

These are the means of the discriminant function scores by group for each function calculated. If we calculated the scores of the first function for each case in our dataset, and then looked at the means of the scores by group, we would find that the low level of mean 0.106, the moderate level of mean 0.050, and the high level of mean -0.248. The function scores have a mean of 5.93 andcheck this by looking at the sum of the group means multiplied by the number of cases in each group:

Most influencing variable= 5.345 + 0.901(Syllables) – 0.583 (Idioms) +0.472(Prefix suffix).
Standardized coefficients = 0.618(Prefix suffix), -0.543 (idioms) and syllables = 0.698
Most influencing variable in teacher behaviour of secondary level language teachers.
= 5.345 + 0.901 (0.618) PS -0.538 (0.543) IS + 0.698 (0.472) SS = 5.93

5.93 are close to moderate value in teacher behaviour of secondary level language teachers. Hence the syllables discriminate highly the moderate group of teacherbehaviour of secondary level language teachers.

C) STRUCTURE MATRIX

Pooled within groups, correlations between discriminating variables and canonical discriminant functions are presented in the showing structure matrix.

Structure Matrix		
VARIABLES	**FUNCTION1**	**FUNCTION2**
Syllables	0.679*	0.229
Prefix suffix	0.564*	0.553
Idioms	-0.327	0.924*
Sentence pattern	0.030	0.415*
Tenses	0.053	0.262*
Phrasal verb	0.054	0.248*
Adverb	0.014	0.230*
Noun verb adjective	0.031	0.166*
Clauses	0.087	0.097*

Largest absolute correlation between each variable and any discriminant function.

Correlation between the canonical discriminant functions and the discriminate variable shown in the table is significant. There exists largest absolute correlation between each variable and any discriminant function.

67.9 percentage of the variation in the discriminate function is due to syllables which contribute in discriminating between low, moderate and high level of teacher behaviour. Similarly prefix suffix which contribute about 56.4 percentages in discriminating function low, medium and high level of teacher behaviour of the study.

D) PRIOR PROBABILITIES

Probabilities are calculated for each, group based on the proportionate for the sample in the respective groups and the results are given in table.

Prior Probabilities for Groups			
		Cases Used in Analysis	
Teacher Behaviour	**Prior**	**Unweighted**	**Weighted**
Low	0.333	174	174.000
Moderate	0.333	664	664.000
High	0.333	208	208.000
Total	1.000	1046	1046.000

The prior probabilities give us the number of observations used in the analysis and the distribution of the observations into groups used as a starting point in the analysis. It gives the weighted value, which is further used in the calculation of the centred value.

Classification Results					
Teacher Behaviour		**Predicted Group Membership**			
		Low	Moderate	High	**Total**
Count	Low	74	52	48	174
	Moderate	232	241	191	664
	High	69	53	86	208
%	Low	42.5	29.9	27.6	100.0
	Moderate	34.9	36.3	28.8	100.0
	High	33.2	25.5	41.3	100.0

52.3% of original grouped cases correctly classified

It has been observed that 52.3% of data was correctly classified as low, moderate, high by the discriminant function. It has also been noticed that out of the 1046 samples, 174 samples have been correctly classified as High level. 664 samples have been correctly classified as moderate level Out of the 208 samples has been correctly classified as low level. The accuracy of the model may hence be considered adequate. This indicates a good predictive capacity of the discriminant function.

52.3% of original grouped cases correctly classified.It is seen that the discriminate function has predicted 42.5 % of the correctly in the low level of teacher behaviour, 36.3% of moderate level of teacher behaviourand 41.3% of high level of teacher behaviour.

FINDINGS OF THE STUDY

- 67.9 percentage of the variation in the discriminate function is due to syllables which contribute in discriminating between low, moderate and high level of teacher behaviour. Similarly prefix suffix contribute about 56.4 percentages in discriminating low, medium and high level of teacher behaviour of the study.
- In discriminant analysis, prefix suffix and syllables highly discriminate teacher behaviour of secondary level language teachers.

EDUCATIONAL IMPLICATIONS OF THE STUDY

- The present study will be implemented towards the teachers handling english language for secondary level based on teachers' lexical competence and teacher behaviour.
- Different types of learning style were followed by the english teacher to enhance their skills towards the language and curriculum.
- The teaching methodology used in secondary schools can be categorized by implementing various modern methods and new idea to increase the competency level of a teacher to improve the language skills. A positive approach should be there between students and teacher to increase their productivity in terms of learning english language.
- The use of technology should be introduced in language classes elementary, higher secondary in government schools.

CONCLUSION

The problem of the present study titled "Using discriminant analysis to classify socio-demographic variables based on lexical competence and teacher behaviour of secondary level English language teachers". The researchers adopted a normative survey method. 1046 secondary level language teachers in six districts were selected as a sample by stratified random sampling technique. Two research tools were used to collect the required data.

The study revealed that the lexical competence and teacher behaviour of secondary level language teachers was moderate. Overall performance is moderate and they have to improve their performance by increasing their lexical competence while they are teaching in class. Sentence pattern for a language teacher will be improved by using different practices provided in textbooks and using modern teaching methods. By maintaining proper sentence pattern the lexical competence level of a language teacher can be increased. The improvement of teacher behaviour can be easily achieved by using the following five dimensions. It was also noted that gender, locality, type of school, marital status, academic qualification of the study were also playing a vital role in hindering the choice of lexical competence and high level of teacher behaviour in secondary level English language teachers. There is no significant positive correlation was found between lexical competence and teacher behaviour of secondary level language teachers. In discriminant analysis, prefix-suffix and syllables highly discriminate lexical competence and teacher behaviour of secondary level language teachers.

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