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A STUDY ON COLOMBO STOCK EXCHANGE VIA STATISTICAL ANALYSIS OF FINANCIAL DATA

A.W. Vichithra M. Amunugama[1], Hemalika Abeysunadara[2], Upali B. Dissanayaka[3]

[1]Faculty of Arts and Sciences, Sri Lanka Technological Campus, Meepe, Padukka, Sri Lanka, [2]Department of Statistics and Computer Science, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka, [3]Department of Mathematics, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka

ABSTRACT - An institution of considerable interest to the public and of importance to economists is the Stock Market. It is responsible for dealing with instruments that represents an assertion of right to the ownership of industrial, financial and service character. This empirical study attempts to examine whether the stock prices of companies listed on the Colombo Stock Exchange (CSE) follow Random Walk Hypothesis (RWH) and try to forecast closing price for future trading days. The research was motivated by the fact that investors are interested in knowing whether past stock prices have a propensity to forecast future stock prices. The period covered by the research was January 2012 to June 2018. The main objective of the study is to investigate the possibility that stock prices follow the RWH and forecasting. The data were analyzed using the Chi-square Test, the Runs Test and the Auto-correlation Test to check RWH and Augmented Dickey-Fuller Test (ADF Test), Auto-correlation, Partial Autocorrelation and Auto-Regressive Integrated Moving Average (ARIMA) to forecast future closing price. R statistical software and Minitab statistical software were used for analysis. The findings showed that changes in stock prices on the CSE refute the RWH. The study concluded that there is some pattern to recognize a trend and that historical price changes can be used to predict future price movements and daily closing price for selected firms were forecasted for next 50 trading days.

Keywords: Random Walk Hypothesis; stock price; Chi-square Test; Runs Test; Augmented Dickey-Fuller Test; Auto-Regressive Integrated Moving Average

1. Introduction

The stock market is one of the most vital areas of a market economy, because it provides companies with access to capital by allowing investors to buy shares of ownership in a company. The Colombo Stock Exchange is the capital stock market in Sri Lanka which consists of 20 highly capitalized firms. Listed stocks are openly traded by the public at the stock exchange through stockbrokers. When buying a stock, the investor anticipates that the price will go up and there is no guarantee that this will happen, since the stock price can also fall. Investors want to take advantage of this volatility to make money out of the stock market. Higher the volatility of stock price indicates risky situation to deal with that firm because it may be a sign of unstable situation of that firm [1]. So it is very important to check volatility of stock prices and get an idea about stability. Therefore, if it is possible to provide a better model for the stock prices which can enable the investors to predict the prices in advance, it would help the investors as well as keep stability of the national economy. This study is an effort towards that direction. To achieve this task, first we have to check whether is past stock prices reflect on future stock prices and finally, we must produce accurate statistical/mathematical method that provide better

forecasting. In the literature, researchers in finance portrayed considerable interest in modelling stock price behavior and testing existing models. The product of their research efforts include the RWH developed by Kendall (1953) and Fama (1965) who hypothesized that stock price movements are irregular and past prices are of no use in predicting future movements [3]. The majority of studies on the Random Walk Hypothesis model focused on developed economies, where majority of the stock prices follow the random walk [6]. But On the other hand, research studies on Shanghai and Shenzhen stock markets and Less Developed Countries (LDCs) stock markets reject the RWH, (Groenwold et al, 2003; Mookerjee and Yu, 1999; Errunza and Losq 1985) [6]. However, Urritia (1995) provided mixed evidence for Argentina, Brazil, Chile and Mexico. Recently, to predict the stock prices, researchers have been proposed a technique by first calculating the sentiment scores through Naïve Bayes classifier and after that neural network is applied on both sentiment scores and historical stock dataset [5]. This ecosystem is being used for pre-processing part and a neural network model with inputs from sentiment analysis and historic data is used to predict the prices.

1.1 Random walk Hypothesis

For many years, researchers in finance portrayed considerable interest in modelling stock price behavior and testing existing models. The product of their research efforts include the Random Walk Hypothesis (RWH) developed by Kendall (1953) and Fama (1965) who hypothesized that stock price movements are irregular and past prices are of no use in predicting future movements [6]. The independence assumption relating to the random walk hypothesis is valid as long as knowledge of the past behavior of the series of price changes cannot be used to increase expected gains. Basic Assumptions of the Random Walk Theory;

1) The Random Walk Theory assumes that the price of each security in the stock market follows a random walk.

2) The Random Walk Theory also assumes that the movement in the price of one security is independent of the movement in the price of another security.

1.2 Models Based on ARIMA

Time series approach has been used by researchers on predicting future stock price. Forecasting models of stock price which are based on Box-Jenkins methods including Auto-Regressive (AR), Moving Average (MA), Auto-Regressive Moving Average (ARMA) and Auto-Regressive Integrated Moving Average (ARIMA) models have been developed. These models are capable of forecasting future stock prices based on past stock prices [8].

1.3 Sentiment Analysis Using Neural Network

Recently, to predict the stock prices, researchers have been proposed a technique by first calculating the sentiment scores through Naïve Bayes classifier and after that neural network is applied on both sentiment scores and historical stock dataset [4]. This ecosystem is being used for pre-processing part and a neural network model with inputs from sentiment analysis and historic data is used to predict the prices. It has been observed from the experiments that the accuracy level reaches above 90% in maximum cases, as well as it also provides the solid base that model will be more accurate if it trained with recent data [5].

2. Proposed Model

In our work, initially we were checked that empirical data follows RWH or not. To examine the hypothesis, first we checked Normality of data using Chi-Square test and later checked Independency using Autocorrelation test and Runs test. If the data follows RWH, it indicated that we can forecast future stock prices. ARIMA models have been used to forecast future stock prices.

3. Experimental Data Set

The empirical analysis is going to carried out by using daily closing price on trading days, which were collected from the Colombo Stock Exchange. The sample period spans from January 2012 to December 2017. Data from 2018 January to 2018 June have been used to validate the forecasted models. On the basis of Standard and Poor's rating, a sample of 20 companies were selected for this study.

4. Aims and Objectives of the Study

1) To examine the veracity of the RWH for stock prices of firms listed on the CSE. If RWH does not hold true in the context of Colombo Stock Exchange and it is obvious that the successive price changes are not random. Therefore, past daily closing prices can be used to predict future daily closing prices. Through that investors, debt provider and creditors will enable to get rational and prudent decisions regarding investment, credit etc. Stock prices following a random walk imply that the price changes are as independent of one another as the gains and losses. Also, if successive price changes for a given security are independent, then there is no problem in timing purchases and sales of the security.

2) To identify the pattern of stock price variation for selected firms. This could guide the investors in the stock market to make profitable investment decisions whether to buy/sell/hold a share.

3) Providing information to investors, debt provider and creditors which is used to enable them to get rational and prudent decisions regarding investment, credit etc.

In this way we can provide the results to investors, debt provider and creditors in the stock market to choose the better timing for profitable investment decisions.

5. Methodology

The modelling procedure is explained by identifying rejection or acceptance of RWH. ADF test is used to confirm the stationary of the data set and ARIMA models are used to forecast future stock prices for each firm. ARIMA model identification was done by considering the ACF and PACF for the stationary time series data. After identifying suitable ARIMA models, most suitable models were selected by considering Akaike Information Criteria (AIC) values of each model. The ARIMA models consist with lower AIC are considered as most suitable

models and among them the model consists with least Root Mean Squared Error (RMSE) and Mean Absolute Percentage Error (MAPE) is the best model. As with standard non-linear least squares fitting, the primary tool for model diagnostic checking is residual analysis. Next apply the Box-Ljung test to the residuals from the selected ARIMA model to confirm whether residuals are random. If the Box-Ljung test shows that autocorrelations among the residuals are zero, indicating that the residuals are random and that the model provides an adequate fit to the data. Thus, we can conclude that the residuals are not distinguishable from a white noise series. Overall, we can conclude that the selected ARIMA model is the best model to forecast future closing price for the selected firm.

5.1 Test for Normality

There are various assumptions upon which various statistical methods are based; one crucial assumption is normality of data that a random variable is normally distributed. Speaking to RWH, this presumes that if stock prices are in random fashion then its distribution should confirm to normal distribution. To put it differently, if changes in indices pursue the normal distribution the series can be called random. Normality of data can be examined by two ways: Graphical method and Numerical methods. Graphical methods envisage the Distributions of random variables or the differences between the given empirical distribution and a theoretical distribution. In this empirical study, Chi-Square tests was used to check normality of the data set.

5.2 Chi-Square Test

The Chi-square Test was employed in this study to verify the normality assumption. It is generally accepted that the Chi-square Test is able to properly fit data unlike other normality tests like the Kolmogorov- Smirnov Test. Hence it has attracted wide usage. Based on such properties, the Chi-square Test was considered appropriate for this study.

To apply the Chi-Square Test for Normality to any data set, let null hypothesis be that the data is sampled from a normal distribution and apply the Chi-Square Goodness of Fit Test and used following formula to find the chi-square statistic.

$$\chi^2 = \sum \frac{(Observed - Expected)^2}{(Expected)} \quad (1)$$

Compare this to the critical Chi-square value from a Chi-square table, given degrees of freedom and desired alpha level. If Chi-square statistic is larger than the table value, we may conclude our data is not normal.

5.3 Test for Independence

After testing for normality, it becomes necessary to test for independence. When a test passes Chi-square Test, it does not automatically follow that the data are not serially correlated. If independence is detected in a stock price series, the RWH is upheld yet if successive changes in prices are dependent, the RWH is repudiated. The test for linear independence of log price changes has been carried out using the Runs Test and Autocorrelation tests. They provide evidence on whether successive stock prices are related or not. Put differently, Auto-correlation tests and the Runs Test investigate if the stock price series data exhibit an unpredictable pattern hence determining if the CSE satisfies the RWH. Autocorrelation tests are most suitable on parametric data while the Runs test is ideal on non-parametric data.

5.3.1 Auto-Correlation Test

Autocorrelation is also at times called "serial correlation "and "lagged correlation" which measures the correlation coefficient between a series of returns and lagged returns in the same series. A significant positive autocorrelation leads us to believe that a relationship exists in the tested trend. Autocorrelation has been the most commonly used test for the measurement of randomness. That means autocorrelations are widely considered one of the most reliable measures to check. If no autocorrelations are found, then the considered the dependence or independence of variables in a series. series will appear to be random in nature.

$$P(k) = \frac{cov(R_t, R_{t-k})}{\sqrt{var(R_t)}\sqrt{var(R_{t-k})}}$$
$$= \frac{cov(R_t, R_{t-k})}{var(R_t)} \quad (2)$$

Where *p(k)* refers to the serial correlation coefficient of the given time series R_t and R_{t-k} denotes the log return of the index at time t, and k is the lag of the period. Hence *cov(R_t, R_{t-k})* is the covariance between the return of the index, over time period *(t, t-1)*and lagged return *(t-k)*periods (earlier) and *var(R_t)* is the variance of return on a security over time period *(t, t-1)* we can also determine the Autocorrelation Function ACF(k) for the time series y_t and the k-lagged series y_{t-k} is discussed as follow.

$$ACF(k) = \frac{1}{T-K} \sum_{t=k+1}^{T} (y_t - \bar{y})(y_{t-k} - \bar{y}) \quad (3)$$

Two approaches are widely employed to test the autocorrelation in the returns:
    1. Parametric autocorrelation coefficient
    2. Nonparametric run test.

Speaking to Parametric test, this is to test the Autocorrelation and to determine correlation coefficient *P(k)*, Ljung Box Test is available which provides, as researchers believe, a superior fit to Chi-Square distribution though for the little samples. This can be computed as follow.

$$Q_{Ljung-Box} = n(n+2) \sum_{t=1}^{k} \frac{\Psi^2}{n-t} \qquad (4)$$

5.4 Augmented Dickey-Fuller Test (ADF Test)

The Augmented Dickey Fuller Test (ADF) is unit root test for stationarity. The Augmented Dickey-Fuller test can be used with serial correlation and ADF test can handle more complex models than the Dickey-Fuller test, and it is also more powerful. The Augmented Dickey–Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejection of the hypothesis that is there is a unit root at some level of confidence.

The hypothesis to be tested are;
H_0: The time series data are not stationary. That is there is a unit root.
H_1: The time series data are stationary (or trend-stationary).

The testing procedure for the ADF test is the same as for the Dickey–Fuller test but it is applied to the model,

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \cdots + \delta_{p-1}\Delta + \varepsilon_t \quad (5)$$

where α is a constant, β the coefficient on a time trend and *p* the lag order of the autoregressive process. Imposing the constraints $\alpha = 0$ and $\beta = 0$ corresponds to modelling a random walk and using the constraint $\beta = 0$ corresponds to modeling a random walk with a drift. By including lags of the order *p* the ADF formulation allows for higher-order autoregressive processes. This means that the lag length *p* has to be determined when applying the test. One possible approach is to test down from high orders and examine the *t-values* on coefficients.

The unit root test is carried out under the null hypothesis $\gamma = 0$ against the alternative hypothesis of $\gamma < 0$. Once a value for the test statistic is computed it can be compared to the relevant critical value for the Dickey–Fuller Test.

$$DF_T = \frac{\hat{\gamma}}{SE(\hat{\gamma})} \qquad (6)$$

If the test statistic is less than the (larger negative) critical value, then the null hypothesis of $\gamma = 0$ is rejected and no unit root is present.

5.5 Box-Jenkins Methodology

The different Box-Jenkins models are identified by the number of autoregressive parameters (p), the degree of differencing (d), and the number of moving average parameters (q). Any such model can be written using the uniform notation ARIMA (p, d, q) first for prediction the investigation of appropriate model type by looking at the autocorrelations and partial autocorrelations. The sample autocorrelation coefficient (ACF) of lag k is computed for (n-k) pairs.

$$y_k = \frac{\sum (y_{t-1} - y)(y_t - y)}{\sum \sum (y_{t-1} - y)^2} \qquad (7)$$

5.6 ARIMA Model

Building Steps:
1) Identification: Using graphs, statistics, ACFs and PACFs, transformations, etc. to achieve stationary and tentatively identify patterns and model components.
2) Estimation: Determine coefficients and estimate through software application of least squares and maximum likelihood methods,
3) Diagnostics: Using graphs, statistics, ACFs and PACFs of residuals to verify whether the model is valid. If valid then use the decided model, otherwise repeat the steps of Identification, Estimation and Diagnostics.
4) Forecast: Using graphs, simple statistics and confidence intervals to determine the validity of the forecast and track model performance to detect out of control situation.
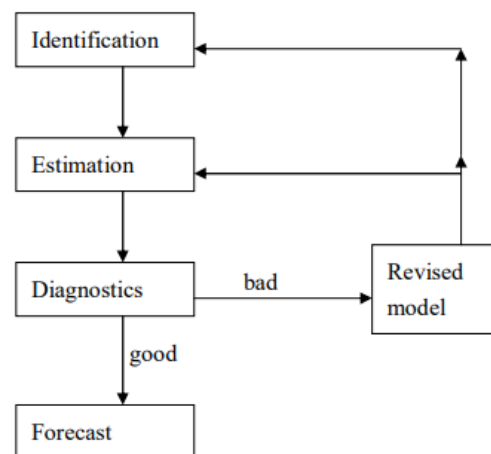

Figure 1. Flow chart of ARIMA modeling

6. Results

This section provides average forecasted daily closing price for next 50 trading days for each firm, calculated using selected ARIMA models using 95% Confidence Limits.

No	Company Name	Average of Forecasted Daily Closing Price for next 50 trading days (Rs)	Average of Actual Daily Closing Price for next 50 trading days (Rs)	Difference (Rs)
1	Access Engineering PLC	23.11	22.66	0.45
2	Aitken Spence PLC	40.58	41.09	0.51
3	Asiri Hospital Holdings PLC	24.48	24.54	0.06
4	Cargills (Ceylon) PLC	201.81	200.65	1.16
5	Ceylinco Insurance PLC	1688.59	1685.09	3.5
6	Ceylon Cold Stores PLC	941.32	937.76	3.56
7	Ceylon Tobacco Company PLC	1017.26	1052.66	35.4
8	Chevron Lubricants Lanka PLC	118.15	114.76	3.39
9	Commercial Bank of Ceylon PLC	136.5	138.18	1.68
10	DFCC Bank PLC	120.16	119.65	0.51
11	Dialog Axiata PLC	13.09	13.57	0.48
12	Distilleries Company of Sri Lanka	201.62	202.49	0.87
13	Hatton National Bank PLC	247.15	246.57	0.58
14	Hemas Holdings PLC	123	122.8	0.2
15	John Keells Holdings PLC	159.82	160.98	1.16
16	Lanka Orix Leasing Company PLC	118.25	118.01	0.24
17	National Development Bank PLC	136.34	136.79	0.45
18	Nestle Lanka PLC	1719.55	1746.33	26.78
19	People's Leasing & Finance PLC	12.11	11.92	0.19
20	Sampath Bank PLC	322.92	320.9	2.02

Table 1. Comparative results of average forecasted and average actual daily closing price for next 50 trading days

7. Conclusion

This study attempts to explore random walk hypothesis and forecasting daily closing price for selected firms from Colombo Stock Exchange. The sample size consists of twenty representative firms of CSE for period of Jan 2012 to Dec 2017. The purpose of the study is to probe that whether the markets under consideration follows random walk or reality is other way round. This has paramount effect on the utility of technical analysis, opportunities for investment management and existence of arbitrage profit. Under statistical guidance, we employed various tests and briefly discussion of findings are as follow. To examine the normal distribution, we performed Chi-square test and observed dependence using Runs Test. To authenticate the dependence, Autocorrelation test was used. Maximum lags were employed for the whole observations of daily returns and Autocorrelation coefficient reveals that there exists a relationship. Further forecasting future closing price, ARIMA modeling was used. Speaking for unit root test, Augmented Dickey-Fuller test was used; indicating that the time series of indices can be seen as non-stationary and times series of indices becomes stationary at order 1 for all the markets. AIC, RMSE and MAPE indices were used to identify the best ARIMA model and findings of Ljung-Box Q-Statistic found to be consistent. This study is conducted on six years' data and cannot be generalized for prediction of long periods. Thus, RWH does not hold true in the context of Colombo Stock Exchange and it is obvious that the successive price changes are not random. Therefore, past daily closing prices can be used to predict future daily closing prices. Through that investors, debt provider and creditors will enable to get rational and prudent decisions regarding investment, credit etc.

8. Future enhancements

The implementation of this study can be extended by integrating the technical analysis and fundamental analysis techniques. Through the evaluation on public opinions fundamental analysis techniques can be incorporated in order to obtain better results. In this way we can provide the improved results for investors in the stock market to choose the better timing for profitable investment decisions. Also willing to improve my model to forecast stock prices by incorporating covariates into the models such as; the introduction of product by an outside company, events that may be occurring in politics, natural disasters, and speculations that are being made about the company in the market. A covariate is a secondary variable that can affect the relationship between the dependent variable and other independent variables of primary interest, and our primary variable is time. By addressing the fact that there are outside components that influence the stock price, we can modify the model to try and anticipate the effect these events will have on the forecasts. In future work, willing to consider those factors to improve proposed model. Also it would also be worthwhile to pursue expanding the selection of stocks outside of the S&P ratings. While the S&P rating is a fairly stable set of companies, perhaps more volatile and less tracked companies may provide interesting results.

Acknowledgment

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APPLICATION OF WASTE MANAGEMENT STRATEGIES OF "*PIVITHURU PASAL*" PROGRAM AT HOME

Dr. L. N. P. Wedikandage[1], Jeevani Herath[2]

[1,2] *Faculty of Education, University of Colombo, Sri Lanka*

Abstract

Environmental issues are considered as a global concern which needs immediate actions to remedy the adverse effects. One measure taken so far globally is managing waste. Solid waste management has become a major environmental problem in many urban areas of Sri Lanka. Acknowledging this dilemma, the Western province has implemented a school based project in order to change the attitudes of young generation towards waste management, naming it "*Pivituru Pãsal"* program.

The purpose of this study was to find out the success of this program in changing the attitudes of family members at home regarding waste management through their children. The sample of the study comprised of 300 students, 300 parents and 40 teachers from 20 schools in Colombo District. Data was collected through questionnaires and interviews. Findings conclude that (1) scouts/guides are the most promoters of the program (2) parents are aware of the program through their children (3)more than half of the students sample have attended workshops conducted by the waste management Authority in the Western Province, however, most parents are unaware of the workshops conducted by the school of their child (4)both students and parents are satisfied with the support they received to conduct the program in the school (5) the majority of students are agreed that their school administrators played an important role in implementing the grogram, but teachers are most satisfied with the support receive from the school (6) students seem to be well aware of the rules that are implemented by school (7) almost half of the schools have a system to sort waste in classrooms. On the other hand, (1) waste management at home seems to be very successful as waste at home is very well sorted (2) parents are especially glad about the home environment that is improved by the knowledge gained through this program (3) students seem to have changed their attitudes regarding environment protection which had made them to protest if anyone dumps garbage in inappropriate places.

Keywords: Waste management, Environmental issues, **Pivithuru Pasal** *Program*

1. Introduction

Environmental issues are defined as any negative or adverse effects on a natural resources caused by human behavior, which in turn adversely effects human life (Licy *et al*, 2013). As such, environmental issues are considered as a global concern which needs immediate actions to remedy the adverse effects. One measure taken so far globally is managing waste. Although, it is difficult to find a permanent solution many countries all over the world have taken productive measures to manage waste, such as making people aware of the dire effects and attitudinal changes. For example, the British government introduced the 3R concept based on 2010 to 2015 government policy: Waste and Recycling, which is Reduce, Reuse, and Recycle at school level in order to change the attitudes of both students and parents. Similarly, Zagozewski . (2011) suggests a diverse group of activities for waste management, such as reduction, recycling, segregation, modification, treatment and disposal.

Sri Lanka also has taken positive measures in waste management in the recent past such as waste collection by local authorities which are segregated and managed in a reasonably effective manner (Bandara, 2011). However, solid waste management is a somewhat neglected item in the agenda of economic development. For this reason, solid waste management has become a major environmental and social problem in many urban areas of Sri Lanka and is especially problematic in the Western Province. There are many incidents which proves this mis-management. In 2017 sixteen people have died, many people were injured and over 100 houses were destroyed or damaged due to a collapse of a section of the Meethotamulla garbage dumping site in Colombo (nytimes.com, 2020). This shows that even though, there are government implemented projects the society had failed to be sensitive of the environments that they live stressing the need for an understanding of their responsibility in waste management. Acknowledging this dilemma, the Western province has implemented a school based project in order to change the attitudes of young

generation towards waste management, naming it as "*Pivituru Pãsal* (pure schools)" program. It focuses on educating school children about reuse, recycling and re-incarnation of generating waste generation according to the national policies and the waste management methodologies, including two main objectives, which are (1) take steps to minimize waste in the school and impose a legal system on waste management in schools (2) sorting and separating of waste.

By 2019 in the western province, 463 schools have adopted this project. The future goals of this project is to introduce this project to 25 schools annually, do feasibility studies to identify weak areas and strengthen them, teacher training, motivation and monitoring at school level. However, after 12 years of implementation, this project has not reached its goal as assumed. For example, still there are lapses in rules and regulations regarding waste management, schools have not prioritized waste management at school, insufficient assistance from school academic staff and lack of waste management discipline among students. Considering all these a study was conducted to ascertain the success of this program at home level.

2. Research Methodology

Main objective of this study is to find out the success of the said program in changing the attitudes of family members at home regarding waste management through students. Following are the sub-objectives of the study.

1. Identify successful approaches used in schools to educate students on waste management techniques
2. Find out the various modes of how that knowledge is utilized at home environment
3. Identify the strengths and weaknesses of the program in utilizing the techniques at home environment

Mixed research method was utilized in the study to attain the above objectives. Questionnaires were given to 300 students and 300 parents (or there caretaker) from 20 schools which have implemented the *"Pivithuru Pasal"* program in Colombo district. In addition, face to face interviews were held with 20 teachers who are the coordinators of the program. Data analysis was done using both quantitative and qualitative methods.

3. Significant findings

3.1 Awareness of the program

The results revealed that most of the students from 20 schools are aware of the "*Pivituru Pasal*" program through various modes which is a positive aspect as

the main objective would have been lost if the awareness is not up to a certain standard. Following analysis reveals this point. Table 1 shows that scouts/guides (48.1%) are the most promoters of the program followed by the members of the Environment Society (23.6%), school prefects (17.8%) and class-teachers and notice-boards (10.5%).

Table 1. Awareness of the "*Pivithuru Pasal*" program

Mode	Frequency	%
Through scouts/guides	144	48.1
Through Environmental Society	71	23.6
Through school Prefect	53	17.8
Through other methods	32	10.5
Total	300	100

Graph 1 shows that parents are also aware of the program through their child (71.7%), the class teacher (55.4%) and other modes such as noticing the environment of the school when they visit the school (30.2%) and school projects through principal (10.4).
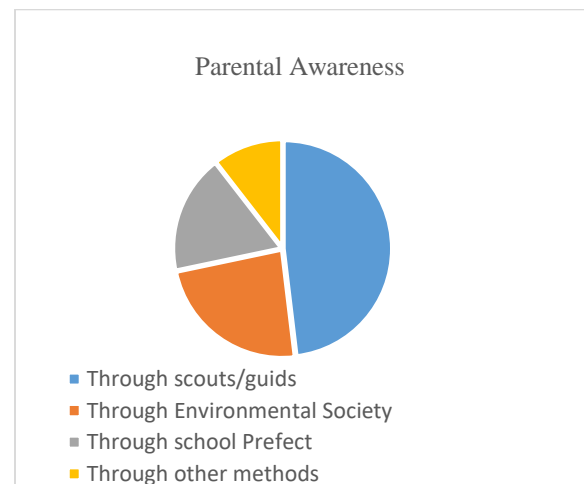
Graph 1: Parental Awareness

A focus group interview in addition shows that most of the teachers have volunteered to participate in the program and believed in the importance of the program for both school and home.

> "I am much concerned about the beauty of the environment. So I voluntarily participated in this"
> "If we want to inculcate a sense of patriotism we should make students to think of their school as their own. So I volunteered"
> "It would be nice to have children teaching their parents of how to sort waste at home"

3.2 Participation in awareness programs

This program conducted by the Waste management authority in Western Province have had several workshops related to waste management. The data in Table 2 shows that the student participation rate for the workshops and parents awareness of the workshops is unsatisfactory.

Table 2: Student participation rate and parents awareness of the workshops

Questions	Yes	%	No	%
Students				
Have you attended workshops conducted by Waste management Authority?	160	53.3	140	46.7
Parent				
Are you aware of the waste management workshops in your child school?	108	36.0	192	64.0

More than 50% of students have attended workshops conducted by the Waste management Authority in Western Province with over 45 % of students never attending these. Most parents (64%) are therefore unaware of the waste management workshops conducted by the school of their child. However, most of the teachers had attended the workshops conducted by their schools. These results show that both students and parents have become aware of the program mostly through school, but not through these programs. This concludes that the relevant authorities should rethink of different methods of attracting the stake holders for such programs.

3.3 Support from school

When asked about the school support for students and parents, more than half (52%) of students are satisfied with the support they received to conduct the program in the school, while the other half (45%) of students are not satisfied with the assistance they received from school to conduct the program. The majority of students (72.1%) perceived that their school administrators played an important role in implementing the program (see Table 3). On the other hand, majority of the teachers are not satisfied with the support they receive from the school.

"I don't find the administrators quite being helpful in this regard"
"When I proposed certain alterations, I was not heard"

Therefore, this presents the need for a mechanism to support to conduct the program in a successful manner. As such, the mere awareness of the program seems not sufficient for the successful implementation of the program.

Table 3. Percentages analysis of school support for the program

Question	Yes		No		No	
	No.	%	No.	%	No.	%
Are you satisfied with the support you received from the school for "*Pivithuru Pasal*" Program?	156	52.0	144	48.0	300	100
Do you think that school administrators have important role to play in the implementation of "*Pivithuru Pasal*" program?	216	72.1	84	27.9	300	100

3.4 School-wise approaches

When considering the approaches that are used by schools, the most useful approach seems to be introducing rules for waste management. Students (81.4%) seem to be well aware of the rules that are implemented by the school and also they (70.3%) have a clear knowledge about those rules. Table 4 shows that the students have mechanisms to segregate waste in classrooms and their homes. Evidence shows around 76 percent of the students have gained this knowledge and that they (70%) are capable of transferring this knowledge to their families. Mostly, from the point of view of students (86%), waste materials are collected according to schedule in the classroom. However, unfortunately only 42% students segregate the house hold waste.

Table 4: Systems to segregate waste in classrooms and homes

Question	Yes		No		Total	
	No.	%	No.	%	No.	%
Have you got any knowledge about the principles of waste management through the program?	228	76	72	24	300	100
Have you transferred this knowledge to your family?	201	70	90	30	300	100
Do you have a system to segregate waste in classroom?	258	86	42	14	300	100
Do you segregate household waste?	126	42	174	58	300	100

Parents who have gained knowledge from their children uses the knowledge daily (71.3%), weekly (10.2%), monthly (2.1%) and never (13.6%) (See Graph 2). On the other hand, majority of school teachers seems not to be using the knowledge at home.
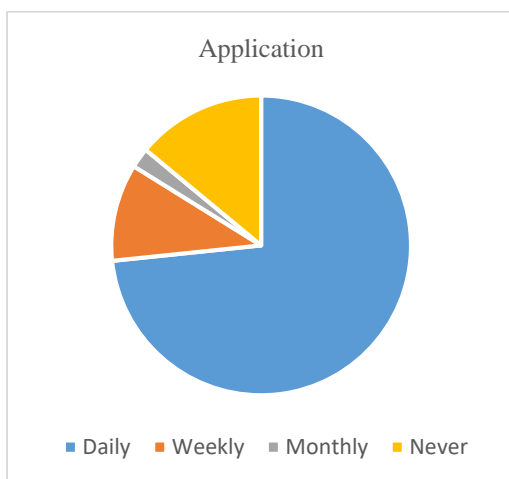
Graph 2: Application of the waste management at home by parents

3.5 Satisfaction about the program

Answers of open ended questions of students and parents and teachers from interviews reveal that this program has beatified the school environment and that it helps to have a conducive environment for teaching learning. Some parents are especially glad about the home environment that is improved by the knowledge gained through this program. Students seem to have changed their attitudes regarding environment protection which had made them to protest if anyone is dumping garbage in inappropriate places. Parents also seem to be contempt with this attitudinal change in their children. However, there seems to be some methods used by schools which are not included in the program which seem to be making an adverse effect on the program. For example students are required to carry classroom garbage to their homes as a measure to reduce school garbage. This seems to be very unpopular among students and parents. '

4. Discussion

The "*Pivithuru Pasal*" program had introduced an environmental education program to develop knowledge, attitudes, and practices of school students, especially on solid waste management and recycling in the Western province, Sri Lanka. In general, the study found out that majority of students are aware of the program, more teaches have volunteered to participate in the program and that the majority of parents are aware of this program through their children. This suggests that most students, at the time of the study were somewhat aware of the importance of the waste management program and that they have acknowledged their parents about the program. It is revealed that they exhibit a good attitude towards waste management and recycling.

This study found out that the most of the students are satisfied with the support they received to conduct the program in the school. However, teachers are not satisfied of the help of schools to implement the program. And the same time most parents are unaware of the waste management workshops conducted by the school of their child. Therefore, it presents the need to develop a proper communication system with parents and schools to transfer this knowledge to society. Similarly, Licy *et al* (2013) says that the awareness program of waste management is gently needed for parents. They also suggested this knowledge can be given through parent-teacher meetings or in a community-based program. Therefore, the education department of the country can implement an environmental education program to the teachers at all levels of education.

The very important finding of this research is that students seem to be well aware and clear of the rules that are implemented by the school and that majority of students have transferred this knowledge to their families. The study also revealed that almost three quarters of parents are using the knowledge daily that they gained through their children.

The present study shows that students, parents, and teachers felt that through this program the school environment is beautiful now and that it helps to have a conducive environment for teaching-learning. Parents are especially glad about the home environment that is improved by the knowledge gained through this program and also seem to be content with this attitudinal change in their children. Eveth *et al* (2016) suggested that Environmental education is recommended, with emphasis on issues regarding solid waste management and recycling, should be included in the basic curriculum or certain course works of college students, to expand their knowledge and attitude towards improved practices on solid waste management.

The main issue of the program is the lack of monitoring of the implementation of the program both at home and school. Therefore, the knowledge gained is not used in any instance. Similarly, a study conducted in Malaysia (adopted from Shahzadi *et al* (2018) showed that students have negative attitudes towards household waste disposal. Shahzadi *et al,* (2018) that the practices of community reported that they generate three bags of garbage per week most of them do not use bins for waste collection or disposal.

5. Conclusion and further recommendation

In conclusion *"Pivithuru Pasal"* program of waste management is crucially needed for students and parents. The study found that the knowledge given by the program helped to change the attitudes of students and parents. However, it need a proper communication system between school and parents and a proper inspection system for real practice. For this purpose, this program can be recommend to other provinces in the country to create a beautiful and healthy school and home environment.

Acknowledgement

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EFFECTS OF GOAL SETTINGS ON THE EXPECTED OUTCOMES OF THE INDIVIDUAL COMPONENTS OF A HIGH-STAKES TEST

Dr. Singanayagam Umashankar

Eastern University, Sri Lanka

ABSTRACT–A test is a high-stakes when important decisions are made based on the test takers' outcomes of such a test. When the outcomes of a high-stakes test are as expected in the school curriculum, then its effects on the stakeholders are washforward (positive washback). However, the expected outcomes of high-stakes are often offset by a range of factors including the test itself which leads to backwash (negative washback). The Sri Lankan GCE (O/L)s and GCE (A/L)s, both of which include mandatory and optional components, are considered high-stakes since major decisions – university entrance, post graduate studies, employment opportunities – are made out of the results of these tests. Nevertheless, analysis of statistical data, online survey and target group interviews suggest that majority of the students focus more on other components than English language of these two tests. It is because of the fact that English as a second language is not mandatory for most of the candidates whose direct goal is to go to the immediate next level: O/L candidates are aiming to get to A/Ls while A/L candidates are toiling hard to enter a university and in both cases English is optional. As a result, the performance of the candidates in the English language at both tests is not as expected. It is therefore clear that only the high-stakes nature of a test does not enough to bring in the washforward. Hence, students would focus more on individual components of a high-stakes test prioritizing their immediate rather than distant goals.

Keywords: High-stakes test, Stakeholders, Washforward, Backwash, GCE (O/L), GCE (A/L)

1. Introduction

The correlation between testing and all the curricular related activities have well been established by empirical studies in various educational settings. The impact of testing on teaching and learning is commonly termed as washback. The outcomes of the impact can be as stipulated in the curriculum and in such a situation the impact is considered as positive washback and the opposite to such a situation is termed as negative washback. It has now been found by empirical studies done on the test impact that a range of intervening factors related to teachers, students, available resources, the school atmosphere, and the factors in the test itself prevent the degrees and kinds of washback. Further studies done in the field of innovation in education have also found several other factors prevent the expected results of innovation. The characteristics of users, user system and the characteristics of test are some of the factors hinder the expected positive effects of testing. However, among the various factors, which hinder the positive washback as suggested by various fields of study and theories, there are only a few studies in washback informing the intensity of the effect of goal setting which prevents positive washback more than other factors. The study reported here will examine the influence of goal setting as one of the important factors which plays a crucial role in preventing positive washback.

2. Background

The policy-makers use the authoritative power of tests to introduce changes to the educational systems in most of the countries especially where there are centralised educational systems. When, the test results have serious consequences for individuals in particular for test takers since many crucial decisions are made on the basis of test results and such a test is called a high-stakes test. Hence, tests have become an inevitable tool for policy makers, administrators, teachers and students for their own reasons. The stake-holders at various levels in the system of education use this tool for achieving different targets. Policy makers want to implement the innovations and to achieve the curriculum objectives through testing, while the students are working hard to achieve their immediate goals which may vary from one high stakes to another. This creates a mismatch of interests and a tense situation between policy-makers and other stake-holders; the teachers and the students at the implementing level. The policy-makers will have long term goal settings towards the curriculum innovations that is to develop knowledge and skills among students to perform certain real life tasks in the future after they pass out of schools, while the students' goal setting towards the curriculum will be of a short term that is to pass in the mandatory subjects for them to go to the immediate next level. As a result of these different goal settings among the stakeholders at the various levels, the curriculum objectives have not been fully achieved. Therefore,

the purpose of this study is to determine the influence of immediate goal setting on achieving long term curricular objectives. Hence, the following question needs to be examined: Does immediate goal setting prevent the achievement of long term goals set out in the curriculum?

3. The context of the study

In the Sri Lankan government schools, a candidate should sit altogether for nine subjects including six core subjects: Religion (Buddhism / Saivaneri / Catholicism / Christianity / Islam), Medium Language (Sinhala Language and Literature, Tamil Language and Literature), History, Science, Mathematics, General English Language and three other optional subjects for the GCE (O/L). To qualify for GCE (A/L), a candidate should have a minimum of six passes including three credit passes. Students who have failed in Mathematics and Medium Language either Sinhala or Tamil are not permitted to move to GCE (A/L) and hence these two subjects are mandatory.

Further, a candidate should offer three core subjects as well as three optional subjects – General English Language, General Information Technology and General Knowledge – for the GCE (A/L). The core subjects depend on the students' interest of the field of study and the results at the GCE (O/L) but the three optional subjects are common to all the students irrespective of their field of study. The students should pass all three core subjects to be qualified for university entrance.

The rationale behind teaching the General English Language (GEL) at the GCE (O/L) and GCE (A/L) is to increase the focus on this language by both teachers and students in the classroom in order to upgrade students' English Language proficiency when they pass out from schools.

Analysis of results obtained by the students showed that percentage of pass rate is more in subjects such as Mathematics, Science and Medium Language at the GCE (O/L) and the core subjects at the GCE (A/L) than in GEL in both cases.

Thus, the results suggest that students focus more on subjects which are mandatory for them to go for the next level: from GCE (O/L) to GCE (A/L) and from GCE (A/L) to university.

It would therefore be of interest to examine the effect of goal setting in achieving the objectives of curriculum.

4. Methods

4.1 Participants and settings

The participants in this study included the undergraduates of a State university in Sri Lanka. They represented various fields of study – Medicine, Agriculture, Science, Commerce and Management, Arts and Culture and Technology – ranging from first year to final year. The participants were also representing various geographical locations in the country. The participants were similar in only one aspect that is they were reading for a degree at the selected state university.

Officials in the field of education also participated in the target group interviews.

4.2 Instrumentation

Questionnaire was administrated to students for the purpose of collecting data addressing the following variables: immediate goals of sitting for GCE (O/L) and GCE (A/L), students' awareness of offering GEL, and difficulty level of subjects. The questionnaire items were presented in such a way that the students should respond by selecting from two options either Yes or No.

The related secondary data on pass rate of students in various subjects and GEL in the GCE (O/L) and GCE (A/L) available on the Official Website of the Department of Examinations, Sri Lanka were also obtained.

Target group interviews were also done with participants in the field of education to find out their perceptions of difficulty level of the core subjects in comparison to GEL.

4.3 Procedure

The questionnaire was prepared in the format of a "Google Form" and the link to this form was sent out to the participants. The students were expected to return the filled up form via electronic mode.

The related secondary data available on the website were also retrieved to analyse the performance of the students during the last five years at the GCE (O/L) and GCE (A/L).

A short unstructured interview was also held with participants at the decision making and implementing level in the field of education.

4.4 Data analysis

Datasets from both the questionnaire and the secondary data which had been collected from the

official website were tabulated for comparison and description.

Descriptive statistical analysis was done with the collected data in order to establish whether goal setting could make any significant impact on achieving curriculum expectations through various subjects and languages taught at schools.

The performance in the core subjects of both tests was compared with the General English Language (GEL).

5. Results and Discussions

The immediate goal of the majority of the participants when they were sitting for GCE (O/L) was to get to the GCE (A/L) as well as of the GCE (A/L) students was to gain entrance to the university, summarized in Figure 5.1 and 5.2 respectively.

1. The immediate objective that I studied the GCE (O/L) was to get to the GCE (A/L) (Please tick).
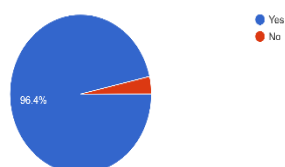784 responses

Figure 5.1 Immediate objective of sitting for GCE (O/L)

2. The immediate objective that I studied the GCE (A/L) was to gain university entrance (Please tick).
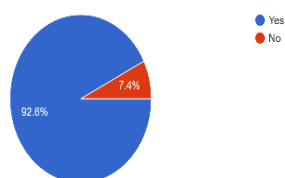784 responses

Figure 5.2 Immediate objective of sitting for GCE (A/L)

Figure 5.3 and Figure 5.4 show that most of the participants were aware that the GEL was not a mandatory requirement for them to achieve their immediate objectives.

3. I was aware that a pass in the General English Language at the GCE (O/) was not mandatory to go to the GCE (A/L) (Please tick).
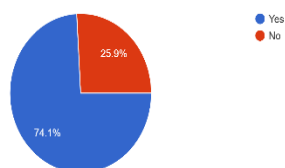784 responses

Figure 5.3 Awareness of a pass in GEL at the GCE (O/L)

4. I was aware that a pass in the General English Language at the GCE (A/L) was not mandatory to gain university entrance.
784 responses
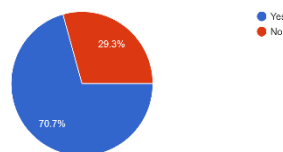
Figure 5.3 Awareness of a pass in GEL at the GCE (A/L)

The analysis of the performance of students at the GCE (O/L) and GCE (A/L) during the last five years from year 2014 to 2018 showed a general trend that a higher percentage of students got through in other subjects than the GEL, summarized in Table 5.1 and 5.2 respectively.

Year	Percentage of Passed (A+B+C+S)				
	General English Language	Medium Language (Tamil)	Medium Language (Sinhala)	Mathematics	Science
2014	45	88	78	57	61
2015	45	81	89	55	68
2016	48	79	87	63	66
2017	51	89	91	67	73
2018	55	90	91	68	70

Table 5.1 School candidates (1st attempt): Results by grades in selected subjects and GEL at the GCE (O/L) Examination

Year	Percentage of Passed (A+B+C+S)				
	General English Language	Physics	Chemistry	Combined Mathematics	Biology
2015	39	66	66	53	76
2016	40	67	68	62	76
2017	41	67	69	66	75
2018	41	72	70	66	75
2019	51	67	66	60	69

Table 5.2 School candidates (1st attempt): Results by grades in selected subjects and GEL at the GCE (A/L) Examination

The comparisons between Medium Languages and GEL show that the performance of candidates at the GCE (O/L) in the Medium Languages were higher than GEL even though the difficulty level of Medium Languages are higher than the GEL. It is important to state that the medium Languages are mandatory for students to go to the next immediate level.

The target group interviews suggest that the core subjects were more difficult than GEL and the margin of difference in difficulty level between these two

was higher. However, a completely different picture emerges as far as the students' perceptions of the difficulty level of GEL is concerned. The analysis of data from the students' questionnaire suggest that the margin of difference in terms of difficulty level between core subjects and GEL was narrow.

5. The core subjects (Mathematics / Science / Medium language) that I offered at the GCE (O/L) were more difficult than the General English.
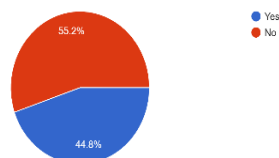784 responses

Figure 5.7 GCE (O/L) Students' perception of difficulty level of GEL

6. The three core subjects that I offered at the GCE (A/L) were more difficult than the General English Language.
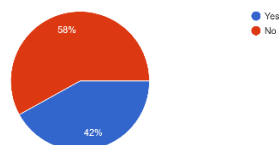784 responses

Figure 5.8 GCE (A/L) Students' perception of difficulty level of GEL

6. Conclusion

6.1 Students' perception of mandatory vs. optional

The evidence from both data, obtained from the questionnaire survey and the secondary data available on the website taken together with others reviewed above, suggest that goal setting do have effects on the expected curriculum outcomes.

It is very clear from the results that students do set goals in order to achieve their immediate objectives. Thus, they prioritise their goals which are immediate rather than long term. They set goals towards moving onto the immediate next level. So that, they focus more on the mandatory ones, which help them to achieve their immediate goals, than the optional ones.

The findings clearly suggest that goal setting is one of the factors influences the achievement of curriculum objectives. Therefore, policy makers should have a clear vision in their policy making. There should be an alignment between curriculum objectives and government policies. When government assigns certain subjects as optional for students to pass onto their immediate next level, they tend to less focus on those subjects. As a result, the curriculum objectives which are expected to be

achieved through those optional subjects are neglected.

Therefore, the policy-makers should mandate the subjects and languages that the students must need in the long run for their successful future as prescribed in the curriculum. In such context, when the students set goals to move onto the next level, they would learn the skills and knowledge by automatically including the mandatory subjects which would take them to the next level.

This kind of situation is clearly seen in this research findings. GEL is optional in both GCE (O/L) and GCE (A/L) for students to go to the immediate next level: students in GCE (O/L) to GCE (A/L) and students in GCE (A/L) to gain university entrance.

The students' perception of difficulty level of core subjects and GEL was that they considered both as more or less equally difficult. However, core subjects including medium language are higher in their difficulty level as suggested in the target group interviews. Hence, students' perceptions also impact on their performance at the examinations.

Therefore, in order to bring washforward to the educational system in Sri Lanka, there should be an alignment between students' goal settings, curriculum objectives and government policies about the status of subjects and languages taught in the schools.

Hence, students' perceptions of the difficulty level of subjects and languages and their goal settings to achieve the immediate objectives should be revisited along with government policies of mandatory subjects.

7. Implications

In order to bring in washforward of the high-stakes tests to the Sri Lankan educational system, the individual components of the high-stakes tests especially the GEL should be made mandatory for the students to reach their immediate next level which is their prime objective. There should be a policy change and GEL should be mandated along with other core subjects for students.

There should be a match between immediate as well as long term goals of the learners. It should be possible when policy makers set their policies as such that there is a less gap between the long and short term goals of the students.

Even though, the study was relevant to a particular educational context, the finding could be of relevance to other wider educational context as well.

8. Limitations

Participants who represented only one of the National universities in Sri Lanka were involved in this study. The university, which the participants represented in, is considered low in the ranking when compared with most of the other National universities. Hence, the students who have performed well at their GCE (A/L) would opt to the other state universities in Sri Lanka.

Therefore, it would be interesting to see whether there would be any deviation in the findings of this research when the population represent all the state universities.

Only descriptive statistical analysis was done with the collected data. Inferential statistical analysis might have given more insight to the findings.

Acknowledgement

Thanks to the undergraduates who participated in this study representing various faculties from first year to final year at the Eastern University Sri Lanka through online and colleagues who assisted in data collection and collation.

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A CRITICAL REVIEW OF LEGAL INTERVENTIONS FOR COMBATING RAGGING IN SRI LANKAN UNIVERSITIES: A CASE STUDY OF SOUTH EASTERN UNIVERSITY OF SRI LANKA

Abdul Raheem Mohamed Zulfi

Senior Assistant Registrar (Legal & Documentation), South Eastern University of Sri Lanka

ABSTRACT

Ragging is a form of Sexual and Gender Based Violence (SGBV). Sri Lanka has taken legislative, administrative and institutional measures to prevent ragging and to protect victims of ragging. Adversely, ragging continues to be a systematic abuse and grave human rights violation. This study critically evaluated the extent to which legal interventions succeeded to combat ragging in Sri Lankan Universities with an objective of identifying potential areas to be proposed as a way forward. Qualitative research method was adopted to develop this paper. Primary data was collected from the selected students, staff members of South Eastern University of Sri Lanka and officers of Akkaraipaththu police station. An open-ended questionnaire and face to face interview methods were used. Secondary data of this study was based on a desk study. The findings of the study disclosed that ragging has been made a criminal offence with rigid punishments by the Prohibition of Ragging and Other Forms of Violence in Educational Institutions Act No. 20 of 1998 and University Grants Commission (UGC) Circular No. 946 dated 10.02.2011. A hotline and a special office have been set up to aid students who have been victims of ragging in universities. UGC has established a complaint portal to report ragging threat or harassment. Ministry of Higher Education has launched an application (App) for mobile devices for State university students to instantly inform the authorities of ragging incidents. Problem lays with the implementation of the legal interventions. There is an urgent need to educate students, staff members and police officers on available legal interventions to curb ragging in universities.

Keywords: Menace of Ragging, SGBV, Sri Lankan Universities, Legal Interventions

1.Introduction

Ragging in Sri Lankan Universities is a menace of intense discussion. It has many aspects, including psychological, social, political, economic and cultural; and that it adversely effects the standards of higher education.[1] The standard of education, at Sri Lanka Universities, is declining rapidly. Instead of quality of education, Sri Lankan Universities are now focused on violence, extremist student policies, strikes, low productivity and moral decay.[2] Ragging is a form of systematic abuse and grave human rights violation and encourages sexual and gender-based violence. Ragging is a violation of right to education and right to be free from torture, cruel, inhumane and degrading treatments enshrined in the fundamental rights chapter of the Sri Lanka Constitution.

Regrettably, ragging has evolved into a socially, culturally, and perhaps legally unacceptable practice in various campuses.[3] Many students had been caught red handed by the University authorities and are reported of remanded after being arrested over torturing of freshers by the senior students. This has become an annual ritual by the University maniacs.[4] It has caused fatalities over the years and has also increased suicide risks among the student population. Ragging at Universities continue to make news at regular intervals in Sri Lanka. We have heard about

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[1] Wijesiri Lionel, (2018) '*Ragging: Is it a crime?* Sunday Observer dated 2 September 2018 < http://www.sundayobserver.lk/2018/09/04/thoughts/ragging-it-crime> accessed 10 September 2019

[2] Wimalasuriya Darshani, (2019) '*Sri Lanka Universities In Dire Straits*' <https://www.colombotelegraph.com/index.php/sri-lankan-universities-in-dire-straits/> accessed 12 September 2019

[3] Hiran, (2019), '*Ragging in Sri Lankan Universities*', <https://studentlanka.com/2019/07/02/ragging-in-sri-lankan-universities/> accessed 12 September 2019

[4] Sri Lanka Brief, '*Ragging in Sri Lanka Universities: Academical Institutions Turn Torture Camps*' <http://Sri Lankabrief.org/Author/Srilankabrief> accessed 10 October 2019

brutal ragging incidents in Universities and other Higher Educational Institutions (HEIs) and stories about students leaving Universities, but nobody expected such a large number of students to give up University education just because of the barbaric mindset of another group of students. We can imagine with these stories as to what a disgraceful situation we have in our Universities.[5]

It is appropriate to mention a few emblematic barbaric cases such as Rupa Ratnaseeli who was paralyzed in a ragging related incident at the Peradeniya University in 1975 and committed suicide in 2002. Chaminda Punchihewa, who died as a result of ragging at the Ruhunu University in 1993, Prasanga Niroshana, who died as a result of ragging at Schools of Agriculture, Angunakolapalessa, S. Varapragash had lost his life due to a kidney failure following severe ragging at Peradeniya University in 1997, Kelum Thushara Wijetunge died in the same way in the same year as Varaprahash at the Hardy Technical institute in Ampara.[6] Wijeyadasa Rajapaksa, who was the Higher Education Minister had said in the year 2018 that for the previous two years nearly 2000 students who had entered Universities had left them due to inhuman ragging by senior students. Further, the former Higher Education Minister Rauf Hakeem also without specifying the duration said in Parliament in March 2019, that 1987 students had left Universities due to inhuman ragging in the year 2019. This situation continues very year. 12 second year students of University of Colombo were arrested by Cinnamon Garden Police over a incident of inhumanly ragging the 1st year students on 08th January 2020. a freshman student at the Shri Jayawardhanapura University was admitted to the Colombo National hospital in March 2020 with a serious head injury allegedly suffered during ragging

Sri Lanka as a welfare State has taken legislative, administrative and institutional measures to prevent ragging in educational institutions and to protect victims of ragging. Ragging has been made a criminal offence by the enactment of Prohibition of Ragging and Other Forms of Violence in Educational Institutions Act No. 20 of 1998 (The Anti-Ragging Act). Certain activities related to ragging have been prohibited and punishments have been specified in

University Grants Commission (UGC) Circular Nos. 919 dated 15.01.2010 and 946 dated 10.02.2011 (Common Guidelines on Student Discipline). The UGC has established a special office, Center for Gender Equity and Equality with powers to deal with ragging related complaints and to aid students who have been victims of ragging in Universities and other HEIs. The UGC operates a hotline and established a complaint portal at UGC to report ragging threat or harassment. Ministry of Higher Education has launched an application (App) for mobile devices for State University students to instantly inform the authorities of ragging incidents as a step to eradicate ragging from Universities. Students and Staff members can report incidents to authorities through this mobile App. Moreover, ragging became a national cost. In 2017 budget allocation, the Government of Sri Lanka allocated 10 million rupees for the elimination of ragging in Sri Lankan Universities.

Adversely, ragging is still perceived by many senior students as a way of 'familiarization' and an 'initiation into the real world' for young University students. The cruel forms of ragging incidents have far exceeded the 'familiarization' or any other claims whatsoever put forward by the promoters of ragging. Despite the government's ban on ragging, and imposing rigid punishments, it is still found that a significant number of senior students continue to rag freshers and also justify it.[7] After hundreds of unfortunate incidents including murders and suicides by the students over the ragging, a selection of the University students who are considered to be the cream of student community have not realized yet the temptation for ragging is nothing other than a psychopathic condition.[8] In this backdrop, it is significant to critically evaluate the effectiveness of legal interventions for combatting ragging in Sri Lankan Universities.

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[5] Sri Lanka Brief, *Ragging in Sri Lanka Universities: Academical Institutions Turn Torture Camps* <http://Sri Lankabrief.org/Author/Srilankabrief> accessed 10 October 2019Ibid

[6] ibid

[7] Lionel Wijesiri, *Ragging: is it a crime?* Sunday Observer dated 2 September 2018 < http://www.sundayobserver.lk/2018/09/04/thoughts/ragging-it-crime> accessed 10 October 2019

[8] Sri Lanka Brief, *Ragging in Sri Lanka Universities: Academical Institutions Turn Torture Camps* <http://Sri Lankabrief.org/Author/Srilankabrief> accessed 10 October 2019

2. Key Objectives

The key objectives of this research are (i) to highlight and analyze the legal interventions existing to curb ragging in Universities in Sri Lankan (ii) to critically evaluate the extent to which the existing legal interventions have succeeded in its objectives and (iii) to identify potential areas to be proposed as a way forward.

3. Research Question

Are legal interventions effective to combat ragging in State Universities in Sri Lanka?

4. Hypothesis

When legal interventions are adequately effective, the tendency of occurrence of incidents of ragging in Universities will be less.

5. Methodology

Qualitative research method was adopted to develop this paper. Students and staff members of Universities were used as research population to gain their balanced viewpoints in different perspectives on the effectiveness of the legal intervention to combat ragging in Sri Lankan Universities. Primary data was collected from the selected individuals as samples of the research population. Purposive sampling technique was used to create nonprobability sampling method.

South Eastern University of Sri Lanka (SEUSL) was selected for the case study as it comprises students and staff of both gender from all three communities where the researcher works as an executive administrative staff member in charge for legal and documentation matters of the SEUSL. There are six faculties in the University namely Faculty of Engineering, Faculty of Applied Sciences, Faculty of Technology, Faculty of Management and Commerce, Faculty of Arts and Culture and Faculty of Arabic Language and Islamic Studies. 06 samples (02 fresher students, 02 senior students and 02 staff members) were selected from each faculties of the University. Gender balance also taken into consideration when samples were selected. Each category of the sample comprised one male and one female. Samples were selected from all six faculties of the University. There were totally 36 samples selected from 06 faculties of the university. An open–ended questionnaire was disseminated among the samples to collect primary data and they treated as confidential.

Further, structured interviews based on predetermined questions were conducted individually with 04 police officers (02 male and 02 female) who were handling complaints related to criminal matters in Akkaraipaththu police station with the purpose of assessing their knowledge on legal interventions to combat ragging in Universities. Interviews were recorded with the informed consent of the samples.

Faculties	Samples						Total
	Freshers		Seniors		Staffs		
	M	F	M	F	M	Fe	
1. Faculty of Engineering	01	01	01	01	01	01	06
2. Faculty of Applied Sciences	01	01	01	01	01	01	06
3. Faculty of Technology	01	01	01	01	01	01	06
4. Faculty of Management and Commerce	01	01	01	01	01	01	06
5. Faculty of Arts and Culture	01	01	01	01	01	01	06
6. Faculty of Arabic Language and Islamic Studies	01	01	01	01	01	01	06
Total	06	06	06	06	06	06	36

Table No. 01 Distribution of Samples

Secondary data of this research was based on a desk research evaluating salient features of the following legislative enactments. UGC Circulars were analyzed for the development of this paper.

1. Prohibition of Ragging and Other Forms of Violence in Educational Institutions Act No. 20 of 1998;

2. The Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment Act No. 22 of 1994;

3. Universities Act, No. 12 of 1978;

4. The UGC Circular Nos. 919 dated 15.01.2010 and 946 dated 10.02.2011 of Sri Lanka, UGC guidelines on students' disciplines; and

5. UGC's mechanisms to maintain student discipline in State owned HEIs in Sri Lanka.

6.   Legal Interventions

6.1 The Anti-Ragging Act
The Anti-Ragging Act was enacted exclusively for the purpose of eliminating ragging and other forms of violence, cruel, inhuman and degrading treatment, from educational institutions as its long title stipulated. This law recognizes ragging as a distinct

offence. The term 'ragging' has been defined by anti-ragging act as follows;

'any act which causes or is likely to cause physical or psychological injury or mental pain or fear to a student or a member of the staff of an educational institution.'[9]

This definition includes physical, psychological injury or mental pain or fear caused to a student or a member of the staff of an educational institution. This act does not provide definition for cruel, inhuman and degrading treatment. For this purpose, definition given in the Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment Act, No. 22 of 1994 could be referred. This act recognizes certain offences such as ragging, criminal intimidation, hostage taking, wrongful restraint, unlawful confinement as cognizable offences.[10]

According to section 2 of the Act, any person who commits, or participates in, ragging even outside an educational institution shall be guilty of an offence under this Act. Although the definition of ragging does not include sexual harassment or sexual related ragging activities, section 2 of the Act further makes a person who, whilst committing ragging causes sexual harassment or grievous hurt to any student or a member of the staff, of an educational institution shall be guilty of an offence under this Act. This Act imposes rigid punishments;

1. Rigorous imprisonment not exceeding two years for any person who commits, or participates in, ragging within or out an educational institution and convicted after summary trail before a Magistrate;[11]

2. Rigorous imprisonment for a term not exceeding ten years for a person who, while committing ragging causes sexual harassment or grievous hurt to any student or a member of the staff and convicted after summary trail before a Magistrate;[12]

   In the above both cases it may also be ordered to pay compensation for to the person in respect of whom the offence was committed for the injuries caused to such person. However, this Act does not require to pay compensation for mental

and/or psychological damages caused to the victim of ragging;

3. Rigorous imprisonment for a term not exceeding five years for conviction of an offence of criminal intimidation;[13]

4. Rigorous imprisonment for a term not exceeding seven years for conviction of an offence of hostage taking or of wrongful restraint or of unlawful confinement;[14]

5. Rigorous imprisonment of not exceeding ten years or to a fine not exceeding ten thousand rupees or to both such imprisonment and fine for an offence of forcible occupation and damage to property of an educational institution;[15]

6. This Act imposes imprisonment for a term of maximum twenty years and a fine of five thousand rupees or three times the amount of the loss or damage caused in respect of any property of, or under the management or control of, an educational institutions if such person is convicted after summary trail before a Magistrate.[16]

This Act empowers the Magistrate Court to order expulsion of a student or to order of dismissal of a member of the staff in any case where such person is convicted.[17]

A person suspected of committing sexual harassment or grievous hurt during ragging or a suspected of hostage taking shall not be released on bail except by the judge of a High Court established by Article 154P of the Constitution.[18]

Section 10 of the Act states that the provisions of Section 303 of the Code of Criminal Procedure Act, No. 15 of 1979 shall not apply in the case of any person who is convicted. Section 303 of the Code of Criminal Procedure Act, No. 15 of 1979 gives powers to impose suspended sentence of imprisonment on an offence for a term not exceeding two years. Section 306 shall not apply in the case of any person who pleads or is found guilty. Section 306 of the Code of Criminal Procedure Act, No. 15 of 1979 gives power of Court to permit conditional release of offenders.

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[9] Section 17 of the Anti-Ragging Act.

[10] Section 11 of the Anti-Ragging Act.

[11] Section 2 of the Anti-Ragging Act.

[12] Ibid

[13] Section 3 of the Anti-Ragging Act.

[14] Section 4,5, and 6 of the Anti-Ragging Act.

[15] Section 7 (1) of the Anti-Ragging Act.

[16] Section 7 (2) of the Anti-Ragging Act.

[17] Section 8 of the Anti-Ragging Act

[18] Section 9 of the Anti-Ragging Act.

6.2 Anti-Torture Act

One of the crucial forms of ragging is torture and other cruel inhuman or degrading treatment or punishment. Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment Act, No. 22 of 1994 makes torture punishable by imprisonment for a term not less than seven years and not exceeding ten years and a fine.

6.3 Universities Act

Universities Act, No. 16 of 1978 gives powers to the Vice Chancellor of a HEI, where the presence of any person in the precincts of a HEI is undesirable, after giving such person an opportunity of being heard, may by writing under his hand served on such person, prohibit such person from entering or remaining within such precincts or within such part thereof as may be specified in such writing. Such prohibition shall be and remain in force until revoked by such Vice Chancellor with the consent of such governing authority. This Act criminalized disobeying prohibition as an offence and on conviction by a Magistrate, be liable to a fine of one hundred rupees in respect of each day or part thereof on which he has entered or during which he has remained within such precincts or part thereof. This amount of fine is very low when comparing to the damages caused to the victim if the person involves in severe form of ragging.[19]

6.4 UGC Circulars

UGC Circular 919 dated 15.01.2010 on the title of guidelines to be introduced to curb the menace of ragging in the Universities or Higher Educational Institutes provides a comprehensive list of preventive measures and procedures to be followed in the event of ragging. It compels students to sign a declaration countersigned by the parent/guardian stating that they shall not related to ragging and it suggests to appoint an Anti-Ragging committee and insist to meet at least twice a month during the preparatory and peak period and regularly report to the Council. Universities/HEIs are also encouraged to establish Faculty level Anti Ragging Committees depending on the needs of the individual Universities/HEIs.

UGC having observed that Universities/HEIs have adopted different procedures with regard to student disciplinary matters issued a set of common guidelines on students' disciplinary procedures by its circular number 946 dated 10.02.2011. Schedule I of this circular provides a detailed step by step procedures regarding any charge of misconduct/indiscipline against a student. This circular empowered the Vice Chancellor of a University to impose an Out of Bounds Declaration on students with immediate effect in cases where the

Vice Chancellor deems it necessary in the context of the seriousness of the infringement of discipline when the fact finding mission revealed that the student has committed an offence amounting to misconduct/indiscipline. Schedule II of this circular provides a table of recommended punishments for violation of student discipline. It also gives appeal procedure against a decision to punish a student.

6.5 UGC Institutional Measures

The UGC has established a Center for Gender Equity and Equality with the vision of ensuring that the HEIs under the purview of the UGC have the institutional capability to ensure a conductive, gender-just working and learning environment to all its members and are recognized for their excellent practice. This center also handle complaints of ragging incidents from Universities and HEIs

Students at Universities and other HEIs can now complain against ragging via a hotline and a separate unit set up for such complaints. The hot line 011-2123700 functions round the clock for the purpose. The UGC also asks the students to lodge a complaint with the local police station after informing their university authorities.

Online complaints portal has also been set up as a means for any member of the University community to lodge a complaint regarding incidents of ragging, harassment, intimidation, and bullying. All complaints that are lodged are investigated and victims of such incidents are offered support and redress. Once the complaint is lodged, the relevant authorities such as the Vice Chancellor, Student Counsellors, etc. are notified and immediately initiate an investigation regarding the complaint.

Recently, Mobile App to end ragging in Universities is launched for State University students to instantly inform the authorities of ragging incidents as a step to eradicating ragging menace from Universities in Sri Lanka. This application is available 24 hours of the day and the UGC would be monitoring it and could identify the students' current location at all times. The local police in the relevant area would be alerted as soon as any student sends a distress call about an ongoing ragging incident and are expected to respond immediately.

7. Conclusion

Analysis of the questionnaires indicates that most of the victims of ragging are female fresher students from rural areas of the Country. Most thus 80 percent of the University students and staff have very poor knowledge on the legislative and institutional

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[19] Sec. 131 of the Universities Act No. 16 of 1978

measures available to prevent and report ragging. None of the student nor the staff member memorizes the UGC hotline number which has been set up specially for the purpose of ragging complaints. No one has downloaded the WhatsApp on their mobile phone which helps to immediately report ragging incidents. Ad-hoc measures to prevent ragging based on individual cases have failed to create a positive and sustained strategies to prevent ragging.

The structured interviews with Police officers illustrate that they have not charged the perpetrators of ragging under the Anti-Ragging Act. The police officers are unaware of the existence of a special legislation enacted to curb ragging and other form of cruel and inhuman treatment in HEIs.

The approach of treating students involving in ragging as criminals needs to be reviewed. The behavioural patterns of students, particularly, potential raggers, need to be identified. There is an urgent need to educate students, staff members and police officers on available legal interventions to curb ragging in Universities. Orientation programmes in Universities must take up the issue of ragging to change the mind-sets of students from within the University system. Guidelines prescribed in UGC circular 919 should be strictly followed at all times.

It is clear that ragging is not merely a disciplinary or a law and order problem that can be solved by punishment alone. It has complex social and psychological dimensions. Apart from its complex nature, another significant reason why ragging is difficult to control is that it is a 'soft' problem – one that is subjective and dependent on how it is perceived by the victims and perpetrators as well as other stakeholders. Therefore, it becomes difficult to formulate efficient means to control or end it.[20]

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STATUS OF MOBULID GILL PLATES AND SHARK FIN TRADE AT SELECTED SITES OF SRI LANKA

De Silva M. L. I.* and Manikarachchi I.U.

Faculty of Fisheries and Ocean Sciences, Ocean University, Mahawela Road, Tangalle, Sri Lanka

Abstract

Mobulids and sharks have been contributed largely to the marine fish catch in Sri Lanka and were exploited within the coastal waters, offshore and deep sea areas. They have been increasingly targeted over the history to supply the growing market for their gills and fins. With no reliable trade statistics and scarce data, it is difficult to assess the status of mobulid gill plate trade and shark fin trade. Assessing the status of manta, mobula gill plate and shark fin trade was carried out in order to establish a clear and descriptive idea along with trends and challenges which is counter balanced by conservation and economic gains. During the study period 19th March 2019 and 29th May 2019 Collection centers specified for collecting shark fins and mobulid gill plates from Negombo and Tangalle were followed along with harbor Tangalle and Negombo. Socioeconomic aspects of this trade was assessed by interviewing fishers, market dealers, stake holders of relevant authorities and interested parties. Shark ban and management measures of government authorities were discussed with fishers and illegal recorded and unrecorded cases were addressed. Implementation of laws and regulations and people's attitudes towards conservation measures were observed to be in two different situations. Majority of the fishers (100%) reported unawareness about conservation measures and 80% of fishers didn't like any conservation measures to be implemented on Mobulid fishery. *Mobula tarapacana* were recorded as the major species recorded from both sites. Unreported illegal shark landings were observed to be much higher than the reported cases. Development of negative attitudes towards dealing illegal shark parts was observed due to market drop and pressure from the relevant authorities. None of the traders were aware about exact purpose of mobulid gill plates and shark fins. Study reviled important aspects of the trade which indicates the need of proper law enforcement and developing awareness among the community.

Keywords: Mobulids, Fishery, Gill plates, Conservation, Status

1. Introduction

The Sri Lankan fisheries sector plays a major role in the economy of the country and it is important in many ways such as income generation, employment, foreign earnings and the animal protein intake for the population. Among the commercially important shark species found in Sri Lanka, Amarasooriya (2001) identified 46 species of pelagic and demersal sharks from the landings. Manta and devil rays belong to the Mobulidae family, which comprises the two species of the genus Manta and nine species of the genus Mobula (Couturier et al., 2012). Manta and devil rays (collectively mobulids) have been increasingly targeted over the past two decades to supply a growing market for their gills, which are sold in traditional Chinese medicine (TCM) and Asian dried-seafood markets (White et al., 2006b; Camhi et al., 2009; Couturier et al., 2012). When concerning about the stability of regional sharks and mobulid subpopulations with the increasing fishing pressure, combined with scarce reporting of fisheries data and unrecorded black market data there is a timely need on information about the shark parts and mobula gill plate trade which is very important in

conservation and management efforts. Though several studies have been carried out on shark and mobula fishery in Sri Lanka, they were basically concentrated on catch rates and size measurements. This is the first study that mainly targeted on assessing status of shark fin trade and mobulid gill plate trade in Sri Lanka which estimates the scale of the trade, sociological aspects and address the existing implications of current levels of trade on the conservation of shark and mobulid species.

2. Materials and methodology

During the study period data were collected from harbors and collection centers located at Tangalle (6.0243^0N, 80.7941^0E) and Negombo (7.200^0N, 79.8737^0E). To calculate market values, supply chain, trends, demand, problems, law implementation and conservation measures, direct interviews were carried out with fishers, market dealers, government authorities, and interested parties. Daily and weekly visits to collection centers and harbors were scheduled to collect catch data and interviewed people engaged in this trade from 19th March 2019 to 29th May 2019.Records of illegal

shark reported cases were obtained from the Sri Lanka Coast Guard dating since 6th July 2015 to 14th May 2019.Visits to several other collection centers Dikwella (5.9717^{0}N,80.6951^{0}E) and another site at Negombo were included to interview the collectors. Discussions with wildlife and fisheries officers were carried out targeting conservation and law implementation criteria. Daily shark and mobulid parts reported along with standard weight (to the nearest g) and possible length measurements (nearest cm), diversity of species and results of the interviews with people were summarized in to Microsoft excel sheets.

3. Results and Discussions

Majority of the fishers (Tangalle 100%, Negombo 100%) reported unawareness on conservation measures and 80 % of fishers didn't like any conservation measure to be implemented on Mobulid fishery. Major gill plates reported from Negombo was *Mobula tarapacana* and *Mobular mobular*. The most reported mobulid gill plate at Tangalle was *Mobula tarapacana* followed by *Mobular mobular*. Trading shark fins, shark skin, shark meat, shark internal organs and jaws was observed at Negombo while Tangalle and Dikwella with shark meat, fins and jaws up to some extend only. Out of 5 illegal shark species in Sri Lanka, landing of 3 species were observed during the study period. From 2015-2019 highest number of reported illegal shark cases were from Dikowita (18 cases) followed by Oluwil (4 cases), Negombo (3 cases) and Beruwala (3 cases). From the illegal shark records, identified major species were Thresher species (59%), followed by *Carcharhinus* longimanus (20%). The unreported numbers tends to be much higher than the reported cases. 86% (Tangalle), 93%(Negombo) claimed banning of thresher sharks should be raised and 86%(Tangalle), 100%(Negombo) believed Threshers were in good stock conditions. 93%(Tangalle and Negombo) fishers reported landing of illegal sharks by themselves and only 20%(Tangalle), 13%(Negombo) of them were been legally punished. 53%(Tangalle),46%(Negombo) fishers reported decreasing of shark landings and 20%(Tangalle), 13%(Negombo) reported increasing of shark landings. 80%(Tangalle), 93%(Negombo) of fishers didn't report any reduction in mobulid catches. From the interviewed total fishers (63%) didn't report their mobulid and shark catches and 78% of them were from Tangalle. From the log book updated fishers 90% of them recorded less catch amount than the real catch. Majority of the people involved in the trade was not aware about the usage and the destinations of the processed parts. Growing tendency of negative attitudes was observed on illegal shark species due to law market values and pressure from relevant authorities. Average wet price of 1kg of *Manta briostris* gills were Rs.2800-3000 per kg and dry price Rs 15000-16000 per kg. Average wet price of 1kg of *Mobula tarapacana* gills was Rs.2500 per kg and Rs.12000 after drying. *Mobula mobular* gills were Rs.1500 per kg and dry value as Rs.9000 per kg. shark tooth more than 4 cm valued Rs.2000-3000 and 1kg of wet fins of *Prionace glauca* costed around Rs.1000 and it doubles after drying. Wet fins of *Sphyrna zygaena* more than 30 cm priced Rs.3000 and doubles after drying. Most frequently reported and one of the most expensive fins were *carcharhinus falciformis,*1kg of fins more than 46 cm valuing Rs.5000 and doubles after drying.

Wildlife officers, related stake holders and interested parties,

It was observed wildlife rangers from both areas were not actively interested in shark fin trade and mobula gill plate trade and most of them were not aware about the trade. Lack of knowledge for the identification of illegal shark fins was one of the major problem observed.

4. Conclusion

From this status study it was observed that fishers and people involved in the trade represents complete different idea than the scientific community involved in this sector. Very few people were engaged in the processing of shark fins and mobulid gill plates and none of them were aware about the true purpose of these parts. It was observed that fishers don't benefit much from the trade while middleman benefits higher than the fishers. Reduction in reported illegal shark landings were observed but high number of unreported illegal sharks was observed. Majority of the fishers and collectors recorded false data (catch amount and trading amounts) concerning income taxes and avoiding any conservation measures to be implemented. Limited knowledge, scarce data, inability of identifying illegal shark parts and problems in law enforcement was observed from the officers and stake holders. Dissemination of knowledge to people who engage in this trade and also to government authorities is a timely need. Implementing laws and regulations and conservation measures is highly recommended for sustainable and economically profitable trade.

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PREPARATION OF BIOBASED PLASTIC FROM BANANA PEEL AND APPLICATION IN INDUSTRIAL WASTE WATER PURIFICATION

Arasaretnam, S

Department of Chemistry, Faculty of Science, Eastern University, Sri Lanka

ABSTRACT

The research study is focused on the synthesis of bioplastic material by using fruit waste mainly banana peels. Bioplastic can be defined as plastic made of biomass such as corn, banana peels and sugarcane. Making bioplastics from banana peels instead of traditional petroleum-based plastic is believed to be a successful solution to increase the efficiency of the plastic industry. Biobased plastic was prepared using banana peel, Glycerol, HCl, NaOH, $Na_2S_2O_5$ as raw materials. All the chemicals were in pure state and Fourier-transform infrared spectroscopy, Ultraviolet-visible spectroscopy, Atomic absorption spectroscopy instruments were used for the analysing and characterizing. Prepared bioplastic was buried under soil to check the biodegradability by microorganisms. Prepared biobased banana peel plastic was dried, grinded well and used in waste water purification process as an end-of-life option of banana peel plastic. Methylene blue, Cd^{2+} and Cr^{3+} were used as the cationic pollutants. The efficiency of purification and ion exchange capacities were compared with the banana peel dust. Results clearly proved that banana peel plastic is more efficient than banana peel dust in water purification by removing cationic pollutants. Therefore, this bio plastic can use in industrial waste water purification as an ion exchange material and as a dye removal agent.

Keywords: Biobased, Biodegradation, Bioplastic, Banana

1. INTRODUCTION

As the needs of world population are increased; conventional petroleum-based plastics have become a major part of our life. Because they are used in number of packaging applications including containers, bottles, trays, boxes, cups and vending packaging, baby products and protection packaging and in many household and industrial applications. But this petroleum-based plastic possesses two major problems.

1. It has grave threat to the wild life and the environment as they take decades to degrade in nature.

2. Petroleum based plastics are produced by non-renewable sources like petroleum, coal and natural gases which lead to increment in fossil fuel crisis.

Rather than that they produce greenhouse gases like CO_2 in higher amounts compare to the biobased plastics in their life cycles which causes serious environmental issues like global warming and climate change. These are the main issues that urge scientists to look forward for a green and sustainable alternative to conventional plastic. Because most of these biobased plastics are degrade in nature, they are produced by using renewable sources like plants and they show low CO_2 emissions in their life cycles. Biobased plastic is not a new concept as it was used in the ancient time in some applications.

Bioplastics are not new, in the 1850s, a British chemist created plastics from cellulose, a derivative of wood pulp. Later in the early 20th century, Henry ford experimented with soy-based plastics as an alternative to fossil fuels for powering various automobiles. Since then, biodegradable plastics began sparking interest, especially during the oil crisis of the nineteen seventies [Reddy, *et al*, 2013).].

Meraldo (2016) has defined that bio-based polymers are defined as polymers made from biological sources. So, they are the materials or products which are derived from the biomass. Biobased plastics are derived from plant sources such as sweet potatoes, soya bean oil, sugarcane, hemp oil, corn starch and cassava starch. Reddy (2013) has reported that bioplastics are commonly based on cellulose, starch, poly lactic acid (PLA) and poly-3hydroxybutyrate (PHB).

According to the findings the chemicals which are used in the manufacture of plastic is also toxic to the humans and bio monitoring process has shown that this chemicals are present in human population. It has found that these chemicals have correlated adverse effect on human population including reproductive abnormalities [Thompson *et al*, 2009].

The research study is focused on the synthesis of bioplastic material by using fruit waste mainly banana peels. Making bioplastics from banana peels instead of traditional petroleum-based plastic is believed to be

a successful solution to increase the efficiency of the plastic industry

2. MATERIAL AND METHODS

Bananas (*Musa acuminate*/Cavendish) were obtained from a fruit stall in Batticaloa. Analytical grade chemicals such as Glycerol, HCl, $Na_2S_2O_5$, NaOH were used without any further purification. Acid and base solutions were prepared dissolving appropriate amount of the particular compound in distilled water. All the glassware was cleaned with both multiple rinsing and appropriate solvents. Distilled water was used throughout the whole procedure. Cd^{2+} metal solution series was prepared using standard solution and concentrations were determined using Atomic Absorption Spectroscopy (AAS, GBC, AA dual model). Cr^{3+} solutions were prepared using $KCr(SO_4)_2.12H_2O$ (Chrome alum) salt and concentrations were determined using UV spectrophotometer (Biobase D-580). Methylene blue solutions were prepared by dissolving appropriate amount of methylene blue powder in distilled water.

Preparation of banana peel plastic
Banana peels were removed and cleaned with distilled water and cut in to small pieces. Then those pieces were dipped in 0.5 % $Na_2S_2O_5$ solution prior to the boiling process. Those banana peels were taken out and added in to boiling water in 800 ml beaker and were boiled for 30 minutes. After that beaker was removed from the Bunsen burner and water was decanted. Then banana peels were covered with dry gauze pad and left to dry for 30 minutes. Those peels were pureed until a uniform fluid was formed by using a hand blender. Then 25 ml of above fluid was taken in to a 500 ml beaker. After that 3 ml of HCl (0.1 M/ 3 ml) was added into it and mixed well. Then 2 ml of glycerol was added and mixed well. Finally, NaOH (0.1 M/ 3 ml) was added to the mixture and mixed well to neutralize the mixture. Eventually this mixture was poured into a ceramic tile and kept in the oven (120 °C for 1 hour).

Preparation of polymer dust
The polymer film was dried and ground into fine powder. It was thoroughly washed with the distilled water until the colour was completely removed. Then the dust sample was dried in the oven to remove the moisture completely. Finally, the polymer powder was sieved through 500 μm sieves to get uniform sized particles.

Preparation of banana peel dust
Banana peels were cleaned several times using distilled water. Then those peels were dried in the oven (130 °C) for two hours. Then they were crushed and sieved through 500 μm sieves and powder was collected and washed with distilled water. Finally, the powder was dried well.

Dye removal process
Initially 50 ml of dye (1 ppm) samples were taken into two Erlenmeyer flasks and 0.1 g of banana peel dust and polymer dust samples were added into the Erlenmeyer flasks separately. Then those Erlenmeyer flasks were kept in orbital shaker (150 rpm) for 1 hour. The same procedure was repeated to 1 g of banana peel dust and banana polymer dust. Finally, absorptions were measured using single beam UV-visible spectrometer at 650 nm wave length.

Heavy metal removal process
For this process 50 ml of Cd^{2+} (0.5 ppm) metal solution was added in to two Erlenmeyer flasks. Then 1 g of banana peel dust and banana polymer dust samples were added in to them. Those samples were mixed well using orbital shaker (150 ppm) for 1hour. Meanwhile 10 ml of each sample was taken out by filtering in 15-minute time intervals. Same procedure was repeated to the Cr^{3+} ion and concentrations for each sample were measured using Atomic absorption spectrometer.

Biodegradation test for banana peel plastic
Banana peel plastic film was cut into 2.5 cm x 2.5 cm piece. It was buried at 5 cm depth in soil and water was sprinkled at regular time intervals. About time interval of two days, specimen was taken out from the soil and washed well, dried and weight was taken.

3. RESULTS AND DISCUSSION

The figure 1 shows the IR spectra of banana peel plastic. The strong band at 3335 cm^{-1} is due to the υ(O-H) stretching of -OH groups. It is stronger and broader than the previous spectrums. The reason for that is newly formed H bonds between glycerol and starch during the plastic formation. Medium band at 2919 cm^{-1} is due to the υ(C-H) stretching frequency of alkyl -CH bond. The strong band at 1027 cm^{-1} is due to the υ(C-O) stretching of alkyl -CO bond. So, it can be assumed that other bonds most probably remain the same.
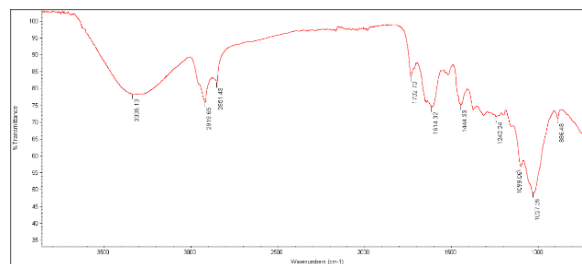

Figure 1: FTIR spectrum of banana peel plastic

The FT-IR spectra of starch is given in figure 2. The strong band at 3271 cm^{-1} is due to the υ(O-H) stretching of intermolecular H bonded -OH group. The medium band at 2928 cm^{-1} is due to the υ(C-H)

stretching frequency of alkyl -CH bond and the medium band at 1361 cm^{-1} is due to the υ(C-C) stretching frequency of -CCH$_2$ bond. The strong intense band at 993 cm^{-1} is due to the υ(C-O) stretching of glycosidic -CO linkage.

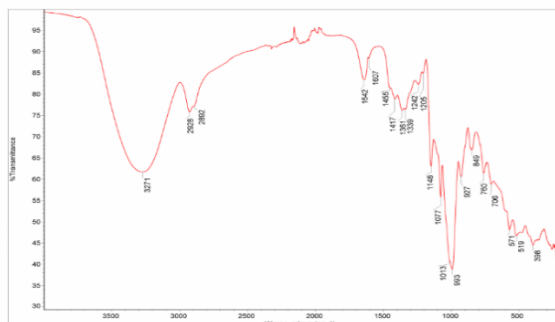**Figure 2:** FTIR spectrum of starch

Figure 3 indicate the IR spectra for glycerol. The intense band at 3268 cm^{-1} is due to the υ(O-H) stretching of intermolecular H bonded -OH groups. The medium band at 2934 cm^{-1} is due to the υ(C-H) stretching frequency of alkyl -CH bond. The strong band at 1032 cm^{-1} is due to the υ(C-O) stretching of alkyl -CO bond.
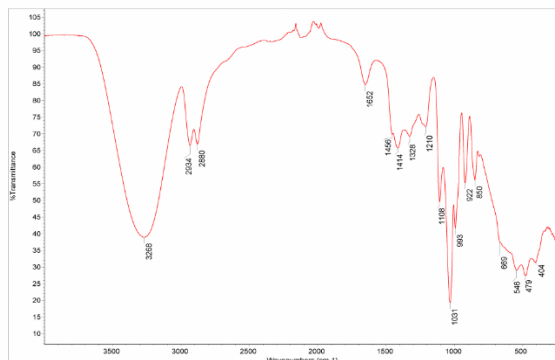

Figure 3: FTIR spectrum of glycerol

Sorption studies

Dye removal

Banana peel dust and banana peel plastic both are evidently rich in negatively charged molecules. So, they have the ability to absorb cationic pollutants like dyes. (Table 1)

Table 1: Dye absorption on banana peel dust and banana peel plastic dust in different amounts.

Amount of material added	Concentration of methylene blue dye	
	After adding banana peel dust (ppm)	After adding banana peel polymer (ppm)
0.1g	0.058	0.043
1.0g	0.048	0.034

According to the Table 1, as the amount of added material is increased dye absorption is also increased. The amount of absorption is higher in banana peel plastic dust than the banana peel dust as it contains more negatively charged molecules

Heavy metal removal

The removal of heavy metal ions from aqueous solution depends on the reacting time.
Cd^{2+} removal

Table 2: Variation of Cd^{2+} concentration with time.

Time (minutes)	Concentrations of Cd^{2+} (ppm)	
	After adding banana peel dust	After adding banana peel plastic dust
15	0.210	0.174
30	0.182	0.123
45	0.150	0.098
60	0.118	0.080

According to the Table 2 an increase in reaction time has increased the amount of absorption of Cd^{2+} by both banana peel dust and banana peel plastic dust. However plastic dust has absorbed more Cd^{2+} than the banana peel dust.

Table 3: Variation of Ion exchange capacity with time in Cd^{2+}.

Time (minutes)	Ion Exchange Capacity (mmol/g)	
	After adding banana peel dust	After adding banana plastic dust
15	0.12899	0.14500
30	0.14144	0.16768
45	0.15567	0.17880
60	0.16991	0.18681

As shown in Table 3 banana peel polymer dust contain higher ion exchange capacity than the banana peel dust. It can be considered that banana peel plastic is more efficient than the banana peel dust in Cd^{2+} ion removal from industrial waste water. The exchange capacity is increased in both materials as the reaction time increased.
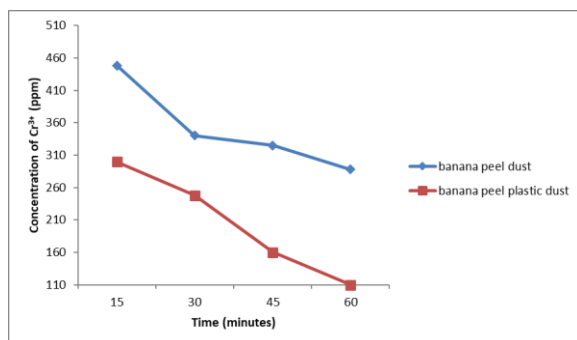
Cr^{3+} removal

Figure 4: Variation of Cr^{3+} concentration with time.

Banana peel plastic dust absorbs more Cr^{3+} ions than the banana peel dust according to the figure 4. Absorption rate is increased as the reaction time is increased in both materials.
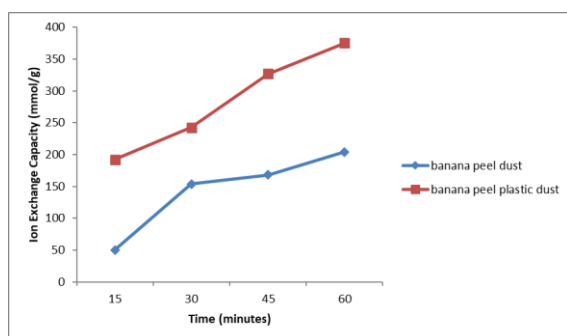

Figure 5: Cr^{3+} metal uptake capacity on banana peel dust and banana peel polymer dust as a function of time.

As shown in figure 5 banana peel polymer dust contain higher ion exchange capacity for Cr^{3+} than the banana peel dust. The exchange capacity is increased in both materials as the reaction time increased. It can be considered that banana peel plastic is more efficient than the banana peel dust in Cr^{3+} ion removal from industrial waste water.

Biodegradation in banana peel

The banana peel plastic piece which was buried in the soil initially showed a slow biodegradation. After some days it become rapid, most probably due to the high microbial activity in soil.
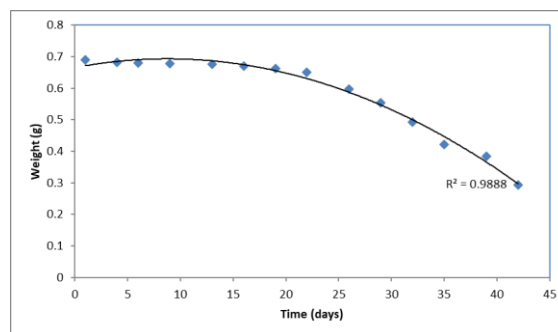

Figure 6: Weight change of banana peel plastic with time

According to the figure 6 weight of banana peel plastic piece has decreased rapidly with time. Initial 20 days show a slow biodegradation and after that the degradation process becomes more rapid due to the optimum microbial activity in the soil.

Banana peel plastic can be used in removal of cationic pollutants such as dyes and heavy metal pollutants from waste water effluents.

So, it can be used more efficiently in waste water purification (especially in industrial waste water purification). Because the banana peel plastic absorbs considerable amount of cationic heavy metal pollutants and cationic dye pollutants. Hence, this bio plastic can be used in industrial waste water purification as an ion exchange material and as a dye removal agent. These chemical applications can be considered as one of the end-of-life options of the banana peel bio plastic. Banana fruit peel is a waste material rich in starch and cellulose. And also, it is a common food all over the world. Heslop and Schwarzacher (2007) reported that annual banana production exceeds 100 million tons and it is a staple food across the Asian, African and American tropics.

CONCLUSION

Banana peel plastic can be used in removal of cationic pollutants such as dyes and heavy metal pollutants from waste water effluents. So, it can be used more efficiently in waste water purification (especially in industrial waste water purification). Because the banana peel plastic absorbs considerable amount of cationic heavy metal pollutants and cationic dye pollutants.

Hence, this bio plastic can be used in industrial waste water purification as an ion exchange material and as a dye removal agent. These chemical applications can be considered as one of the end-of-life options of the banana peel bio plastic.

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SUSTAINABILITY EDUCATION: PERSPECTIVES OF SRI LANKAN SCHOOL CHILDREN ON THE DEPENDENCE BETWEEN HUMANS AND THE ENVIRONMENT

Liyanage T. I. S.

Abstract

Many research data reveals that over the past 20 years, Sri Lanka has had one of the highest defor31estation rates of primary forests in the world. Natural disasters have been ubiquitous due to detrimental activities of humans. Waste management, conserving fauna & flora, garbage disposal, protecting the cost, balancing the atmosphere have become challenges and attempts have failed due to uncooperative attitude and egoistical behavior of the individuals. Many countries of sustainable living, point out that education system of a country plays a major role in driving the society towards being conscious and ecofriendly. The study here aimed to investigate on the present attitude of school children on the dependence of humans on the environment and identifying the ways which their paradigm could change towards the sustainable living. Data were gathered through a closed ended questionnaires, which was designed to obtain information on attitude and perception of sample respondents (1000 school children of junior secondary level and 100 teachers) based on the determinants identified from the literature review. Findings of the research revealed that cognizance of school children on the dependence of humans on the environment are lacking. Schools curriculum does not generate individuals blended with the nature and value the sustainability. The incongruity of the attitude leads to more number of individuals in the society, deteriorate the surrounding they live. Thus, all the stake holders; governing bodies, educationists, environmentalists must all endeavor an action plan to transform pivotal knowledge into conscious action so students can become catalysts for future evolution.

Keywords: Sustainability, Environment, Perception, Education, School Children

The problem and its background

1.1   Introduction

Waste management, conserving fauna & flora, garbage disposal, protecting the cost, balancing the atmosphere are considered as some of the important environmental outlooks which are needed to be aware of individuals' any society. The obliviousness of these factors could lead to many environmental hazards which are harmful to the healthy living of mortals. Recent decades in Sri Lanka these problems have become recurrent leading to many health and environmental issues. Spreading of dieses and facing many natural disasters are being frequently experienced by the individuals' in the society leading to many economic drifts of the country. It is evident from many articles and incidents that the community in Sri Lanka has been practicing a lifestyle with a least concern on being sustainability style of living. The Sri Lanka is move forwarding with the modern developments and complex technological advancements with a least concern of the environment. Many media documentaries reveal that the Sri Lankan community is becoming self-centered and is being constantly neglected about the protecting the natural habitats but be more concern about the commercial value of them. The water falls, forests, lakes, ponds and other natural habitats are being constantly polluted with many non-biodegradable

wastes, garbage and chemicals. The trees are being cut down in an irrepressible manner. Illegal and unauthorized sand mining, excavation of rocks, reclamation of marshy lands have become ordinary activities. At the same time the campaigns based on protecting the environment and ensure the sustainable living are very infrequent. Many attempts have been made by the governments who came to power in Sri Lanka to bring up a sound explication to minimize the problems, but inadequate. When it is concerned with the international scenario, both developed and developing countries who are successful in this context, points out an important aspect regarding the transforming the society towards the sustainable living through an attitudinal change among the persons in the community. According to their (United Nations and other International bodies) point of view, education and training system play a major role driving the individuals in a society to wards being ecofriendly and achieving the goals through that. According to the articles published by UN, the education could play a major role in generating the awareness and making an attitudinal change on driving individuals toward being eco living. It is recognized as an essential element of one's life to be conscious about the environment that they live and this could lead to a conducive life style. One of the major fact pointed out at the United Nations (UN) Conference on Environment and Development in Rio de Janeiro, Brazil (1992) was

that for people to live in a hazardous free environment they have to be mindful about the surrounding that they live.

According to the sustainable development goals set by year 2030 in UN conference the schools are to be organized to give educational program and organizational culture, in a manner that environmentally conscious global citizens are produced to the world. Sustainable learning environment creates individuals who would make the planet earth prosperous place where the future humans could live peacefully. UN has emphasized that educational development and sustainable learning environment are two aspects which cannot be separated. In other words, the individuals could be developed from an education system mainly by creating a sustainable learning environment for them. Students spend majority of their day in a school during their most vibrant developmental ages. In this time of progressive ages, schools must be a place for creative thinking, a source of inspiration, and a starting point for developing a sense of awareness and responsibility. Since recent past the Sri Lanka was endowed with rich fauna and flora and ranked as the country with the highest biodiversity per unit area among Asian countries for flowering plants and vertebrates except birds Sri Lanka with its rich culture and roots of ancient civilization has shown substantial evidences of application of modern sustainable environmental and resource utilization concepts and theories in ancient periods. The role played by Sri Lankan traditional environmental ethics on conserving the biodiversity in ancient times was immense (Senevirathne, 2014). In a historical back ground of sustainable living, the present day Sri Lankan community has become vulnerable nation and facing the impacts of the nature more frequently as disastrous outcomes. The country faces many environmental threats such as landslides, draught, floods, air/ water/soil pollution, drought, intoxicated fruits and vegetables, endemic diseases and many more. Under Sustainable Developmental Goals, it is a set of seventeen aspirational "Global Goals" born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. SDGs are a set of universal goals that meet the urgent environmental, political, and economic challenges facing our world. Many countries including Sri Lanka has given high priority on development agendas are now focusing on Sustainable Development Goals and how they will improve lives while protecting the planet over the next fifteen years. Over the past 15 years (1990-2005), Sri Lanka has had one of the highest deforestation rates of primary forests in the world. In that period the country lost more than 35 percent of its old-growth forest cover, while total forest cover was diminished by almost 18 percent. Worse, since the close of the 1990s, deforestation rates have increased by more than 25 percent (Mongabay, 2006). Many lives have been lost and effected due to improper garbage disposal such as Blumandal disaster occurred in year 2013.

The aim of the research is to investigate the attitude of school children on sustainability and the nature of practices being implemented at the current school culture regarding the eco concepts. The specific objectives of the study are to identify attitude of the school children; the ongoing programs and their effectiveness; the gap between these programs; their effectiveness towards attitudinal change within school children of Sri Lankan Education system.

The research problem is to identify why individuals in our society have less concern about the environment, what are the attitudes and skills the school children need to improve towards sustainability and how these attitudes could inculcate through the system of education and transform to the society.

1.2 Significance of the research

Foundation for Environmental Education (FEE) is the world's largest environmental education organization with members in 77 countries. Through their five innovative schedules, they empower individuals to take meaningful and purposeful action to help create a more sustainable world. For a quarter of a century, the Eco-Schools program has been engaging young people in taking positive actions that transform their lives. At the beginning in a few European countries, the program has expanded to effect change in some 59,000 schools in 68 countries across the globe. According to UNESCO and UN Environment as a world-leader within the fields of Environmental Education (EE) and Education for Sustainable Development (ESD), the Eco-Schools program is not just an economic model to lower costs, it is also a humanistic model that places the students and stakeholders at the center of a process of change towards sustainability, connecting them to the real issues in their communities. Their focus group is the school children and the tool is the education system. Among the countries which are actively participated their school children in these eco activities and it is obvious fact that Sri Lanka is not yet a member of it. This gives a clue that we are still not in a precise practice to drive our nation towards the sustainable living. Findings of this study aims an eye opener to the governing bodies, stake holders, educationists, teacher and parents on importance of sustainable living for the development of the society. This study not only reveals that, where has been gone wrong but also light to path for the attitudinal change within the community to reduce the gap between humans and the natural environment. Teachers have more opportunities to devise unique learning opportunities

and students benefit through increased participation and productivity and improved problem-solving and critical thinking skills. Sustainable schools are the teaching tool that bring together environmental education and community engagement. These collaborative activities inspire all members of the school community, which creates a culture of continuous learning, growth, and development. This study would significantly be an initiative to produce individuals with positive attitudes towards the environment. Children who grow and protect plants, do not pollute and waste water, reduce, reuse and recycle non biodegradables, do not litter senselessly, do not harm other animals would make a better society. This study could be used as an indication the leaders and stakeholders where we are and what to be done to protect and develop our country.

1.3 Objectives of the study

1. Identify the attitude and the awareness of junior secondary level school children towards sustainability.
2. Recognize the practices which are being conducted by schools in Sri Lanka to make the students are to be ecofriendly.
3. Point out the inadequacy of current practices and their effectiveness on driving the whole school community, towards sustainability.
4. Use the findings of the study as an eye opener to the responsible parties such as the leaders, educationists, curriculum designers to drive the children towards ecofriendly living style.

1.4 Definitions - Sustainability for Education

"Education for sustainability develops the knowledge, skills, values and world views necessary for people to act in ways that contribute to more sustainable patterns of living. It enables individuals and communities to reflect on ways of interpreting and engaging with the world. Sustainability education is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through informed action. Actions that support more sustainable patterns of living require consideration of environmental, social, cultural and economic systems and their interdependence" (Australian Curriculum, 2000).

2.0 Review of literature

Sri Lanka rapid post disaster needs assessment (PDNA) report (2017 by the ministry of disaster management states that has the effects of floods and landslides in 2017 confirmed the increasing impact of climate related disasters in Sri Lanka coupled with haphazard human development activities. It further specifies that high impact disaster events are occurring frequently since 2011 which on average affect more than 1 million people annually. According to this report both floods and landslides are closely related to land use practices and the pressure of human activities over sensitive areas such as ad – hoc development practices including construction of houses and other infrastructure, roads and water systems and deforestation for agriculture. According to information from the five most affected districts, cost of the effects of the May 2017 floods and landslides (damages and losses) sum up to LKR 70 billion. Poor patterns of land-use and practices have been highlighted by communities and professionals as factors that significantly aided the impact of the disaster. Communities attribute many landslides in Kalutara District to uprooting of rubber plantations to provide raw material for MDF manufacturing and conversion of forest land for tea cultivation in other areas. In Matara District, unstable river banks, which are a result of sand mining, resulted in the uprooting of Bamboo bushes along the banks by the force of flood waters, which help in blocking path of the river in many places. (Rapid PDNA report, 2017 PP.42).The factors above point out two important aspects as the summary, one aspect is that the impact of natural disasters in Sri Lanka has become more frequent and sever in the recent years. The second important fact is that the improper human activities have been mainly caused for the severity for all the disasters occurred in the recent past.

Chathumani, D., Wickramasinghe, D., Gunarathna, I., (2019). The collapse of Meethotamulla garbage dump was one of the most devastating man-made environmental events in the history of the country. The event is a significant eye opener for environmental hazards in Sri Lanka that has brought about changes in attitudes and practices both in the communities as well as in the government. One important aspect of solid waste issue in the country is attitudes of the communities when the government took a decision to look for alternative sites and move solid waste dumping sites away from the cities to suburbs or remote areas. The mind-set of the people, in general, seems not to accept garbage from elsewhere to their residential areas.

"All new schools...should be models for sustainable development: showing every child in the classroom and the playground how smart building and energy use can help tackle global warming...Sustainable development will not just be a subject in the classroom: it will be in its bricks and mortar and the way the school uses and even generates its own power" (UK prime minister- Tony Blair (2004).

"Education is a foundation for sustainable development. Not only doe's quality education, especially for girls, help to improve health and

livelihood outcomes, it also contributes to active and informed global citizens. Educating the next generation of leaders about the importance of protecting our environment and combating climate change is a key investment for a sustainable planet and future for us all" (Ted Turner, Founder and Chairman, United Nations Foundation, (2015).

The benefits gained through the sustainability program are formulated by Stanford University in UK (Annexure3)

3.0 Research Methodology

This research is a survey study that focuses to identify the attitude and the awareness of the junior secondary school children towards the sustainability and live an ecofriendly life style. The method used in this research is a qualitative method and focused on school children of lower secondary level (Grade 6 to 9) of different school types located in Colombo district. Age range from 12 to 15 who are studying in grade 6, 7, 8, 9 classes twenty to twenty five students from each school chosen from the grades mentioned above to a maximum of one thousand students. In addition, to get some extra knowledge on the current practices related to the main theme of the study, information gathered from the teachers. A sample of hundred teachers are from the same schools selected as additional participants of the study. The main instruments of the study was an attitudinal survey questionnaire on environmental awareness self-assessment that given to junior school students. Questioner was developed based on the knowledge gained from the past studies to gather level of attitudes of school children on sustainability practices. This was a twelve-item researcher made survey divided into four sub-parts to determine the mean attitude of students towards the sustainability living based on eco concepts such as littering, recycling, plant trees and conservation of energy (Annexure 1). A separate questionnaire was developed to be developed for the additional group focused in this study (Annexure 2).

3.1 Method of Analysis:

All collected data subjected for analyses using excel data sheet and employed to quantify the data and to answer the problem set for the study. Descriptive statistics such as frequency count and percent distribution, correlation was used to describe the respondents' profile. It is expected that the structured questionnaire makes it convenient for respondents to choose the most suitable answers under each variable. This would avoid generating a large amount of heterogeneous information and the measurement of the level of attitude towards each variable. Piaget (1936), explained that from about 12 years children can follow the form of a logical argument without

reference to its content. During this time, people develop the ability to think about abstract concepts, and logically test hypotheses. This stage sees emergence of scientific thinking, formulating abstract theories and hypotheses when faced with a problem. Since the understanding the conceptual facts and practical applications are much convincing with this age group, was the main cause for choosing the junior secondary level students in this study.

3.2 Key Variables

Based on literature review a sets of key variables were identified in this study. Littering waste appropriately Consumption of recyclable objects, Plant trees, Reduce, Recycle, Reuse, Act to stop global warming. It was expected that the structured questionnaire makes it convenient for respondents to choose the most suitable answers under each variable. This would avoid generating a large amount of heterogeneous information.

3.3 Limitations of the research

This study aimed to investigate a problem related to a vast environmental impact made by people in Sri Lanka. As the school children can be categorize as a micro population which reflects the factual image of a society the main target group was them. Even though there more than ten thousand schools in Sri Lanka with a greater variation among the students' attitudes and sustainable practices the survey has to be limited to the Western province of Sri Lanka, mainly due to a few practical problems such as time consideration and cost of field investigations faced by the researcher. Therefore the study was planned to conduct only in twenty schools of different categories as government, private and international, in the western province which many environmental issues recently occurred due to maladaptive practices of sustainability living.

4.0 Survey findings and data analysis

4.1 Introduction

On the basis of the information gathered from the research, a demographic analysis was conducted to summarize the perception of the respondents' awareness of and accountability on sustainability practices. Microsoft Excel package for windows used to do statistical calculation and data analysis. A detailed analysis of the findings are illustrated in the table and the graph below.

Table 4.1 Percentages of student's responses for question one to twelve in the questionnaire

questions	q1	q2	q3	q4	q5	q6	q7	q8	q9	q10	q11	q12
NO	62%	80%	58%	98%	95%	96%	93%	59%	87%	34%	89%	57%
YES	38%	21%	43%	2%	5%	4%	7%	41%	13%	66%	12%	43%

First step of the survey was to investigate the level of perception among the students about the sustainability practices and the knowledge of the concepts. Questionnaire targeted on assessing their awareness on four sustainability aspects.
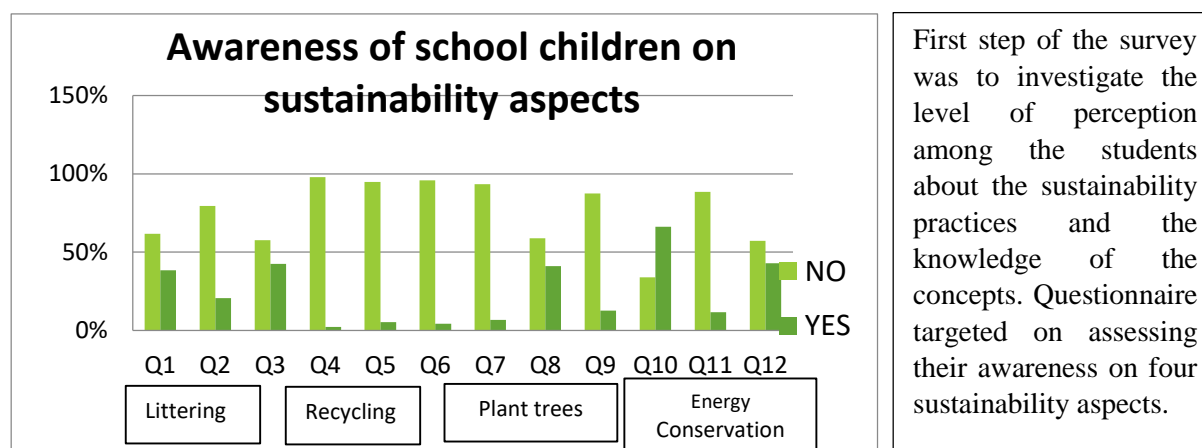
Figure 4.1 Graphical illustration of students' responses over sustainability aspects

Form the graph above it is clear that the 1000 students responding to the questions whether they aware of the sustainability practices only a small percentage had replied positively. Majority of the students had replied negatively. This reveals that there is a huge gap in the awareness of sustainability aspects and their conceptual meanings. This can be further explicated using the chart below which was built on the percentages of responses to the question no. 1 (Annexure 1).

4.2   Analysis of data

4.2.1 Questionnaire 01 – (student) Question 1.

Do you know why litter is separated as food waste and polythene/plastics and collected?
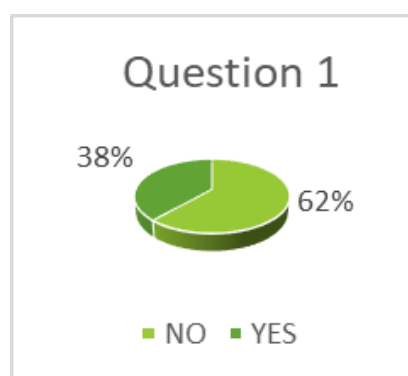
Figure 4.2 Awareness on Separation of litter

Only thirty eight percent of students had replied positively to this question and 62 percent of students' awareness on collecting garbage was negative and they were not aware of purpose of collecting litter separating as food waste and non-bio degradable. The pattern of responses for other four key aspects were also showed a similar pattern. At the same time a correlation between the knowledge and practice was also observed in further statistical analysis of the results and it is illustrated in the table 4.2 below.

Table 4.2 Correlation between conceptual knowledge and sustainability practices

Correlation

	CON	PRAC
CON	1	
PRAC	0.845068	1

Correlation between the awareness of sustainability aspects and practical application of sustainability measure is very close to 1 (0.845). Therefore it can be observed that the practical application is highly correlated to the knowledge on concepts.

Accordingly that there is a high probability that the students who are aware the concepts considered in the study (littering, recycling, planting trees, conservation energy) adopt the measures practically.

Table 4.3 Survey on teacher's perception over sustainability practices of education

QUESTIONS	Q1	Q2	Q3	Q4
YES	0%	85%	24%	11%
NO	100%	15%	76%	89%
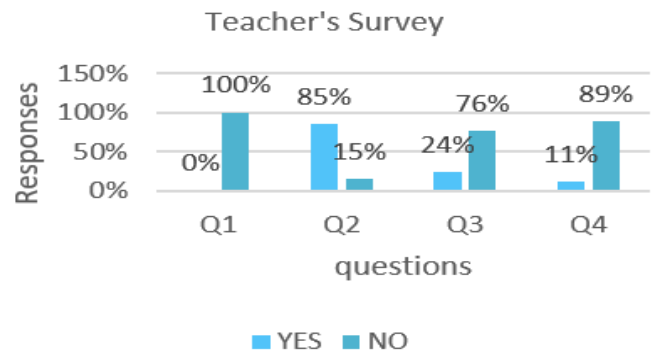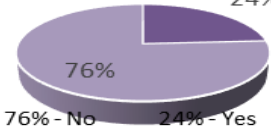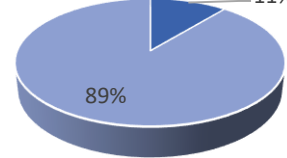
Figure 4.2 Graphical illustration of teachers' responses over sustainability aspects

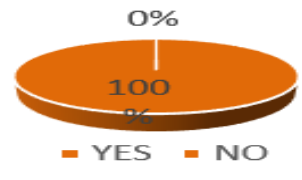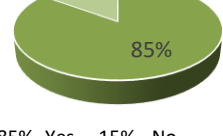**Table 4.4 Teacher's questionnaire and the summary of findings**

Q1	**Does your school has any environmental protection facilities such as solar energy, air power source and reclaimed water treatment to save energy?** *The teachers' response to question 1 reveals that none of the schools which the students' survey was conducted is having any environmental protection facilities such as solar energy, air power source or water treatment facility.*	
Q2	**Does your school has formed eco clubs or any other societies related to sustainability?** *As the answer to this question, 85 percent of teachers responded that they have eco clubs in their schools.*	
Q3	**Are you satisfied with the students' active participation on ecofriendly activities conducted by the eco clubs in your school?** *The teachers' response for this question was that the majority of them (76 percent) were not satisfied with the active participation of sustainability practices of the existing eco clubs and societies of the school.*	
Q4	**Do you think that our educational curriculum support guiding the children towards sustainability?** *89 percent of the teachers' response was negative and accordingly they majority of their idea was that the educational curriculum does not support the children perspectives to drive towards the sustainability.*	

5.0 Conclusion and Recommendations

From the results of this study, it is revealed that the perception of Sri Lankan school children towards sustainability is at considerably low level therefore their awareness on the dependence between human and the environment is at a ground level. Also the correlation analysis reveals that there's a high probability that the students who are aware of the concept adopt the measure practically. From these two findings it can conclude that the attitude and the awareness of junior secondary level school children towards sustainability at a very low level and both conceptual awareness and practical exposure of the concept would enhance their perception on the dependence between the human and the environment in a much meaningful manner.

From the teachers' survey it is revealed that the schools setups are not implementing any effective methodologies such as solar systems, bio gas plants, waste management systems or any water consumption methods. Their responses also revealed that the school curriculum does not fully address the real-world experiences to the students through the curriculum and the eco clubs in the schools. Therefore from the findings of the study it can be recommended that incorporating sustainability to the educational practices can be the possible improvements in learning, motivating and active participation of students towards Eco friendly life style.

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Annexure: 01

Questionnaire for students

Total no of participants – 1000

Theme	Questions	yes	no
Littering	1. Do you know why litter is separated as food waste and polythene/plastics and collected?		
	2. Is litter a concern to you?		
	3. When you are out and need to dispose trash. If a bin is not available, do you put it your pocket until you find a proper disposal?		
Recycling	4. When you choose pencil case, bag do you think of recycling of any of them?		
	5. Do you think choosing a recyclable water bottle can make a difference?		
	6. Have you got any live experiences of how the recycling is done?		
Plant trees	7. Have you ever planted a tree in your life		
	8. Would you like to plant trees?		
	9. Have you got any opportunities to plant trees in your school or at home?		
Energy Conservation	10. Do you know what is meant by conservation of energy?		
	11. Do you regularly switch off lights, fans when you are not using them?		
	12. Would you like to use public transport as a solution to conservation of energy?		

Annexure: 02

Questionnaire for teachers

No of Participants 100

1. Does your school has any environmental protection facilities such as solar energy, air power source and reclaimed water treatment to save energy?

    Yes -   No   -

2. Does your school has formed eco clubs or any other societies related to sustainability?

    Yes –   No –

3. Are you satisfied with the students' active participation on ecofriendly activities conducted by the eco clubs in your school?

    Yes -   No –

4. Do you think that our educational curriculum support guiding the children towards sustainability?

    Yes –   No –

Table 1: Benefits of Implementing a Whole-School Sustainability Program

STUDENTS	SCHOOLS	PLANET
98% of studies conducted by Stanford University revealed a positive impact as a result of environmental education.	Sustainable schools use 33% less energy and 32% less water than conventionally constructed schools.	Sustainable schools are designed to act as living laboratories to teach and embody eco-friendly initiatives that reduce our environmental impact.
Sustainable schools with natural light sources reported significant increases in test scores, and progression in reading and math.	Sustainable schools save, on average, $100,000 per year on operational costs.	Sustainable school buildings are constructed with eco-friendly materials that decrease the reliance on fossil fuels, thus reducing carbon emissions.
Studies reported students were able to equally engage in environmental education regardless of where they fell on the intellectual spectrum.	Sustainable schools reduce absenteeism, improve health of students and staff, and increase indoor air quality. One study reported a 38.5% reduction in asthma, the number one reason for student absences in the United States.	Green roofs last 30-50 years longer than typical roofs, reducing the amount of waste produced from more frequent replacement.
Studies reported increased student participation and engagement in class.	Sustainable schools receive direct and indirect savings from increased efficiency, higher teacher retention, and lower health costs, saving about $70 per square foot, 20 times higher than the initial "greening" costs.	Sustainable schools offer more opportunities for outdoor and hands-on learning, which inspire the next generation of environmental stewards.

Source: https://www.greenschoolsalliance.org/why

WHEN THE KILLER IS A WOMAN: DEPICTIONS OF THE FEMALE SUICIDE-BOMBER

Sureshika D. Piyasena

Independent Researcher, Sri Lanka

ABSTRACT

This essay delves into the representations of suicide bombers of the LTTE (Liberation Tigers of Tamil Eelam) in Fiction and in cinema. The essay analyses how they are located within existing gender and cultural norms with reference to martyrdom, gender and sexuality. The discourse surrounding female suicide bombers tend to get attached to notions such as sacrifice, sexuality, marriage and filial devotion, despite the woman stepping into a world of war and destruction which is considered a male sphere. This essay is based on the female suicide bombers in the novels: *Island of A Thousand Mirrors* by Nayomi Munaweera (2011), and *Tigers Don't Confess* by Visakesa Chandrasekaram (2011), the plays: *Forbidden Area* by Visakesa Chandrasekaram (2000) and the play *Thin Veils: In the Shadow of the Gun and The Wicked Witch* by Sumathy Sivamohan (2003), Sinhala movie: *Kalu Sudu Mal (Colourless Flowers,* 2002*)* directed by Mohan Niyaz, the documentary *My Daughter the Terrorist* (2006) directed by Beate Arnestad, Tamil movie *Kannathil Muthamittal (A Peck on the Cheek*, 2002*)* directed by Mani Ratnam*,* The Hindi movie *The Terrorist* directed by Santosh Sivan (1997), the political autobiography *Like Myth and Mother* by Sumathy Sivamohan (2008), and the short story "Appointment with Rajiv Gandhi" by Charles Sarvan (1998).

Keywords: Female martyrs, Gender, Representation, Sexuality, Suicide bombers

1. Introduction

This essay analyses how suicide bombers of the LTTE (Liberation Tigers of Tamil Eelam) in Sri Lanka are engendered in fiction and in cinema and how they are located within existing gender, religious and cultural norms. The discourse surrounding women militants and female suicide bombers tend to get attached to notions such as sacrifice, marriage and filial devotion which I have discussed in a previous essay. In this essay I will focus on gendered suicide, martyrdom, and sexuality.

Between murder and suicide, the latter is more inconceivable than the former, but both these aspects amalgamate in the figure of the suicide bomber. The LTTE could claim the use of the highest number of suicide bombings until overtaken by Palestinian groups in 2003 (Bloom 60). Between July 1987 and February 2000, the LTTE carried out 168 suicide terror attacks in Sri Lanka and India (Schweitzer 78). Michael Roberts calls suicide bombers "precision bombs" (2005a, 497) because they can reach the target with more precision. In the documentary *My Daughter the Terrorist* (2006) which is based on two women suicide bombers, one of them being Dharsika says, "Even one person alone can destroy a big target. You must have self-determination and courage for that. And also be able to do what the leader says… We have training for that." Rohan Gunaratne too acknowledges this when he says; "One suicide bomber can have a profound effect on the political, military and economic contexts, especially in peace-building situations" (2000).

The use of suicide attacks emerged "at a time when there were several opposition groups competing for leadership of the Tamil community" (Bloom, 44). By having followers of the group sacrificing themselves thus, the group could gain prominence among the Tamil community as well as reaffirm its power. "The spectacle of a suicide bombing is a way in which violence is used to mobilize and radicalize the polity" (Bloom, 44).

The negative psychological impact of a suicide bombing is also part of the goal of the perpetrators even more so than the death of the targets. They require no escape plan and there is no fear of being caught and interrogated afterwards.

'The Black Tigers' which was the suicide bomber squad of the LTTE maintained an utmost level of secrecy. Even after been selected for a mission, only Prabhakaran, the trainers and members of the Black Tiger intelligence wing knew the identities of the bombers (Swamy, 2003, 235). Although her "subjectivity is unavailable to the public before her death, she becomes the object of literary and visual portrayal, public speculation and fascination" (De Mel, 2007, 192). As there are only very few publicly available interviews or personal

accounts of Black Tiger women, it is the representation of these women in fiction and film, which creates the image of the female suicide bomber which is the only representation available for society. This raises the question of "Subaltern representation" – but can "the suicide bomber who also expropriates other people's voices by her violent action" be termed subaltern in the first place? (De Mel, 2007, 200). Due to these complexities, it is not so important nor is it possible to analyze if these representations are true but to locate the sites of power and speech which produce her for the public (Abu- Lughod, qtd. in de Mel, 2007, 200) and which stereotypes these texts enforce or which ones they try to break away from.

2. Gendered Suicide

Militarism is a gendered project. Charny points out how these organizations, especially the LTTE and PKK exploited women's desire to prove themselves as equal to men. Since women feel they are physically weaker than men, they opt for suicide to make up for this lack at the battlefront. However as reported to Amy Waldman, Thamilini, "rejected any comparison with Palestinian Suicide bombers, who she suggested are more often dejected." She also added that, "People dejected in life won't be able to go as Black Tigers. There must be a clear conception of why and for what we are fighting. A deep humanitarianism is very necessary – a love of others, for the people" (qtd. in Charny 21).

Tigers Don't Confess posits the reasons for revenge and suicide as mental health issues and as consequences of torture and injustice. Pushpa who is arrested and tortured in custody, kills everyone who was involved in his court case. Dr. Nadesan says with regards to Pushpa, "Yes, pretty much every day he needs to take medication…I guess he found a therapy - revenge killing, if that helps him - I don't know" (195). Revenge and mental health issues are very often seen as reasons for suicide bombings, but these are very often attached to women rather than men. In the novel, Shalini is a woman who seeks revenge due to her rape and murder of her parents during the 1983 riots. Pushpa's presence in the novel "dismantles the dominant notion that *only* women are inspired into militancy by personal grievances" (Ransirini). Both women in *My Daughter the Terrorist* are also portrayed as opting for a militant life because of personal grievances.

Women are often chosen for suicide attacks, as they attract less suspicion and can easily get closer to the target. This choice is made very evident in the play *Forbidden Area* by Chandrasekaram. The play depicts for us Urmila, a woman cadre of the LTTE, who is waiting with her escort Raman, for the right moment to carry out her suicide mission. Among the three characters of the play, it is Urmila who has to blow herself up and not Raman or Supremo: the leader of the liberation organization. It is made evident that Urmila was very faithful to the cause unlike Raman and therefore it would have been more appropriate for Supremo to assign the task to Raman as his life is worthless to the movement, but he does not.

In all three texts, "Appointment with Rajiv Gandhi," *Kalu Sudu Mal (Colourless Flowers)* and *Forbidden Area,* the three female suicide bombers Dhanu, Nirmala and Urmila respectively can get closer to the targeted person as she draws less suspicion. Using women to fool the enemy has been a ploy used by the LTTE for a long time. Why is it that a woman generates less suspicion? Is it because of the assumption that she is by 'nature' kind, loving and peaceful and would not be involved in such activities? Why is it so easily assumed that women will not be part of a struggle in which civilians are rising up against a government*?*

These notions also go hand in hand with the notion that a woman is not expected to destroy life as she is by nature a life giver. It is possibly this attitude, which made Rajiv Gandhi say "Relax. Take it easy" (Sharma 39) to the woman constable Anusyua, who wasn't allowing Thenmuli Rajaratnam (alias Dhanu) to come closer to him. As a result, these became the last words of Gandhi's life. "According to the eye witness account, while bending the woman assassin smiled at Anusyua" (Sharma 39). No one will know for sure what this inscrutable smile meant. The narrator's opening speech in the play *In the Shadow of the Gun* by Sumathy recalls the female suicide bomber in "Can you hear her explode in a laughter of love, Into tiny smithereens of atom, the suicide bomber (12).

In the Sinhalese movie *Kalu Sudu Mal (Colourless Flowers)* the two suicide bombers, Nirmala and Dilip, are given a house in Colombo to live in before they carry out their mission. While they are living there, their neighbour's dog creeps into their house and Dilip kills it as he feels that they should not interact with any of their neighbours. A review by Bakr of *Kalu Sudu Mal (Colourless Flowers)* questions this scene as to why the dog wasn't simply returned to the neighbor. The intention however of including this scene was not only to show how aloof the couple wanted to be but also to show that Dilip was unnecessarily being violent. The movie through this scene tries to show how Dilip is trying to be a harsh and strong male under the burden of masculinity. His cruel role gives him much worry and restlessness afterwards. Nirmala tells him to stop being a hero in the scene in which they are practicing to shoot on the beach. This is a contrast to Nirmala's reaction, which shows her in a more humane light

even though she is ready for the deadly suicide mission. In contrast to Dilip she is very docile. However, his exterior machismo cannot be kept for long as his conscience keeps bothering him and it is she who tells him that they have to be strong and complete the mission.

Bakr's review of the movie criticizes Niyaz for casting Yasodha Wimaladharma in a minor role and giving the role of the suicide bomber to Dilhani Ekanayake. It could be that some of the explicit scenes in the movie would have limited his choice of an actress who would take up this role, as well as the controversial nature of the theme of the movie being one of the first Sinhalese movies to deal with suicide bombers and one which tries to empathize with them. It is well known that this theme kept many actors and funding agencies away from this script. It was only five years after the script was written that the National Film Corporation decided to finance the film (De Mel, 2002). The casting of the actors such would have also been a result of the image of a suicide bomber in the mind of the director.

There are contradictory reviews of Dilhani Ekanayake's performance in *Kalu Sudu Mal (Colourless Flowers)* who is known to be a good actress. According to Neloufer de Mel "Nirmala is portrayed in the film extremely skillfully by Dilhani Ekanayake" (2002). While De Mel appreciates this portrayal for the fact that it shows us "that humanity can live side by side with militancy" (2002) viewers such as Bakr are quite puzzled as to why Dilhani Ekanayake could not do justice to this role. This dissatisfaction comes from the image in mind of a suicide bomber as ruthless and aggressive. It is partly the fault of the script which does not explain to the viewer why particularly Nirmala and Dilip were chosen for this deadly mission, except for the fact that their past records were considered, and neither do we get an insight into their personal lives.

Nirmala's reaction to her pregnancy in *Kalu Sudu Mal (Colourless Flowers)* is a sharp contrast to Malli's in the Hindi movie *The Terrorist.* Nirmala says that she got more strength for the mission once she realized that she was pregnant and says, "If I can sacrifice my life, let my child also sacrifice its life for the movement." It is Dilip who convinces her that as a mother she should know to protect the life of her child and she gives into Dilip when he becomes violent and restless over the matter. His violent behaviour towards Nirmala, in a bid to convince her to let their child live, is ironic in the circumstances in which they are supposed to be violent to kill. In contrast Malli in the Hindi movie *The Terrorist* finds it difficult to choose between her roles as life giver to a new homeland and as life giver to the life within her. A further contrast to Nirmala is Dilip who changes everything about himself in preparation of

fatherhood. In this sense the film tries to show the burdens of masculinity to a certain extent.

There is also a tremendous change in Dilip after he gives up his macho image and makes love to Nirmala. It is similar to Urmila's condition in the play *Forbidden Area*, but none of the reviews of the movie objected to the fact that Dilip's change is due to his sexual encounter although this was a great matter of contention with regard to Urmila. This stems from gender stereotypes and reviewers also assumed that it is fatherhood which brings about this change in Dilip which shows that it is not only motherhood which is always an overbearing presence. Dilip stresses on the importance of the child after Nirmala gets pregnant but a close look at the movie and the characters show that his metamorphosis happens after he makes love to her for the first time. In fact, Neloufer de Mel protests that "Nirmala's pregnancy alone is not sufficient to convince us of how and why Dilip changes from self-contained, dogmatic, intolerant and sexist male to a man capable of jealousy, love and tenderness. If his internal crisis is produced by the stress of impending self-annihilation, we are not given a chance to witness that development, that deeply intimate moment in his character" (2002).

Nirmala's balanced characterization stands in stark contrast to Gauri who is absolutely cold-blooded and stands for the typical stereotype of a militant woman. Gauri's image undermines Nirmala's balanced portrayal. The movie shows empathy for the suicide bomber, but it does not adhere to the idea that women are always more emotional. The story line creates no sympathy for Gauri, through whom the message is very clear that women can be perpetrators of violence as well, and as manipulative and cruel in a political scenario. In fact, Gauri is responsible for the deaths of Nirmala and Dilip as well as Maya's fate.

Unlike Dilip who plays the strong ruthless male at the beginning of the movie, Raman is a character embedded with many 'feminine qualities' throughout the play *Forbidden Area*. His life is even more pathetic than Urmila's as he joined the movement by default and not even by conviction like Urmila. He feels guilty about having sex with Urmila in spite of boasting that he does "lots of forbidden things" (12). In fact, Urmila says to Raman, "I have never met anyone as sentimental as you" (13). It could be a possibility that he is not afraid to show what is termed 'feminine' qualities only because Urmila "is not going to be alive to tell…" as he says to her. In this vulnerable state he gets the space to expose what society has forbidden in a man. It is Urmila who should be sentimental as she is about to die but that is a 'forbidden area' for her and she takes on the role of the courageous 'heroine.'

The very first line "The day has come but its night" of the short story "Appointment with Rajiv Gandhi" starts the ominous mood of the narrative reminding us of the myriad paradoxes in this situation by the mere contrast and play of the words which denote darkness and light. It encompasses the paradox of the suicide bomber who is in a situation in which she must kill herself for freedom. "There is a powerful paradox in self-annihilation that is simultaneously regarded as life giving to a community" (De Mel, 197). Self-annihilation and the role of life giver would be more familiar to a woman than to a man. Besides isn't this what is expected of a woman anyway? The only difference is that a suicide bomber's self- annihilation is a much more ruthless one.

In *Militarizing Sri Lanka*, De Mel analyses how "the rhetoric of 'terrorism' shapes the way we can talk about the female suicide bomber or not, and how the grammar of security deployed by both the LTTE and the Sri Lankan state expropriate her voice" (192). "The secrecy that surrounds the LTTE suicide bomber makes her subjectivity available to the public only at the precise moment in which she is silenced and silences herself through her final act of violence" (De Mel 192). Although silent, her mutilated body, which is left behind speaks for her and for the movement she belongs to.

Kaushalya Perera states that women are given two cyanide capsules and the men only one (27). Bose too points out that women wear two "to symbolize their dual commitment to national liberation and women's emancipation" (108). Women need to wear two capsules to prove their commitment more than men and it also stresses how important it is for a woman to die rather than be violated by the enemy.

3. Secular Martyrdom

The naming of Prabhakaran's son as Charles Anthony shows that homage to the dead begins at a personal level with the leader himself and was a practice within the movement (Roberts, 2005a, 495). As Martha Crenshaw points out, "Unless martyrdom were *valued* by society or at least by a subculture, individuals would not seek it" (emphasis mine. Moser et al. 25).

Bose points out that "The cement that solidifies the national bond is also derived from the violence that Tamils themselves perpetrate, and the death they encounter and the 'martyrdom' they achieve while doing so" (122). Thereby martyrdom acts as a binding force within the movement. Sumathy calls it a "glorification of and preoccupation with militarism instead of militancy" due to martyrdom being the desirable end for women (2004, 129).

"The LTTE does not bury its dead, it plants them," to quote a LTTE leader (Schalk1997b). The fighter's body compared to a seed that grows again is a metaphor not for his physical and spiritual resurrection, but for his life being a source of inspiration for others. This 'plantation' is a confidential death ritual consisting of recitation of a special text called 'declaration at the sepulcher of the great hero.'

Unlike other militant groups such as the Hamas, the LTTE propagated a notion that their martyrdom is secular, and this therefore Rohan Guneratna points out that "The mindset of the LTTE suicide bomber is distinct from his or her west Asian counterpart" as he or she is motivated by her socio-political environment (2000). As Schalk points out, "The LTTE's main concept of heroism is the concept of *tiyakam*, 'abandonment' (of life)" (1997b).

Trawick too strongly feels that the LTTE is secular and has no religious underpinnings. The female militant Sita who is a Christian wears sacred ash on her forehead, which is a Hindu ritual and tells Trawick that there is no religion within the movement. Therefore, Trawick says that, "When one contrasts the secularism of the LTTE with the Buddhism of Sri Lanka, one concludes that while Sri Lankan violence may be spurred by religious fanaticism, the violence of the LTTE is derived from other sources" (160).

However, this secular rhetoric has religious underpinnings. Prabhakaran himself said that the dead cadres "will be *worshipped* in the *temple* of our hearts throughout the ages" (emphasis mine. qtd. in Bose, 120). A. J. V. Chandrakanthan points out how, "Hymns and devotional *bhakti* songs have been appropriated to celebrate the *yaga* (sacrifice) of the martyrs. There is prolific use of religious terms: martyr, renunciation, sacrifice, offering, self-immolation, self-gift, victim, grave, temple and shrine" (Wilson 170).

The LTTE consciously interprets suicide through cyanide in the situations mentioned as an act of *tiyakam* (abandonment). This kind of suicide is regarded as a death inflicted by the enemy. Especially Catholic cadres needed these distinctions to overcome scruples about this suicidal practice. Axel Michaels has pointed out that in Hinduism ritual suicide (for example by starvation) is not a stigma as it is in Christianity and Islam (qtd. in Hellmann-Rajanayagam, 2005, 114). Hellmann-Rajanayagam also points out that "planned death rarely features in classical ideology" but in LTTE poems images from Cankam and Bhakti literature are explicit (2005, 116). The *tiyakam* meaning 'abandonment' is not a suicide, but a gift of oneself, according to the LTTE.

It should be noted that from the terms *Thatkolai* in Tamil which means 'to kill yourself' and *Thatkodai* which means 'to give yourself', the Tigers use the latter term (Waldman 12). Due to this, Roberts says that the LTTE is not as secular as it claims to be ("Tamil Tiger Martyrs" 495).

We see Selvi, who was part of the LTTE, unconsciously battling against the symbol of a martyr in "Selvi's Revenge." "Unlike the tiger women whose familial devotion is replaced by a filial devotion to a fraternal community, Selvi embraces a 'sheltered' domesticity, and abrogates the virtues of martyrdom" (De Silva, 29).

The paradox of death as a final closure, as well as a new unfolding (David Clark 3) is acknowledged but more attention is given to what is to unfold out of the death. It is constructed as something which can be conquered. "Death has surrendered to them. They keep eagerly waiting for the day they would die" (Prabhakaran 1993 Black Tiger Day speech). Mellor points out how "...factors such as death can call into question the social constructed picture of reality" (14) but an over emphasis of death and a glorification of it will lead people to value their lives less.

Although the suicide bomber may symbolize selflessness and bravery for those who support the movement, for others it only reverberates disaster. Charny states that "…they represent the darkest forces of death masquerading as a legitimate way for solving the problems of the living" (17). Sumathy says in *Militants, Militarism and the Crisis of (Tamil) Nationalism* that the self-destruction of the suicide bomber is symbolic of the "nihilism" which Eelam has brought about for the Tamil People of Sri Lanka (25). Sumathy shows in her one-woman performance *Thin Veils* how women are categorized into two as "The life that is glorified or is not talked about; the stories that go unheeded and questions unanswered" (14). Dhanu is supposed to have volunteered for the mission to kill Rajiv Gandhi as vengeance of her rape by the IPKF. Therefore, the suicide is posited as a protest. The political underpinnings of this attack were obvious. They wanted to eliminate Rajiv Gandhi before the elections, which might have brought him back to power, to pre-empt a reintroduction of the Indian Peace-Keeping Force (IPKF).

4. Sexuality and Suicide Bombers

De Mel very rightly points out that the female suicide bomber is very often linked to her sexuality which is absent in the discourse concerning the male suicide bomber (2007, 199). Various "domains of speech coincide to cast the figure of the female suicide bomber in ways that sexualize her…" (De Mel, 2007, 193).

The purity of a woman's body is to be protected by any means and this idea is brought out very clearly in nationalist movements. The woman who opts for a cyanide suicide is seen as someone who is divine as she did not allow the enemy to rape her or 'pollute' her body. "The body becomes a site of power for production, violence and conquest" (Mangalika De Silva, 2005, 15).

In "Gendering Tamil Nationalism…" Maunaguru views suicide killings by raped women as an act of purification of the body of the woman. "A raped woman is considered one who has lost her chastity: the 'super virtue' of a Tamil woman… In other words, by killing Rajiv Gandhi, she not only tackles revenge against the enemy, but also performs an ancient purification ritual– the *agnipravsam* (immolation by fire)" (171). Sumathy referring to this argument takes this concept further by saying that the suicide bomber commits an act of purification of not just the body but of the "body of the land-nation" as did "Kannaki in the Tamil Epic, *The Lady of the Anklet*" (*Militants* 25). In *Island of a Thousand Mirrors*, the community sees Saraswathie as polluted after her rape. She has no choice but to join the LTTE and save her and her family's reputation.

The use of the name Urmila for the suicide bomber who indulges in sex before her mission is significant in the play *Forbidden Area*. This may be a reference to Urmila: a relative of Uma, who Swamy points out was the chairman of the nine member central committee of the LTTE (2003, 48). According to Rohan Gunaratne, Urmila Kandiah joined the LTTE after serving as a prominent youth wing member of the TULF and she became the first "female member" of the LTTE (1999, 110). An LTTE member complained to Prabhakaran that Uma was sleeping with a young female cadre called Urmila. Prabhakaran asked them both to leave the movement but Uma refused. Whether Uma and Urmila were having an affair is not clear in the first place because Balasingham requested the two to admit their affair and get married but they "insisted that they were being framed" (Swamy 2003, 54). Swamy has recounted that Prabhakaran spat on Urmila when she was brought to him and refused to apologize to her (1994, 70). "Prabhakaran also said that Rajiv Gandhi deserved to die at the hands of a woman" (Kaarthikeyan 75). These only highlight the attitudes of the LTTE towards women's sexuality.

In the play *Forbidden Area* the sexual is aroused by the divine. The day before the suicide mission, Urmila goes in search of a Kali temple but finds a Vishnu temple instead. It is only after seeing Lakshmi and Vishnu together that she gets "possessed by a kind of madness" (26) and then expresses her need for a sexual encounter with Raman.

In *Kalu Sudu Mal (Colourless Flowers),* the scene, in which Dilip first sees Nirmala in her night gown, makes it rather apparent that she is trying to get his attention. This role of the seductress is further carried out in her relationship with Chathura who they exploit to carry out their mission. Nirmala uses her body here again before using it to kill their target who is named Double X in the movie. Her body is deadly in more than one sense. Her body is also used to seduce the audience.

The woman's body is an object of desire and voyeuristic pleasure whether she is a suicide bomber or any other role that has been assigned to her by society. In the poem "Avargal Parvaiyil" ("In their Eyes") by Maunaguru written under the name of Sangari she says:

> They talk
> of chastity
> of Kannaki
> And while they
> talk so
> They keep on gazing
> at my body.
> (qtd. in Sumathy, "The Rise of
Militant Tamil Nationalism" 144)

Tambiah too makes a connection between the roles of the sex worker and the female militant when she says, "In Sri Lanka armed conflict, gender, sexuality, and sex work are intermeshed with militarized nationalism. Militarization entrenches gender performances and heteronormative schemes while enabling women to transgress these- whether as combatant or as sex workers" (2005, 243). Sexuality in both these roles for women are controlled and constructed in the interest of militarized national projects.

In *Like Myth and Mother* Sumathy writes:
> woman bearing arms!
> come hither!
> give us this day
> our daily body!!" (108)

Apart from the addition to physical power in the battle, the pun on the last line of 'body' instead of 'bread' illuminates that the woman's body which is used as cannon fodder gives them their daily bread as well because it is the body which allows the war to go on. The woman's body feeds the war machines as well as those who are continuing the war.

Besides the fact that both the prostitute and the suicide bomber use their bodies, it is the circumstances of war that creates a space for these roles. This does not mean that prostitution does not happen in peaceful times, but large armies concentrated in one area have given rise to

prostitution. Although Nirmala prostitutes her body to seduce Chathura in the Sinhalese movie *Kalu Sudu Mal (Colourless Flowers)* she is unable to use her body for the suicide mission when her body starts carrying another life.

Women who cannot prove their identity were instantly taken to be suicide bombers in Sri Lanka. In the play *The Wicked Witch,* when the witch enters the city and she cannot prove her identity as she has no "pass" or "ID" she is thought to be "a suicide bomber" (51) by the guard and she is arrested and stoned by onlookers.

The *Cat's Eye* review of the play objected to Urmila's representation in *Forbidden Area*, as a vacillating woman who changes her mind after a sexual encounter (qtd. in De Mel 2004, 85). Although a close reading of the play shows that it is not only "a one night of passion with Raman" that makes her abandon the cause and the mission (qtd. in De Mel 2004, 85) it was read thus. The review objected to the fact that the play portrayed the woman militant in such a light and asks writers to "respect" (qtd. in De Mel 2004, 85) women and not show them as so fickle. This respect was uncomfortable for people who felt that it was not possible to respect anyone who opts to be a suicide bomber. This same feeling is expressed by Charny when he says, "Personally I hate a cultural relativism and deconstructionism that end up understanding and accepting the normality of people who were socialized to be totalitarian killers" (Charny 83).

Nalin Swaris's response to the *Cat's Eye* review accused the writer for trying to give value to the suicide bomber's political convictions and by doing so, giving value to the LTTE. Swaris feels that women, or men, even if they are fighting for liberation should not support violence in any way and the *Cat's Eye* review is contradictory as it is denouncing any support for violence of the organization but is asking for respect for the suicide bomber. Swaris's discontent with the play that it does not bring to light the devastation caused by Urmila's final act is a fact to be considered and the spectator ends up identifying and empathizing with her. We do not blame her as she blows herself up unwillingly finally.

Unlike Urmila, the speaker in the short story "Appointment with Rajiv Gandhi" is very conscious of the destruction she is going to unleash when she thinks "and now, ironically I add to the destruction and sorrow" (358). She also thinks of the victim's family, about his wife and children. She is too uneasy to even enjoy the final love making that has just occurred. She wonders if she has behaved "like a corpse" (359) while making love to the man who is sleeping next to her who she does not name. She also

tries to justify killing Rajiv Gandhi by telling herself that "I am sure he's had a much, much happier life" (360). Urmila does not show such a conscience. She was prepared for the violent act from the very beginning of the play and we forget Urmila's violent nature due to the last episode of the play. It becomes a case of the victimizer been shown as the victim as the violence is finally directed towards both Urmila and Raman.

Besides as Swaris points out "Sexual union is a life affirming act," and isn't a night of love making for a woman who has had next to nothing in her life, a valid reason to want to live? Sex is considered inferior in the mind matter hierarchy but at a ground level it can be an opening to a new way of thinking. Desire can fuel spiritual and emotional development. Foucault too asked "why is sexual conduct, why are the activities and pleasures attached to it, an object of moral solicitude?" (1980, 10). Swaris accuses *Cat's Eye* for being moralistic. He points out that "It can be life changing for Urmila." According to Swaris, "libidinous energies held in abeyance and concentrated on the Supremo breaks out in a flood of passionate love making with Raman." In psychoanalytical terms this is a case of transference in which sex with Raman may have made Urmila see the Supremo in a different light which she becomes conscious of when she realizes that she is being used by him for his own political motives.

In *Tigers Don't Confess*, the beating of the breasts by Meenachi can be associated with Shalini's mastectomy. Grief and revenge become an extension of their bodies, and in Shalini's case her revenge and her sexuality all mingle together. Shalini's portrayal is very sexualized compared to Pushpa but as Ransirini points out "unlike dominant portrayals of LTTE women militants who are accompanied by men in their final mission, Shalini remains, to the final moment, unaccompanied."

Forbidding sexual pleasures is a common trait in organizations such as the LTTE (Swaris). The 'Fuhrer Princip' ("leader principle') in which all the idealizing and worship is directed towards the leader in fascist ideology is personified by Hitler and Mussolini. Sumathy too acknowledges that "channeling of sexual energy toward the cause and, more importantly, also toward the male leader" (2004, 136) is a method which curbs multiple possibilities of women's desire and in this way desire is "merged into the strategies of a gendered discourse of nation, family and struggle" (2004, 136). Such a quasi-sexual devotion is seen in Sita who Margaret Trawick interviewed in Batticaloa in March 1996. Trawick describes how Sita and Nirmala play a song about Prabhakaran and then Sita asks Trawick, "Have you seen him? He is beautiful, isn't he?" (146). This awe is very well brought to life by actress Ayesha

Dharkar in the movie *The Terrorist* in the scene in which she meets the leader for a meal with him before setting out on her mission. In *Island of a Thousand Mirrors*, Saraswathie says, "I smile at the thought of our bodies, mine and the traitor's mingled on the ground, in pieces, indistinguishable" (186), where her death is posited as not just revenge but as almost a sexual ratification. Even her death mission is akin to the excitement of a bride to be. "He wants me! He has chosen me! Joy like tiny tingling bubbles pulses under my skin threatening to break out from under my bones" (186).

Exponents of this concept like Schalk say that containing the woman fighter's sexuality allows her to take on the role of an avenging female empowered by her chastity. James W. Prescott believes that the deprivation of physical pleasure is a major ingredient in the expression of physical violence. *Karpu* (chastity) is believed to give Tamil women *sakti*, their strength and power. "In the notion of virginity is embodied the idea of power" (Mangalika De Silva 2005, 27). This is the constructed inner strength of women which the "Lower middle class woman" in *Like Myth and Mother* refers to when she says, "We as women should be careful and cherish our inner strength." The male cadres of the LTTE are not allowed to indulge in sex as well, but there is no reference to them getting more power in the battlefield due to abstinence. For the male, sex is simply a distraction and the women are seen as an embodiment of sexual distraction.

De Mel is of the opinion that the portrayal of Urmila in *Forbidden Area* "reflects no more or no less the 'true' subjectivity of the female suicide bomber" (2002, 203). What is this true subjectivity? Her reluctance when the target is changed is shown and her reasons for joining the movement are given. The reactions to the representations of women militants seem to prove that the viewer or reader has a certain image of her in their minds and when these representations differ from them they are disappointed.

5. Conclusion

In this paper I have discussed how women are chosen for suicide missions due to certain gendered notions such as being considered physically weak and more obedient and sacrificing, and how their reasons for opting to be a suicide bomber are posited and different than their male counterparts. I have also discussed how martyrdom is secularized through existing religious notions and how these notions are distributed in society in a way that is appealing. Most portrayals of the female suicide bomber are sexualized unlike the male figure. Some of the texts try to break away from these stereotypes of women while some adhere to them and the reactions to these

texts also bring out gendered notions and prejudices in the readers and the viewers of these texts and films.

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DEVELOPING COMPETENT COMMUNICATORS THROUGH ENGLISH LANGUAGE TEACHING AT SRI LANKAN UNIVERSITIES

Vasuki U. Jayasinghe[1], Thilini N. Wijetunge[2], Nirupa D. Ranasinghe[3], Jayani T. Weeraratna[4]

[1, 2, 3 & 4] Department of Languages, General Sir John Kotelawala Defence University, Rathmalana, Sri Lanka

ABSTRACT- Universities around the world have recognized the need to add a global dimension to higher education programmes. This paper proposes that English Language Teaching (ELT) in Sri Lankan Universities should be revisited. There is a widespread recognition that a thorough understanding of international issues is imperative in grooming the young undergraduates for future sustainability. The role of ELT is critical in this process due to several reasons. For the reasons that the English language is constitutionalized as the link language of Sri Lanka and English language is being taught in Government schools as a compulsory subject from Grade 3 to the completion of university education, it is essential to re-examine the role of ELT in Sri Lankan universities. Thus, this paper provides a critical analysis based on a literature survey. The analysis reveals that Sri Lankan graduates can be developed as competent communicators who are competent in global and local requirements through the improvement of English language communication skills along with linguistic and cultural competences. Further, the professionals in Teaching English for Speakers of Other Languages (TESOL) are encouraged internationally to use the privileged positions as classroom leaders and researchers in transcultural pragmatics. However, in a milieu where English is used as a global lingua franca and especially in a multilingual country where peaceful interethnic coexistence is promoted, the incorporation of cultural dimension to ELT is yet to be extensively investigated. Conducting such a study is crucial to explicate the role of ELT in Sri Lankan universities.

Keywords: ELT in Sri Lankan universities, Global lingua franca, Sociolinguistic competence, Strategic competence

1. Introduction

Before five hundred years 14 000 languages had been in use but today, the number has decreased to 7000 yet, 40% the world's population speaks one of only eight languages with a further decline in languages [1]. Today, having identified English as the global lingua franca, many if not most of the people, organizations and nations prefer mutually coordinated communication across cultures. Communication is the major skill that humans use to share ideas with each other. Thus, today, communication is not only an important competence for any global citizen but an essential life skill. Sri Lanka identified this global need and launched in 2009 through the programme 'English as a life skill'. Further, communication competence has become an identified main focus in university education over the globe over the past couple of decades. In Sri Lanka, the need is emphasized not only as a global need but as a common language to link people in a predominantly bilingual country [2]. Since Sri Lankans have two major national concerns of ensuring communication competence of English, it is necessary to observe the progress of the ongoing programmes initiated and intended by national goals. Therefore, this paper presents an overview of the

development of competent communicators through English Language Teaching in Sri Lankan universities.

2. Communicative Competence

Communication competence refers to the knowledge of effective and appropriate communication patterns and the ability to use and adapt that knowledge in various contexts (Cooley & Roach, 1984; Hargie, 2011; Hinner, 2020). In further analysis of the definition related to university education, the idea of 'effective and appropriate communication patters' refers to occupational requirements and interactive communication among the people from multiple disciplines and multicultural backgrounds [3]. The effectiveness and the appropriateness may vary depending on the context but the fundamental preparation of a graduate or undergraduate to interact in such intercultural context is a prerequisite the expectation of a competent communicator in university education around the world today [4], [5].

The notion of 'competent communicator' is perceived mainly from social, psychological, religious, professional and cultural dimensions. When two individuals from different cultures

communicate, it constitutes intercultural communication [6]. The initial idea of intercultural communication [7] based on anthropological viewpoint but over the decades it has grown its links to many other disciplines. Having considered other interpretations in general, the concept of intercultural communication is interpreted in this paper in the inter-disciplinary viewpoint of Peace Linguistics. Based on the international university education needs and the locally identified national goals, developing competent communicators through English Language Teaching (ELT) in Sri Lankan universities provide a global level commendation by contributing social, economic, professional and psychological development of a university student. A skilful competent communicator enhances national security development through increasing individual capabilities to collective capabilities. Developing competent communicators through university education is imperative for the reason that university is the place that could inculcate and ensure the core values of an individual for national security and development. Thus, in thinking of a holistic approach for national security and development, grooming university students as competent communicators in par with national and international needs is undoubtedly bequeathing a global passport for a peacefully interconnected society.

2.1. Contribution of a university

University education provides a lifetime experience for an individual amidst the association of a scholarly community to improve analytical thinking while gaining the standardised subject knowledge along with research experience. Although the concept of a university (term 'academy' in Northern European countries) has been changed over the centuries varying from western to eastern world requirements, the new addition of responsibility to a university is common to the whole world. Half a century ago, mostly university students expected the only elevation of their academic knowledge and skills enhancement from university education but not an exactly professional qualification. However, today Sri Lankan university education is being committed to groom students for the job market [8], [9]. Further, academic course modules are improved according to the requirements of the current job market irrespective of geopolitical boundaries. Further, into the upliftment of quality university education (Chua, 2004), some countries have already considered revision of their educational practices by enhancing sustainability in the curricula and redesigning multicultural vision of sustainability [10].

President of International Association of Universities, Pam Fredman says that universities are a critical voice in the society while the Secretary-General, Robert E. Semerena believes universities

have very important responsibilities in society as universities need to cultivate democracy, social values, peace and social well-being [11]. Further, IAU signifies that university specialists have the responsibility of reinventing higher education to connect different knowledge systems around the world, monitor national sustainable goals, and foresee the future with current trends. In sum, the focus of a university needs always be in line with the idea how university teaching, research creations and community engagement can contribute the local, regional and global wellbeing targeting fostering sustainable development.

2.2. Expectations of Communication Competence at the university level

In this milieu, the English language is the global lingua franca which is a specific requirement identified by the majority of universities around the world to expand communication across the countries. Amidst a plethora of literature based on foreign countries' experience of university English Language Teaching (ELT), the literature on Sri Lankan experience denote the significance of English language communication for university students to fulfil their professional needs in communication [12]–[20]. The literature during the last decade reveals the multiple benefits of being competent communicators in the English language.

Having understood the improvements of quality education in the university sector, collaborative approaches in university education needs to provide a path for university students to grow up with their scholarly contribution to the society in a productive way. In Sri Lanka, graduate students can contribute reconciliation in a wider array, if they are given intercultural awareness through university education. The university students are a significant part of the Sri Lankan workforce as well as they are the future parents who can transmit cultural awareness that they gained through university education and by being competent communicators in English. Sri Lankan graduates are trained to be competent in a minimum of two languages including English. Since the English language is taught as a compulsory subject to all the university students to prepare competent communicators of English, it can be used as an effective mode of knowledge transformation for multiple purposes such as English for academic purposes, professional purposes, intercultural communication purposes and psychosocial and socio-political satisfaction.

2.3. Communication competence in English for interactions –ensuring peace

[30] English is a language with worldwide status, serves global human relations and needs, and used by

more people than any other languages. Based on this global demand, ELT around the world has become a leading business as well as the main education goal in almost every sphere around the world.

Definition of communication competence may differ according to the field it is used and the time it is defined. None of the definitions can be wrong but important in understanding and scrutinizing the concept in different contexts. An interdisciplinary review, Kubota (2010) argues the meaning of communication competence in two main viewpoints; the exclusive focus on teaching English as a global language as a homogenizing trend (using four language skills for global communication) and in contrary heterogeneity of linguistic forms (using for co-constructed interactional competence and plurilingualism) and practice in scholarly concerns. Accordingly, based on political discourse analysis and content analysis, this paradoxical nature of communication competence is neoliberal communication competence because in the neoliberal globalized world. Thus, Jaspers & Madsen, 2019 in Kubota, (2010) concludes that these two trends mirror a tension between fixity and fluidity in a sociolinguistic inquiry.

Communicative competence for peace purpose is widely discussed in Peace Linguistics including two main concepts *communicative peace* and *communicative dignity* [32]. As per his explanation, life can be improved communicatively if a language is organized and implemented as a peace building force and also language users are educated to learn to use languages peacefully for the good persons, groups and humankind. Followed by these two convictions, de Matos provides four guidelines to the language learners as well as for the language teachers paving the way to intercultural understanding. His suggestion for English for Speakers of Other Languages (ESOL) teachers to teach the underlying principle for promotion of language for peaceful communication and to cease all kinds of conflict for the best of all kinds [33].

2.3.1. Historical overshadow

Communication competence in English in Sri Lanka is influenced by social, political and cultural aspects. To briefly present the overview of the historical relation of the English language in Sri Lanka, Kloss in Fernando, (1996) states that until 1956, Sri Lanka had been a fully exoglossic country. Even though Sri Lanka regained its independence in 1948, English remained as the only official language until 1956. Similarly, although English was dethroned in 1956 by the Official Language Act, it is unlikely to say the social value given to English by Sri Lankans is reduced, rather it has been maintained as a social class marker [22], [23]. Language in education policy

has been reviewed over the last five years by Sri Lankan veterans with specific emphasis on the English language and its role [13], [24]–[28]. In research, mostly, the central discussions are focused on national identity, social inequality, the formation of social class, needs in globalization, socio-economic changes in the society and their effects on ELT requirements and its significance to university students in Sri Lanka.

Today, in the era that can aim to develop communication competence through ELT in university education for reconciliation in Sri Lankan society urges effective policy and practices. According to Fernando, (1996), the critical role of English language played as the official language of Sri Lanka can only be fully understood in terms of its functions in a variety of domains of languages use depending on the institutional context and their congruent behavioural occurrences. Socio linguistic aspect of language policy and its impact on human life is crucial, especially in psychosocial and socio-political aspects. Reviewing the colonial history of the Sri Lankan society, [26] states taking over the place of English by vernacular languages (Sinhala or Tamil) created a social class difference because it was the English language that raised and these people (administrators) to their positions of power and endured those positions. In fact, this influence had an impact on religions as well because until independence English was considered as the privilege of minority communities with their close association to the church. These factors rooted deep show the language policy of Sri Lanka and its influence over the general public (even today) have very subtle psycho social and socio political links to their attitudes and believes on education, religion, social and political practices. In addition, ethnic communities in Sri Lanka also have differently impacted on the language policy and the related decisions. Therefore, in pragmatic concerns, language policy changes and its implementation have direct or indirect links to the beliefs and expectations of general public in Sri Lankan society.

Moreover, in 1956, the Official Language Act declares Sinhala as the only official language of the country and followed by this Act, from 1956 to 1958, language riots protested against the Sinhala only administration. [26], [29]. Prof. Gunasekera sees Youth Resurrection in 1971 from the linguistic viewpoint and titles it as a 'rebellion by non-English speaking youth'. This implies the policy implementation and its reverberation on the citizens cannot be ignored. Furthermore, Herath (2015) argues as, in many former colonies, language policy and planning in Sri Lanka has been shaped and continued to be overshadowed by its history of colonial rule (pp. 245). Most importantly, the influx of the historical use and then the status of English in

Sri Lanka has impacted not only on the entire Sri Lankans in socio-economic and political aspects but also it has showcased the variety of English used by the different ethnic communities Sri Lanka [23], [29]. Accordingly, these factors replicate the *unwritten* expectations of university students; it encompasses social, political, educational and professional stereotypes or models of 'educated person' with the competence of English communication skills. According to my understanding, these unwritten expectations derived from the historical influences that are inbuilt in the society and they are equally important as written national goals and educational goals.

2.4. Importance of competent communicators for national development

In the Sri Lankan case, apart from the common impact on the general public, the consequences caused by the language policy implementation and its changes are unique to each ethnic community. Moreover, although the ethnic communities in Sri Lanka have their religion and racial differences, linguistically there are only two main linguist groups; Sinhala and Tamil language users. English is used in Sri Lanka but it does not represent any ethnic community yet a common language to any ethnic group. To my belief, this is a significant fact in terms of searching effective means of developing competent communicators through ELT Sri Lankan universities for a few main reasons. Firstly, English is a common language irrespective of any ethnic difference within the country. Secondly, the provision given in the constitution for the English language is very powerful and equitable tool-English as the link language of Sri Lanka. Thirdly, English is global lingua franca as well as in Sri Lanka. Fourthly, the English language is a major demand in higher education and career opportunities. At last, in sum, I believe, university students who become products of Sri Lankan universities in this era (current period after the experience of the civil war and communal disputes until we find a time with no ethnic tension in the country) need to be competent in English for goals written and unwritten in curricular. One of the central messages is to ensure that they can communicate and strengthen the bonds at least among the 'educated professionals' and work together to educate the rest of the general public so that all Sri Lankans should step forward to experience the unity concerning each-others' differences which they inherit by birth. Although it is not easy to get rid of the post-colonial impact, the intrepid theme of the millennium needs to be striving for a holistic approach to national growth through individual development by addressing unique issues as a country. In a globalized world, none of the nations can be isolated but can be prominent with unique art development by applying ideal methods for the specific needs of the country. Therefore, a collective effort of ELT in university education for developing competent communicators should be to promote every citizen of Sri Lanka by joining the workforce not only with the objective of developing the country economically but by becoming a part of 'peace-friendly' workforce with virtues and values accepted in Sri Lanka as 'Sri Lankans'.

Reintroduction of ELT in university education for developing competent communicators is a timely concern. Thus, re-examine the role of ELT in Sri Lankan university education is essential. By parallel development of linguistic and cultural competencies broaden its benefits into greater extend. Considering ELT in Sri Lanka either as Teaching English for Speakers of Other Languages (TESOL) or Teaching English as a Second Language (TESL), interdisciplinary knowledge enhancement of ICC rejuvenate development of individual goals in education, profession and social level to the national level goal while contributing the reconciliation and ensuring peaceful coexistence of the society.

3. Tracing the goals

As discussed above, it is indeed clear that the importance of developing competent communicators through ELT in universities is a national level expectation in this era. On bottom-up countercheck, the first encounter in that line of review is the Constitution of the country. According to the Thirteenth Amendment to the constitution [Art 18 (4)], English as a link language of the country. Further, in the Constitution of Sri Lanka, Sinhala and Tamil are the national languages as well as Sinhala and Tamil languages are given the status of official languages [Art 19 and 18 (1) & (2)]. In the Sri Lankan context, Sinhala and Tamil represent three main ethnic communities and English is neutral. Although it is always good to be competent in both the national languages in the country, considering the usage, English is used as the second language. Irrespective of the ethnicity, Sinhalese, Tamils and Muslims prefer to be competent in English than to be competent in the other national language. To my understanding, this is the first place everyone loses the sensitivity to understand others. Literature in ICC discusses these as intercultural inquiry, cultural wisdom, identity in multicultural society [34], [35]. According to the theoretical models in ICC, this is stage is the initial stage in ethnorelativism [36]. Bennet's Developmental Model of Intercultural Sensitivity (DMIS model) elucidates these stages [37]. According to the DIMS model, acceptance of the difference of the others is a mandatory step in the transformation from ethnocentrism to ethnorelativism. If anyone skips the step can be identified as a vulnerable point in intercultural insensitivity but still there is a chance left if it can be

replaced by a *link language*. The countries where English is used as the lingua franca use English as a tool for intercultural interactions successfully, especially they have become successful in ELT for ICC [38]–[40]. Likewise, the required state involvement in building interethnic relationships can be seen by availing the constitutional provision but it is necessary to examine whether the citizens use it as the link language effectively- this review highlights the necessity of in-depth study on ELT professionals in Sri Lankan universities to find out whether they utilize English as a link language to develop competent communicators. [13] Found that the initial idea of link language, by the time it was constitutionalized, has been changed over the decades. As a result, the initial idea of linking different ethnic communities by communication has not been very successful. Not only that but to identify the national contribution in developing competent communicators through Sri Lankan universities, it is necessary to find out the national goals of education as well. Unless the identification of the national need of a competent communicator for the purpose of linking or promoting communication among the different ethnic communities in the country, it is impractical to see them in the goals at the rest of the educational levels-tertiary level education in this discussion. Therefore, it is also essential to reexamine the role of link language in ELT in Sri Lankan universities.

Further, in the analysis at the institutions in university education, the University Grants Commission (UGC) considers being the apex body of the university system in Sri Lanka. According to the UGC Sri Lanka, planning and coordination of university education and regulation of the administration of Higher Education Institutes (HEI) are two main functions. Therefore, a thorough examination needs to be conducted on the goals of UGC and related bodies regarding the ELT in Sri Lankan universities, to find out the stipulated decisions, practical steps taken and difficulties encountered.

The final phase of the findings of this literature review reveals that a thorough investigation needs to be conducted to examine the ELT courses offer for university students during their university education. Although this is the last phase of the process of developing competent communicators specifying the purpose of intercommunication for strengthening or maximizing further communication among the university community and the professional community, this is the beginning of the place where the competent communicators can experience the benefits of ICC. Since university community consists of students from different geographical areas of the country, sometime from different countries, and most importantly the students from different ethnic communities and different social strata of the country, it is a great opportunity to get multicultural exposure. Provided that if every university student from every faculty is competent in link language (English in this context), the first barrier for the interaction eased. Further, if there are any misunderstandings or preconceived negative assumptions based on experience or baseless arguments, I believe, communication is the most important catalyst that can assist to unlearn and reconstruct the broken relationships among ethnic communities or individuals belong to such social groups. Undoubtedly, the area of communication is broad as well the communication for peace is broader and deeper. Hence, it needs further inquiry with depth analysis on the specific field of ICC in developing competent communicators through ELT in university education.

4. Conclusion

Considering Sri Lanka as a country with experience of random communal unrest after about quarter of a century of war ended with lots of commitments, the reconciliation that ensures positive peace [41] in the country is an essential national requirement. In that scenario, if ELT in university education can contribute to the wellbeing of interethnic coexistence, that can be one of the national goals of the era. Thus, most importantly, the review of the literature shows that there is a privileged position for ELT professionals to develop intercultural communicative competence which is a timely necessity to Sri Lanka. Having identified the development of linguistics and cultural competencies in transcultural pragmatics as equally important aspects in the products of university education, scrutiny is required to identify the specific objectives embedded in developing competent communicators through ELT in the universities in Sri Lanka.

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HOW TEACHING METHODS EFFECT TO THE EFFECTIVENESS OF LEARNING: IN THE CONTEXT OF WP/KE ABC VIDYALAYA

Yasodha N. Gunawardhana[1], Bhagya Jayasekera[2]

[1] National School of Business Management, Sri Lanka,
[2] University of Sri Jayewardenepura, Sri Lanka

ABSTRACT – Understudies and their realizing are what make a difference most in characterizing the fate of a nation. Accordingly, this research addressed how teaching methods could be influential in defining the success of learning of students in the context of Wp/Ke ABC Vidyalaya. With the expectation of noting the research problem, current teaching methods rehearsing in the school and their effect on students learning, alternative teaching methods that could be implemented and their possible impact and the conceivable opposition that could emerge in executing modern teaching methods were discovered. Research took qualitative aspect by conducting semi-structured interviews and Non-participant observations by taking six academic staff members and two students as the sample using convenient sampling technique. Data were analysed using thematic analysis and it was found that both conventional and modern teaching methods were using in the context and modern teaching methods have high positives on students learning. Technology centered learning, Interactive learning and inquiry learning were identified as alternative teaching methods while some resistance from teachers, lack of infrastructure and reinforcement and no resistance from students were discovered in executing modern teaching methods. The conclusions of the finding recommended that teachers in the context needed to be given training on modern teaching methods along with a continuous supervision and students also needed to be educated on adopting modern learning and to harvest the fruitfulness of it. Further, provision of adequate infrastructure was also identified as a reinforcement to implement modern teaching methods.

Keywords: Teaching, Learning, Teaching methods, Conventional Teaching Methods, Modern Teaching Methods

1. INTRODUCTION

Most of the educationalists and educational reformers stand with the fact that the key to improve student performance lays in improving curriculums, assessments and teaching skills aligned to well-developed academic standards. Adequate teaching skills followed by proper teaching methods to the level of academic standards will improve the student performance [1]."There is now an increased demand for improving the quality of teaching in order to increase the students' level of achievement"[2].

It is argued that teaching means the activity of both teacher and student. Apparently, they are inter-definable and cannot exist without each other[3]. Considering the practical consequence of the everyday world, there is a very strong ground to note teaching as the activity of teacher. Adjoining the student to the process to bear what is being taught can be understood as teaching methods. "Then a working definition of teaching method would be that it is a means of controlling the cognitive activity of students directed towards specific educational objectives" [3].

Principally, learning refers to a permanent change of behavior and that occurs at the end of experience [4]. Teaching by all means cannot be equivalent with learning. The idea conveyed by teacher may be accepted and altered by the learner, which can be tagged as learning or education.

A continuum of teaching styles extend from traditional/didactic (teacher centered) to progressive / participatory (student-centered) teaching styles[5]. The most challenging, rewarding, and frustrating of activities associated with teaching is the development and implementation of learning experiences for students. Teachers are in a constant search for new and better methods". Still a question remains in when and how to use the newly located teaching methods to gain superior performance from the learners although it is accessible to wider variety of rich sources of information like Books, journals, colleagues, conferences and workshops [3].

Although in past literature it was discussed the fact how these different teaching methods affects to the academic performance of the students in the world context, not much of attention was drawn in applying this concept into a study in the Sri Lankan context. Hence, this qualitative research paper focuses on exposing how these two traditional and progressive teaching styles affects to the effectiveness of classroom learning in view of a provincial council school in Sri Lanka.

2. LITERATURE REVIEW

Predominant direction of this chapter is to discuss the above declared research questions with the support of past literature. Keys terms, theories and models presented by the preceding researchers, that would be assist in finding answers for the research questions will be addressed. And it is also aimed to highlight the importance of possessing knowledge about the related theories, concepts and models in understanding how teaching methods affects to the effectiveness of learning

2.1 Teaching

Teaching is a continuous process that involves bringing about desirable changes in learners through use of appropriate methods [6]. There is an agreement that solid teacher execution in the class adds to the achievement of instructive gauges [7].Teaching is a complex and difficult task that demands extraordinary abilities [8]. The way toward teaching and learning is different starting with one day then onto the next, depending as it does on the point being educated, students' frames of mind or the speakers' disposition, and teaching methods carried out among numerous different factors [9].

2.2 Learning

Learning is a change in human disposition or capability that persists over a period of time and is not simply ascribable to processes of growth [10]. Leaning consists of basic concepts such as act, reflex, instinct, experience, behavior, sense, perception, attention and memory [4]. Act reflects to the performance. What is done by a person establish his or her performance. Reflex gives the meaning for the behaviors arises suddenly, in which those behaviors are inborn, quite immediate, and consistent and there should be a stimulus behind the action. Instinct implies an act that can be seen in all the members of a group that has been developed because of maturity not purely because of learning. Behaviors are both implicit and explicit [4].

2.3 Teaching and learning

It is usual to contrast teaching and learning, learning to known as the activity of the student and teaching would be considered as that of the teacher. ―However, instruction is understood as the activity of the teacher taken alone, whereas teaching means the activity of both teacher and student. This is not hair-splitting. Teacher and student are inter-definable, in the sense that they cannot exist without each other‖ [3].

In the continuum of teaching methods there are three categories of decision sets be taken by a teacher, namely, pre-impact, impact, and post-impact decisions. The continuum is based on who takes the decision, whether it is the teacher or the student. One end represents that, teacher takes the all the decisions, and the act of the student is to obey and act accordingly. Other end represents that teacher act as a resource person and decision-making part is done by the students themselves [11].

2.4 Teaching and students' performance

Adaptation of successful teaching practices does not narrate the story of being an effective teacher who deliver the perfect thing for students [8]. But in order to become an effective educator, teachers have to shape the foundation of being an effective teacher. "An effective teacher in his qualitative study on the characteristics to be one who has been most successful in helping students to love learning" [2].

He further shows that there are 12 identifiable personal and professional characteristics of effectiveness in an effective teacher, such as always being prepared, being very positive, holding high expectations, creative, displaying a sense of belonging, compassionate, having a sense of humor, respecting students, forgiving and admitting mistakes [2].

It can be stated that, the above-cited characteristics create the more progressively significant conduct that successful teachers are relied upon to display and have the option to use to improve the scholarly accomplishment of students [2].

No researcher holds a collective agreement on the definition of an effective teacher or teaching. Some of the researchers hold their point on the position of interactiveness in participation of the student to the teaching and learning process. This standard hinders the teacher as the central or the focal point of the instructional process [2] .

Aside from successful educator qualities, it is important to decide the effect of these attributes on students learning and performance. Educators' capacity, characteristics, qualities and instructing fitness have been demonstrated observationally to have a solid relationship and impact on students' learning and execution. What is more, instructing and formal training happens in the school and in the classroom and activities teachers carry out in the classroom, the strategies utilized for instructing and procedures connected by the instructor for the understudy to assimilate adapting firmly influence the advancement of the students in the school [2].

3. METHODOLOGY

The research paper on studying how different teaching methods affects to the effectiveness learning, carried out as a descriptive study as this topic was discussed by the previous researchers in international context.

Research project took the qualitative approach, while case study method was chosen as the research strategy.

3.1 Type of the study
This research paper follows a descriptive research design where different views, perceptions and ideas of the Social factors are taken into consideration in drawing conclusions in understanding how teaching methods affects to the effectiveness of learning: In the context of a provincial council school.

3.2 Research Approach
The study adopts inductive approach as the research approach. The intention here is to get a feel of what was going on in order get an idea about the nature of the research problem and the research field [12]. Conclusion of analysing the data in inductive approach would result in formulation of a theory [12]. In this place, it analyses about conventional and modern teaching methods and how those will influence in students' effectiveness of learning in codifying a theory about how teaching methods affects to the effectiveness of learning: In the context of a provincial council school

3.3 Population and sampling
Study took the population as the entire academic staff engaged in Ordinary Level teaching and the students in Ordinary Level and Advance Level classes of ABC Vidyalaya. Academic staff consists of 20 teachers including the principle and around 200 students engage in studies in Ordinary Level and Advance Level classes.

Convenience sampling, which is a non-probability sampling technique, was applied in deciding the appropriate and un-bias sample for the process of collecting data.

3.4 Collection of data
In the study interviews and non-participant observations were used as the primary data collection techniques. In conducting interviews and Non-participant observations, prior understanding about which areas to be discussed and what factors should bring to the surface during the interview was known to the researcher. The study focusses also on collection of data through secondary sources such as result sheets, assignments and previous research articles done on this topic.

4. ANALYSIS AND DISCUSSION

Thematic analysis was used as the data analyzing technique to bring forward the insights brought up by research participant through different themes emerged.

A review on each research question was done through identifying sub themes by identifying the visible themes and patterns. Themes were defined and meaningful names were given to both main themes and sub themes as the final step of identifying the themes and patterns using the data gathered through semi-structured interviews and Non-participant observations.

4.1 Conventional teaching methods and their impact on students learning
"Lecture method" was the first answer came out from every respondent other than Ms. Basnayake, when the researcher raised the question on what are the current teaching methods that are practicing in this school. As of the practice for a long period, what teachers deliver without effort is the lecture method.

"...Actually specking, when I go for inspections, I can see very limited number of teachers are using modern teaching methods to deliver subject facts to the students (in a serious tone). What I see most deliver the lesson being in front of the classroom. Like out of four, only one I can see using modern teaching methods to make child learn the subject. No matter how they were compelled to implement practical base they do not try to practice it. I only see Ms. Basnayake and Teacher X who is doing Sinhala implementing modern methods in every possible aspect." (Principal)

According to principal's viewpoint most of the teachers try to implement a teacher – centered teaching methods which are conventional teaching methods. Though the leadership does strong emphasis on the important of implementing modern teaching methods, a lack of support from the staff was visible.

"...As I'm doing Sinhala for grade 10 and 11, it is not practical to implement interactive or student – Centered methods due to the time constraint. A huge syllabus needs to be covered when it comes to Sinhala subject and as the terms and content is harder for students to learn, everything needs to be explained by the teacher. Like in lessons "Angulimaala damanaya" the language usage is difficult for students to learn by themselves. Therefore, even the meaning of the words needs to be given for students" (Ms. Wickramarachchi)

What she expressed was that due to the time constraint and the complexity of the content in her major, to deliver the facts to the student, a teacher – centered in other words the conventional teaching methods plays a major role. Not only the guidance,

the teacher's involvement in explaining the whole is a must to deliver subject facts to the students. Thus, according to her, for her major, especially in G.C.E ordinary level classes, teacher – centered teaching method is preferred.

When it comes to traditional lecture method, sometimes this goes up to the level where students are totally bored (here she uses the word "Neerasa") about the whole subject content." (Ms. Basnayake)

According to her point of view, it can be elaborated that due the drawbacks in the traditional teaching methods, students found not only the teacher, but also the whole subject to be bored. Since students are not interested in listening and learning those contents in those subjects, that would lead to low results for subjects and finally it affects to the total results of them on top.

In conventional teaching methods, teacher is the person who proceeds all the decisions, and the act of the students is to obey and act according to the teacher [11]. Thus, in this kind of a situation teacher plays the main role and due to that the role played by the student will be limited. This would lead students to have less focus in the classroom. In the context of WP/KE/ ABC Vidyalaya, same can be identified as most of the data analysed stated the fact that they are adopting conventional teacher – centered teaching methods and that would result in low performance of the students. Though for the purpose of completing bulk syllabus within a tight time period, teachers use conventional teaching methods, as of the fact that students are dropping their focus, they would not be interested in engaging academics. Hence that has negatively impacted on students' learning.

4.2 Modern teaching methods and their impact on student learning

This was another theme emerged in analysing data relating to the current teaching methods practice in WP/KE/ ABC Vidyalaya. When analysing data, the fact that teachers are trying to implement conventional teaching methods was highlighted. Other than very few teachers, most of the teachers respond was that they are trying move away from conventional teaching method as they could identify the drawbacks in conventional lecture method. But some answers could also be found in which stated that they are currently using modern teaching methods with the intention of increasing the students' learning.

"..As I'm doing science for the students, I always try to go for interactive teaching methods as my subject is too technical and if I'm to go for traditional lecture methods it would be too bored for students. Rather than

teaching them always in the classroom, taking them out for a bit would change their mind as well. This can be done for environmentally related subject contents. Most of the time theoretical lessons are done through group works to increase their participation." (Ms. Basnayake)

As per Ms. Basnayake, for technical contents, she always tries to go for interactive sessions where students could learn by themselves. She also encourages group work in conducting theorical lessons. Through that she can engage students to the learning process and through that performance of the students can be increased.

In researcher's point of view, there is a positive impact on the student learning process through modern teaching methods than the conventional teaching methods. As students be more interactive with what they learn, that makes them understand well the subject contents. Along with that it makes students more engage with what they learn and that make them interested in finding knowledge and skills.

"..Some teachers carryout group work in conducting lessons. We really love that kind of group work as it is not boring, and we can learn things very quickly. It goes into our minds quickly. But not all the teachers do that. We like if all teachers can that kind of group work for us" (Maleesha)

Therefore, according to the students view, they are in fond of carrying out collaborative teaching methods in which they found it is interesting for them to learn and according to them this way of collaborative learning would assist in fast learning experience. Adding to that point the student also stated that only few teachers are carrying out the modern teaching methods currently within the context of Wp/Ke ABC Vidyalaya.

In modern teaching methods, teacher acts only as resource person and students do the decision-making part by themselves which makes students engage in what they study [11]. Several researches also have reported important advantages which can be gained by students through working collaboratively in groups. Small group learning can be used to enhance the effectiveness of learning and it has been proven to be really valuable for students in learning as it requires high level of thinking, decision making and problem-solving skills [14]. Thus, according to the literature also it can be stated that use of modern teaching methods requires higher degree of student involvement in which student learnings would be more effective. Students participation in modern teaching methods would also consider to be higher as

of millenniums favor in participative and interactive learning. Therefore, it can be analysed that use of modern teaching methods are favored by the students and it has higher positive impact on student learning

4.3 Alternative teaching methods that can be implemented and their expected impacts on students' learning

4.3.1 Technology centered teaching methods
When discussing with the research participants on alternative teaching methods that can be implemented to increase the effectiveness of learning of the students, "if this teaching process can be more integrated with technology, it feels like students would give more attention towards studies." was the mostly given answer.

"..I love to take this teaching to be more integrated with technology. We already have taken some initiatives to make our teaching styles more interactive and technology centered. We are also with the new government project of building smart classrooms in schools with that we are expected to have advancement in students' learnings and performance as well." (Principal)

According to principal's view on alternative teaching methods, she stated that always she is there to give support in technological developments in teaching methods and that they are expecting higher performance from students with the new technological advancements. She also mentioned on the fact that they are expecting some technological advancements through a project called "SMART classrooms in schools" funded by the government of Sri Lanka.

Technology plays a vital part in reforming teaching and learning practices. Teachers must also take a leading role in designing Suitable learning environments that engages with technological developments to assist children to get better learning experience along with technology [15]. Computer technology can be used as a tool which can motivate students with thinking and learning skills.

4.3.2 Interactive Learning Methods
Another theme that emerged during the discussion on alternative teaching methods was on adopting more interactive teaching and learning methods. This was based on the ideas of both students and teachers' perspectives.

It was also brought into the discussion on what are the limitations of carrying out interactive learning with students by Ms. Silva who engages in teaching science for Ordinary Level students.

"...like mostly the ones in grade 6,7,8,9 love to do group work and other interactive stuff. But when splitting them in to groups we always be conscious to make that team consist of both girls and boys. If by chance any group to be boys only group, most of the time they tend to be deviated from the learning objectives. So, if we are to come up with interactive teaching, it is necessary to come up with tactics to keep them align with learning objectives." (Ms. Silva)

Hence, according to Ms. Silva, interactive teaching and learning methods can be identified as an alternative teaching method to as students in Wp/Ke ABC Vidyalaya has a favor in learning in an interactive environment. She also expressed her opinion on limitations if they are to implement interactive teaching methods like students being deviated from the learning objectives.

From the data analysed, researcher could identify that most of the students have positive attitudes towards moving with interactive learning methods. It was also mentioned that school is going to construct a mobile laboratory, Mathematics garden (mentioned as "Ganitha Midula"), and a museum (mentioned as "ithihasa Kauthukagaraya") which would assist interactive learning environment for the students. It can be identified on the researcher's view that implementation of interactive learning in this context would be viable and suitable as necessary infrastructure and attitudes are with all the parties relating to the teaching and learning process.

Interactive learning makes students responsible for both group and individual achievements [16]. Along with that interactive learning also can be used to reawaken the passion of the students on learning and that would assist in achieving success of the learning journey.

4.3.3 Inquiry learning
Apart from technology centered teaching and interactive learning, discussion on inquiry learning was came into surface when taking interviews with the staff of Wp/Ke ABC Vidyalaya. In that discussion it was mentioned that if students are to search and learn, probability of those subject facts going into the brains of the students are high. Most of the staff was with the fact that letting students to do self-learning with the guidance of a teacher is good to implement, but with the practice of the students for a long time, they feel like that students would not quickly adjust to the system of inquiry learning.

"..It is always advised for us to encourage students for self-learning. But if we let students learn by themselves, they won't do anything. This method can be applied for

student like in School "X" in which students have "thirst of learning". But when it comes to our school, students try to listen to the lesson just because of our bothering. They do not try search for anything additional." (Ms. Wijesinghe)

According to Ms. Wijesinghe, students in Wp/Ke ABC Vidyalaya expect everything thing relating to the lesson to be given by the teacher. They do not have eagerness of searching and learning. Therefore, she believes that in that kind of situation if students are to encourage for self-learning, they would learn nothing.

In researcher's point of view, self-learning can be promoted within the school if teachers can make interest in students mind about self-learning. If students are let to know how important inquiry learning would be, not all, at least some students will try to adopt to that method. This method of inquiry learning can also be integrated with technology centered learning which would be made students interest in inquiry learning as well.

In inquiry learning, students work in self-directed way, they complete an assigned task by finding relevant implications from what they have discovered. This process would be guided by an instructor, to provide some guidance in the process of delivering effective learning process to the students [17]. Thus, by having inquiry learning incorporated into the students learning process, the student would get the advantage of understanding contents in clearer way

4.4 Resistance from teachers

When the researcher having discussions on modern teaching methods, some resistance could be identified from the teachers by the way of expressing their ideas. This resistance could not be seen by all the teachers. But a negative attitude could be seen from teachers who have longer service experience.

"It is my way to use the lecture method which is convenient for both students and me. I normally deliver the lesson, give 2 or 3 questions based on the lesson taught and check the answers on the next day. For me there is no need of going for modern teaching methods because I have 80% for my subjects." (Mr. Anura)

According to Mr. Anura he does not adopt modern teaching methods as he feels like that use of traditional teaching methods would be convenient for both himself and the students. He mentioned that he has the habit of using lecture method and through that already he has achieved 80% pass level for G.C.E

Ordinary level students (80% is the standard pass level in Wp/Ke ABC Vidyalaya).

According to Ms. Silva, going with modern teaching methods lead them in pre-preparation for conducting the lessons. Modern teaching methods demand them to prepare teaching Aids, work sheets, summary sheets and other materials that are relevant for conducting interactive sessions. According to her that is something additional for the teacher and that requires additional dedication from the teacher which sometimes may lead to homework for teachers as well.

Therefore, a resistance from some teachers could be seen mainly due to two reasons, the fear of being out of their comfort zones and modern teaching method would result in additional work for them.

Discovering on literature, "People that are high on dispositional resistance to change, which is conceptualized as a stable personality trait, are less likely to voluntarily incorporate changes into their lives, and when change is imposed upon them, they are more likely to experience anxiety, anger and fear" [18]. Hence, it could be identified that teachers who are resistance to change from conventional teaching methods mainly show that resistance to change due to their personal traits such as they believe that they are highly experience and they do not want to volunteer for change. They believe that changing from conventional teaching methods to modern teaching methods would take them away from their comfort zones.

4.5 No resistance from students

It could be identified that as a whole; student have positive attitudes towards implementing modern teaching methods within the context of Wp/Ke ABC Vidyalaya. Having discussion with teachers and principal, it was stated was that to implement modern teaching methods, there will not be any resistance from the students. Students seemed to hold the same positive idea on implementing modern interactive and technology related teaching methods.

"..If our all teachers to implement technology centered teaching methods, we would be delighted. We love working with technology. Some teachers to do group work and we like to do those things as well." (Sameera)

According to the student Sameera, students are in favor of implementing modern teaching methods. They think that the way of learning can be made more interesting by incorporating modern techniques with teaching methods.

In researcher's perspective students being millenniums would be more bias towards working

with technology. As modern teaching techniques are more towards incorporating technology, they would love engaging in modern teaching methods when they are in their learning process.

Different studies on teaching methods from past literature have indicated that modern teaching methods incorporated with technological characteristics are affected to the students through the excellence and easiness of adopting these methods. "Positive attitudes of students' and behaviors regarding modern learning are important and necessary towards the acceptance and adoption of those" [19]. Thus, it can be stated that there will not be any resistance from students for the implementation of modern teaching methods.

4.6 Lack of infrastructure and reinforcements

Within the discussion on suitable alternative teaching methods, the lack of infrastructure and reinforcements were highlighted by every participant. It was mentioned that though some teachers were willing to move with modern teaching methods the lack of infrastructure and the motivation makes them to back off their plans of implementing modern teaching methods. Here the academic staff has identified provision of proper infrastructure as a reinforcement for them. Though the teachers and the principal were willing to carry out a proper plan of implementing modern teaching methods within the school, this lack of infrastructure make them resist in implementing those.

> *"..In our school we try to carryout learning and teaching methods in a modern way. But no one gives their attention on motivating us. They do not even visit us and give comments on what we are doing. If are to develop these methods furthermore, we need help mostly on infrastructure and financial wise. Teachers also sometimes do not want to move with modern methods stating that they do not have enough infrastructure to implement those teaching methods in an effective way." (Principal)*

According to principal, in Wp/Ke ABC Vidyalaya, they have the process of implementing modern teaching methods. But when it comes to infrastructure, they do not have sufficient investments done on them to implement those modern teaching methods. Due to that even teachers try not to implement modern teaching methods at the expense of not having proper infrastructure.

Here it can also be indicated that though teachers tend to change, absence of reinforcements will take them back to their previous position of conducting traditional lecture methods. Here the researcher takes the view that this resistance of implementing modern

teaching methods are mainly due to the lack of reinforcements rather than infrastructure. If staff were motivated in conducting modern teaching methods by giving reinforcements or any other incentive, that would make them active in implementing modern teaching methods.

Reinforcements needed to be given to establish the effect after a change [20]. This is not to lose the effect which outcomes because of changing process. Therefore, to keep the changed behavior within humans, reinforcements should be given to those people. Same applies in the context of Wp/Ke ABC Vidyalaya, in which in order to make teachers and students established with the movement of adopting modern teaching methods, reinforcements should be given.

5. CONCLUSION

This section intends to address the findings of the research derived through analysis and discussion chapter.

During the study it was found that both conventional and modern teaching methods are used by the academic staff. Traditional lecture method be the widely used teaching method while group work, and modern teaching methods are practiced by minor group of teachers.

Technology centered teaching methods was identified as one of the feasible modern teaching methods due the expected technological advancements to flow into the school in the near future. It was also found that interactive teaching methods can be implemented as already the school is into projects of building interactive learning environment within the school. Another modern teaching and learning method that drew the attention of the researcher as an alternative teaching was inquiry learning. It was discovered that implementing of this method would be bit challenging in the context of Wp/Ke ABC Vidyalaya, as it takes time to change attitudes of the children to be familiar with the procedures in inquiry learning.

Finally, under the objective of analysing the resistance in implementing modern teaching methods, it was found that there is a resistance coming from the position of teachers due to fear of them being losing their comfort zones and the ancillary contribution they need to produce on practicing modern teaching methods. Along with that, no resistance on implementing modern teaching methods were found from the hand of students. The lack of infrastructure and reinforcements were identified as another rationale for resistance in implementing modern teaching methods as, though they try to implement more effective teaching

methods for the betterment of the future, no recognition was identified from the relevant authorities.

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SKIN ISSUES CAUSED BY CONSTRUCTION TECHNIQUES USED IN CASUAL GARMENTS: SURVEY OF FEMALE CONSUMERS IN SRI LANKA

Niromi C.K. Seram[1], Malmi A.T. Senadheera[2]

[1,2]*Department of Textile & Clothing Technology, University of Moratuwa, Sri Lanka*

ABSTRACT

Appropriate clothing construction techniques that include fastenings, finishing methods, embellishments and other special components/ accessories are important to produce quality garments that will satisfy consumers. However, there are a minimal number of studies that deal with skin issues caused by the construction techniques that are typically used in casual garments. Therefore, this research focuses on exploring the skin issues caused by the construction techniques used in making casual garments in Sri Lanka. A questionnaire survey was conducted with 97 female consumers in Sri Lanka and the collated data were analyzed using descriptive analysis techniques. The findings showed that the awareness and concern of the consumers about the construction techniques used in the garments made within Sri Lanka was at a poor level. However, as revealed by the survey results, bright red welts and itchy red bumps were very common skin issues caused by the construction techniques used in making casual garments. Further, it came to light that the common reasons for the appearance of bright red welts on the skin were coarse or badly placed zippers, thick seams, and rubber objects. Seams on the closely fitting areas of the garments too caused these problems. The findings of this study have significance for Sri Lankan casual wear designers and technologists because drawing attention to these issues will assist them to understand the problems relating to the construction techniques used for making casual garments. Pointing out these shortcomings will also prompt designers and technologists to experiment and introduce better construction techniques in the Sri Lankan context. Furthermore, the findings may prove useful to the clothing companies, by guiding them to produce and sell quality garments to their customers.

Keywords: Casual garments, Construction techniques, Consumer, Skin issues, Sri Lanka

1. Introduction

Prompted by the need to preserve modesty, have protection from the elements, manifest a distinct identity and look attractive, human beings started to wear clothes. Originally, these were made from raw natural materials like animal skins, furs, grasses, leaves, bones, and shells [1]. Gradually, with the advent of yarns and fabrics, clothes were manufactured using distinct construction methods. At present, garment making has evolved into a technical craft that requires knowledge of fabrics, principles of clothing construction and specialized skills [1,2]. The construction of a garment is described as follows – *"A costume or garment is constructed by cutting the fabric into parts according to a pattern that fits the human form; then the different parts are joined together by sewing"* [1]. It suggests that there is a particular process involved in constructing a garment. Therefore, in the making of a garment, several steps

have to be followed and the sequence of the process can be listed as, designing the garment, making the patterns, selecting the materials, cutting them, sewing them, applying embellishments, and pressing [1].

1.1. Construction techniques used in casual garments

A casual garment is described as *"A type of clothing that emphasizes comfort and personal expression over presentation, formality and conformity. More simply, 'casual' can be defined as something relaxed and occasional, not planned or formal"* [2]. Nowadays, there are several different types of informal or casual garments available in the market as illustrated in Figure 1. According to the categorization, jogging suits, leggings, and warm-ups belong to active casual wear while T-shirts, sweatshirts and cotton pants or jeans are classed as sports casual. Trousers, long sleeve shirts, slacks or skirts, blouses and jackets belong to the smart casual garment category.
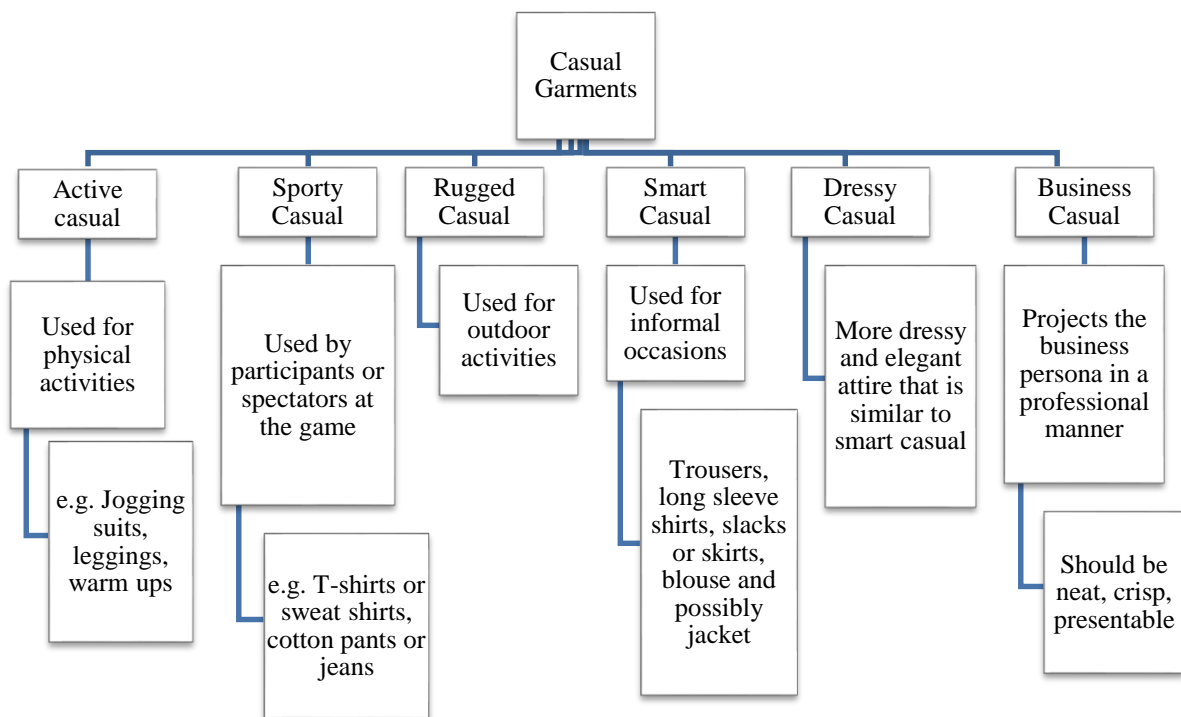
Figure 1. Casual garment categories [2,3]

The construction techniques used in casual garments are decided based on type of fabrics, design of the garment and the type of casual wear [2,3,4]. Therefore, the construction techniques used in casual wear can be discussed under five subcategories as fabric properties, fastenings, finishing methods (stitch and seam types, hem and edge finishes), embellishments and other special components/ accessories [2, 4].

The type of fabric is one of the important factors that will determine the method of construction of a garment. Batiste, Corduroy, Chiffon, Crêpe, Denim, Jersey, Organza, Tweed, Voile, Cotton and Linen are the most used materials for casual wear [4]. The types of seams, hems and edge finishes are decided based on the properties of the chosen fabric. Half zipper with button fastening, code with studs, metallic zipper fastener, invisible zippers, buttons, and holes with placket and draw cord fastener are the common fastening techniques. The fastening technique is chosen according to the type of casual wear, design of the garment and type of material used. Lock stitch overlock stitch and flatlock stitch types with plain seams are the common stitch types used for seams, hems, and edge finishing in garment construction. Single turn hems, double turn hems, bindings, and facings are also frequently used in casual wear.

They are decided according to the type of material and design of the garment. Prints, embroidery, and beads are used in casual wear as embellishments. Zippers, buckles, elastic bands, and elastic threads are recognized as the special components/ accessories used in casual wear.

1.2 Skin problems related to casual garments

Clothing dermatitis and skin problems related to garments are referred to as *"manifestations caused by wearing clothing or other fabrics that come into contact with the skin"* [5]. The skin problems related to garments can be due to any of the four major reasons listed below [5,6].

- Chemical additives used on fibers and fabrics that are mainly of the dye types and textile finishing resins.
- Clothing accessories such as dress labels (care labels, brand tags), nickel plated metal objects, rubber objects with inlaid patches of different colors and materials, and other embellishments (prints, direct embroidery or embroidered patches).
- Occlusion can be caused, especially in humid climates. Friction can result from the repeated rubbing of the garment against the body due to the design of the garment, seam types, decorative

accessories, fitting problems, and daily repetitive movements of the body.

- Personal factors such as an individual's taste (some people like to wear close-fitting garments), geographcal factors such as humid climate and different skin types.

1.3 Objective of the study

Sri Lankan consumers have a proclivity for choosing garments in the casual wear categories due to their easy-going nature and demands of the climate. Accordingly, careful attention to the quality of the casual wear categories is vital in the Sri Lankan market since the construction techniques are mainly considered as representing the quality of a garment. However, to date there were no publications evidence on the skin problems caused by the construction techniques for Sri Lankan consumers. Thus, this research mainly focuses on the skin problems triggered by the construction techniques used in the production of casual garments for Sri Lankan consumers. In order to achieve the objective of the study the following research question is proposed.

- What are the most common skin problems caused by the construction techniques used in the production of casual garments?

2. Methodology

A questionnaire survey was conducted on the female consumers in Sri Lanka since contact dermatitis associated with garments is more common among women than men [6]. Online web survey software was used to calculate the sample size [7]. Total population of women was taken as 11,172,825 [8], with margin of error as 10% and confidence level at 95%. Accordingly, the recommended sample size was determined as 97 female consumers in Sri Lanka. A pilot study was conducted first with 15 females. Based on the pilot study responses, the questions were moderated. The moderated questionnaire was sent through the Internet and directly to the recommended sample size after categorizing it into the three age groups of 15-25, 26-35 and 36-50 as these age brackets have different buying power [9,10]. The data were analyzed using descriptive analysis techniques.

3. Data analysis

As per the findings shown in Figure 2, the demand for casual garments is higher than for formal wear and sportswear among Sri Lankan female consumers. Consumers in the 15-25 age group were more willing to buy casual wear products than those in the other two age categories.
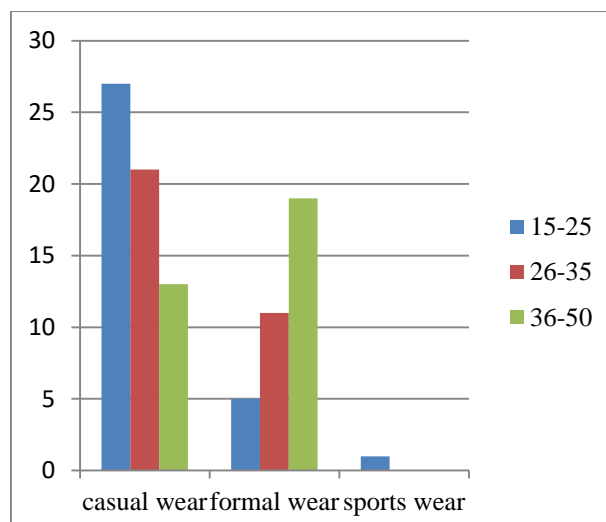

Figure 2. Demand for casual wear, formal wear, and sportswear

Further analysis revealed that the female consumers in the 15-25 age group mainly comprised undergraduates and students (Figure 3). Women in the 36-50 age group who were employed tended to wear formal attire more (Figure 4). The most common clothing category of the 26-35 age group was casual wear (Figure 5). At present though many female employees prefer to wear casual attire to the office in Sri Lanka. That is because the business casual attire, which is a new trend, comes under the casual wear category, and enhances the wearer's personality.
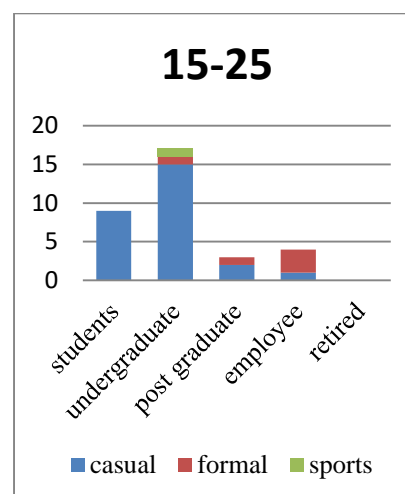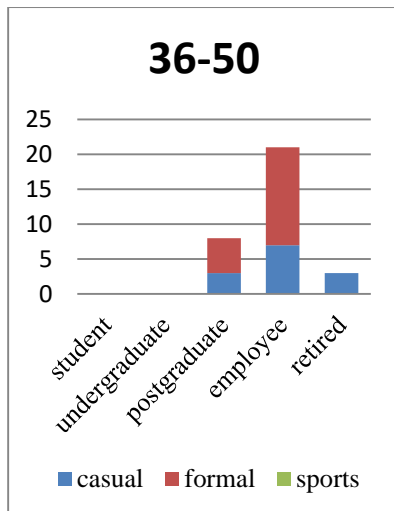

Figure 3. Occupations 15-25 age group
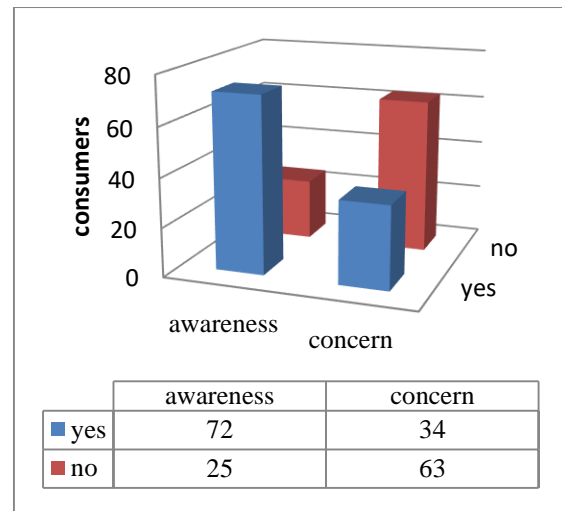
Figure 4. Occupations 36-50 age group

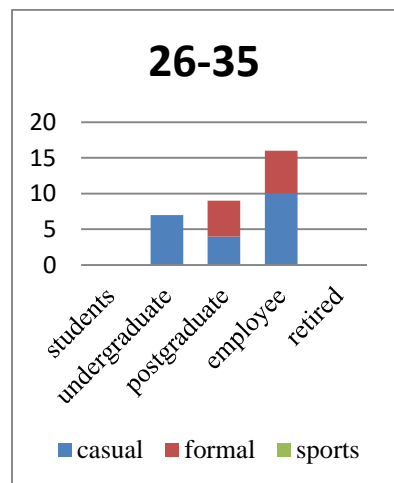Figure 6. Consumer awareness and concern about construction techniques

	awareness	concern
yes	72	34
no	25	63

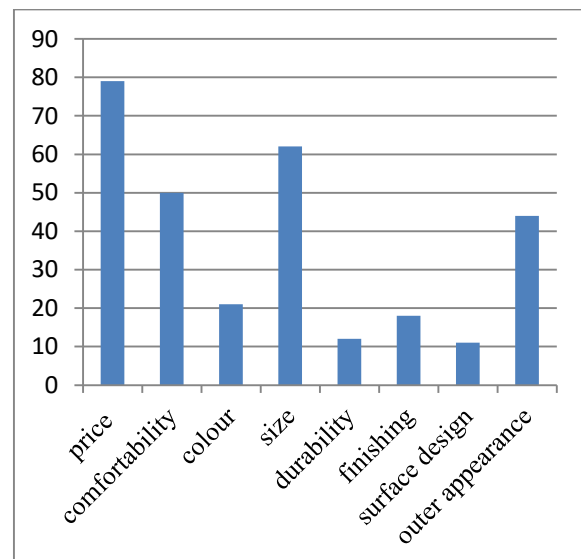Figure 5. Occupations 26-35 age group

Figure 7. Qualities valued most by the consumer

3.1 Consumer awareness and concern about construction techniques

The findings in Figure 6 highlight that most Sri Lankan consumers do not have any awareness about the construction techniques. They also do not pay much attention to the construction technique when they are shopping for garments.

As per the findings presented in Figure 7, the three most valued factors are price, size, and comfort. Although consumers are highly concerned with the comfort, the attention they pay to the construction techniques seems to be minimal. Only 18 consumers out of the 97 considered the finishing of the garment when they did their shopping.

3.2 The effect of construction techniques on the skin

Even though consumers did not seem to be aware of or concerned about the construction techniques, they did respond regarding the impact of the construction techniques on their skin. The results highlighted that the majority were not affected by the construction techniques. However, as per Figure 8, the bright red lines (welts) and red and itchy bumps were the most common skin problems caused by the casual garments.
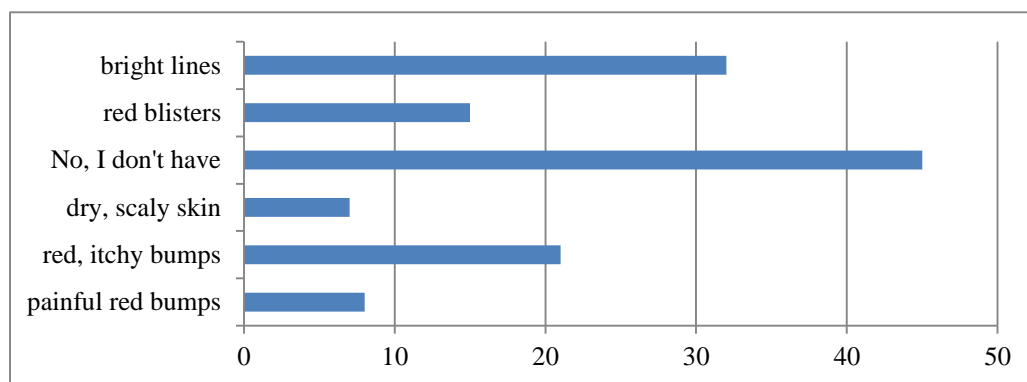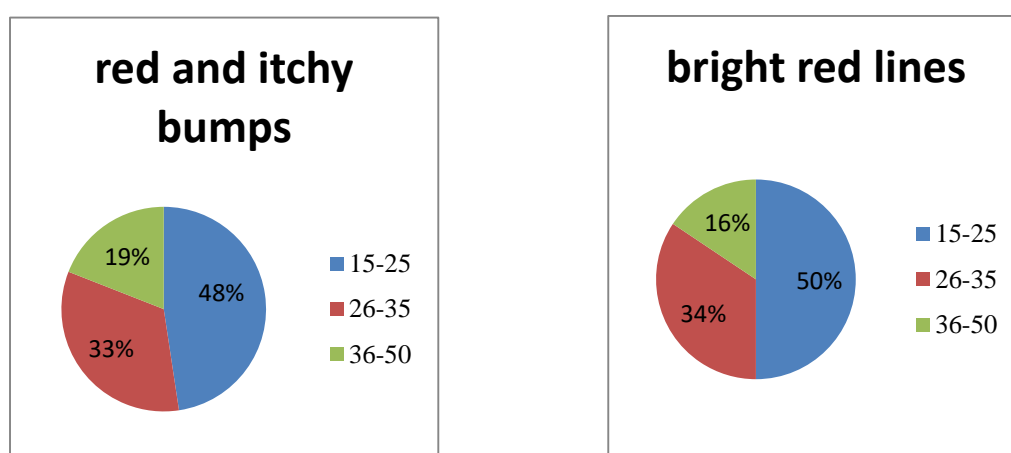
Figure 8. Skin issues caused by garments

Figure 9. Impact of the common issues according to the age categories

It was revealed that the 15-25 age group was the most affected by both issues: bright red lines and itchy red bumps (Figure 9).

Further analyzing the above two skin problems, it became clear that the main reason for the symptom of bright red lines was the construction technique. This could be due to roughly finished or badly placed zippers (accessories), thick and raised seam types, or rubber objects (special components) as illustrated in Figure 10. The cumulative percentage of the above three is 47%. It was revealed that the common reason for the itchy red bumps is perspiration (37%) (Figure 11). Sweating is most likely due to the geographical location of Sri Lanka, which is a tropical country. Because of the sweating, more friction can occur and with more areas of the garment that happen to fit the body closely. The literature also documents that nickel-plated metal accessories and certain types of rubber used on clothing can cause dermatitis [5]. Such rubber items may be shoulder pads, dress shields, collars, and certain parts of girdles.
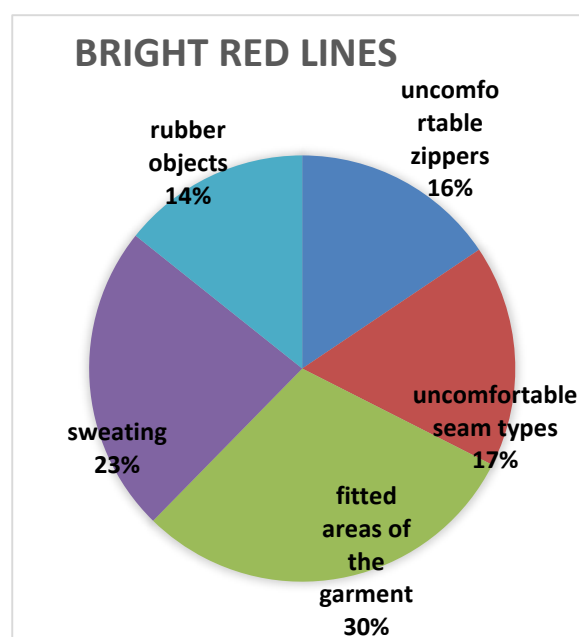

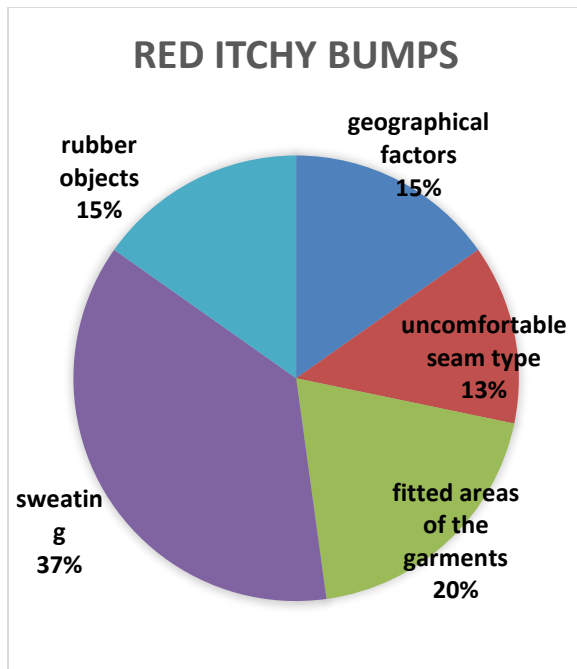Figure 10. Reasons for the bright red lines

RED ITCHY BUMPS

rubber objects 15%

geographical factors 15%

uncomfortable seam type 13%

sweating 37%

fitted areas of the garments 20%

Figure 11. Reasons for the red itchy bumps

4. Conclusion

The findings of the study revealed that price is the most important consideration among Sri Lankan consumers when buying products. Because of the high cost of living, the part of their income that people allocate for clothing is only 3% [11]. Therefore, consumers prefer to purchase garments for a low price disregarding their low quality. Low quality garments naturally use low quality materials and employ low quality techniques in their construction. Unfortunately, inappropriate construction techniques may cause a lot of discomfort to the consumers. It was reported that the most common skin issues caused by garments are bright red welts and itchy red bumps. Most of these occurred because of poor construction techniques like thick, tight, or sharp seams and the use of uncomfortable zippers, buckles and rubber objects (special components). Sometimes perspiration also turned out to be a cause. All these highlight the fact that designers need to understand and pay more attention to the current problems faced by consumers who buy casual garments. They should realize the pressing need to improve the construction techniques and use more appropriate materials in the production of casual garments to provide better quality products to the consumers. Therefore, the findings of this study will prove significant in the Sri Lankan context to all those involved in the garment manufacturing industry, like the following parties:

- Casual garment designers and technologists who wish to experiment and introduce better construction techniques for these garments for which there is such a high demand in Sri Lanka.

- Retail business owners who deal in casual garments will be able to provide better quality products to their customers.

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FACTORS INFLUENCING ON CUSTOMER SATISFACTION TOWARDS BABY CEREALS OF NESTLE LANKA PLC: A STUDY OF MOTHERS WHO ARE WORKING AT BENJI LTD IN SRI LANKA

[1]Ambalam Pushpanathan and [2]E.A. Madhushini Edirisinghe

Department of Economics and Management, Faculty of Business Studies,
Vavuniya Campus of the University of Jaffna, Sri Lanka

ABSTRACT

Customer satisfaction is a measure of how products and services supplied by a company meet the customer expectation. Therefore, the main objective of this study is to evaluate the factors influencing on customer satisfaction towards baby cereals of Nestle Lanka PLC, a study of mothers who are working at Benji Ltd in Sri Lanka. Convenience sampling method is used in this study. The data were collected from the mothers who are working at the Benji Ltd Garment Factory. Structured questionnaire was prepared and issued among the respondents. The conceptual framework and hypothesis were developed through careful review of literature and findings derived by using correlation and simple linear regression with Statistical Package for Social Sciences version 20.0. The quality, advertisements, price, nutritional labelling, reference group and opinion leadership were considered as independent variables of this study and customer satisfaction was considered as dependent variables of this study. The study identified that price was considered as the major predictor in determining the customer satisfaction of baby cereal purchase by 41.3%. Furthermore, the study confirmed that customer satisfaction towards baby cereals of Nestle Lanka PLC is higher at 51.4%. According to the findings Nestle Cerelac mixed fruit category is the most preferable cereal among the respondents. So the objectives of the study were achieved and clearly explored the factors highly influencing on customer satisfaction towards baby cereals of Nestle Lanka PLC. So this research study provide direction to the marketers for their survival in the market place as well as to the customers.

Keywords: Advertisement, Customer satisfaction, Nutritional labelling, Opinion leadership, Price, Quality, Reference group

1. Introduction

Today the situation is more complex than earlier. Because the market is a more customer oriented in the sense all the business operations revolve around satisfying the customers by meeting their needs through effective delivery of products. For the sake of that it is important to gather factors affecting to create the satisfied customer towards particular products. Without surveying the effectiveness of the product preference in the customer oriented perspective, organizations losing their valuable customers and they will fail in the market. Market survey is really important to learn what the firm customer likes and dislikes about products. In Sri Lanka, Nestle Lanka PLC is the leading brand provides the various cereal categories to their customers. As a market, they have to give valid reason as to why a customer should choose their brand as against that of competing brands available in the market.

Customer is the one who purchase the products and judges the quality of the products. Customers are always passionate about brands, for which they look forward with an added value and they have their method of evaluating brands choice available at the market place. In today's competitive edge, Organizations should attempt to focus on customers' needs and wants to meet their expectations and satisfy them. Oliver (1980) refers customer satisfaction as the response or feedback from the customers as the result of the customer's emotions or feelings based on the past purchase experience and their expectations towards the product or service purchased.

Baby cereal products create confusion among mothers because it is so difficult to figure out what they need for their babies and why. While deciding this, the mothers are being affected by the society to own right baby cereal in order to function as a perfect mother. This obviously causes stress among mothers. Most of the time marketers are producing the products without touching the customer attitudes or

expectations. Here the manufacturers should satisfy both customer and consumer expectations. If the producers don't have much knowledge about their customers, they will fail in the market. On the other hand if they have enough information about future requirements only, they can think on the development of new product in future according to the future market needs.

In this study focuses on factors highly influencing on customer satisfaction towards Nestle Baby Cereals in Kuliyapitiya area. Hence it is more important to see the satisfaction of the customers towards Baby cereals

2. Method and Material

2.1 Literature Review and Hypotheses

2.1.1 Customer Satisfaction

Satisfaction of customers with products and services of a company is considered as most important factor leading toward competitiveness and success (Dauda et al., 2013). Customer satisfaction is actually how customer evaluates the ongoing performance of a firm (Dadoa et al, 2012). Therefore, a firm should concentrate on the improvement of Service Quality and charge appropriate fair price in order to satisfy their customers who would ultimately help the firm to retain its customers. According to (Sharma, 2014; Saleem and Raja, 2014) customer satisfaction is the customer's reaction to the state of satisfaction, and customer's judgment of satisfaction level. Customer satisfaction is very important in today's business world as have ascertained that the ability of a service provider to create high degree of satisfaction is crucial for product differentiation and developing strong relationship with customers.

Satisfied customers also can provide a steady flow of word-of-mouth promotion, thereby reducing the expense required to find new customers (Swan and Oliver, 1989). In addition, customer satisfaction reduces the size of the set of products and retailers considered and minimizes switching behavior among previous purchasers (Sambandam and Lord, 1995). Product performance is an important determinant of overall customer satisfaction.

2.1.2 Quality

Quality is defined as a zero error rate, the ability to produce a perfect product on the first try (Parasuraman *et al*., 1985). Crosby defines quality as the producer's ability to meet expectations (Crosby, 1979 quoted in Parasuraman *et al*., 1985). As far as the customer's (consumer's) point of view is concerned, quality can be defined as the quality perceived upon the basis of the consumer's decision

on the overall excellence or superiority of the product (Zeithaml, 1988). All definitions mentioned above apply to the quality of a product, which is consistent with the focus of the research into the foodstuffs industry.

The quality can be regarded as the result of a subjective process whereby the customer compares their ideas (or expectations) with the reality. Moreover, the higher product quality does not necessarily equal a higher level of customer satisfaction (Oliver, 1980). We can agree with this statement, the exception being that higher customer satisfaction automatically means higher product quality (as perceived by a specific consumer).

Quality is also defined as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs (Kotler et al., 2002). It is evident that quality is related to the value of an offer, which could evoke satisfaction or dissatisfaction on the part of the user. Therefore, the research hypothesis that;

Hypothesis 1: Quality of the cereal has a significance influence on customer satisfaction of baby cereals of Nestle Lanka PLC.

2.1.3 Price

Price, which is an enduring element of the original Ps of the marketing mix, may generally be perceived in terms of the specific monetary value that a customer attaches to goods and services (Kent and Omar 2003). Farahmand and Chatterjee (2008) conceptualize price within the auspices of the value assigned to something bought, sold or offered for sales, expressed in terms of monetary units. It also pertains to how buyers view a product's price, as high, low or fair, which ultimately affects consumers' willingness to buy the product (Ahmad and Vays 2011). Pricing is a crucial strategic variable due to its direct relationship with the company's goals and its interaction with other marketing mix elements (Yesawich 2004). Pricing enables companies to segment markets, define products, create incentives for consumers and even send signals to competitors (Atchariyachanvanich and Hitoshi 2007). Goods and services must be priced in a way that achieves profitability for the company and satisfies customers, in addition to adapting to various constraints such as competition (Sahay 2007). Therefore, the hypothesis 2 of the present study;

Hypothesis 2: Price has a significance influence on customer satisfaction of baby cereals of Nestle Lanka PLC

2.1.4 Nutritional Labelling

Consumer's attitudes towards the nutritional aspect of the foods and proper eating habits are increasing rapidly. Therefore, consumers are more concern about balance and healthier diet. Further they are becoming more demanding about nutritional information, safe and quality food. In this context, labels of food products play a significant role as it provides all the mandatory information regarding nutritional composition, safe and quality food. Basically, labels provide information on ingredients of the food products, nutritional properties, preparation, storage, etc. Consumers purchasing decisions mainly depend on the perception of the product. Food labeling is one of the most important factors affecting for the purchasing decisions of the consumers (Bandara et al., 2016). The third hypothesis of the present study;

Hypothesis 3: Nutritional labeling has a significance influence on customer satisfaction of baby cereals of Nestle Lanka PLC.

2.1.5 Advertising

The major aim of advertising is to impact on buying behavior; however, this impact about brand is changed or strengthened frequently in people's memories. Memories about the brand consist of those associations that are related to brand name in consumer mind. These brand cognition influence consideration, evaluation, and finally purchases (Romaniuk and Sharp, 2003). The principal aim of consumer behavior analysis is to explain why consumers act in particular ways under certain circumstances. It tries to determine the factors that influence consumer behavior, especially the economic, social and psychological aspects (Ayanwale *et al.,* 2005). When young people choose advertising information and characters as their role models, they may not only identify with them but also intend to copy them in terms of how they dress and what they are going to buy (Latif *et al.*, 2011). Therefore, the fourth hypothesis of this study;

Hypothesis 4: Advertisements has a significance influence on customer satisfaction of baby cereals of Nestle Lanka PLC.

2.1.6 Reference Group

Consumer research on reference groups has demonstrated congruency between group membership and brand usage (Bearden and Etzel, 1982; Bearden, Netemeyer, and Teel, 1989; Burnkrant & Cousineau, 1975; Childers and Rao, 1992; Moschis, 1985).

Reference groups are defined as social Consumers use others as a source of information for arriving at and evaluating their beliefs about the world. This assessment of opinions and abilities uses relevant others who share beliefs and are similar on relevant dimensions. The fifth hypothesis of this study;

Hypothesis 5: Reference group has a significance influence on customer satisfaction of baby cereals of Nestle Lanka PLC Ltd.

2.1.7 Opinion Leadership

In a social system, communication flows from the source to the opinion leaders, who pass it on to the others in the social system (Katz and Lazarsfeld, 1955). Indeed, opinion leadership is considered an important factor in word of-mouth communication, which contributes towards the success of an innovation (Childers, 1986; King and Summers, 1970). Opinion leadership reflects an individual's ability to influence other individual's attitudes or overt behavior in a desired way in a particular domain. Opinion leaders are typically physicians who have an academic title with the department of a medical school and have contributed peer-reviewed publications (Tan, 2003).Therefore, sixth hypothesis of the study:

Hypothesis 6: Opinion leadership has a significance influence on customer satisfaction of baby cereals of Nestle Lanka

2.2 Methodology

2.2.1 Sample

Convenience sampling method is used in this. According to the convenience sampling method researcher collected the data from the mothers who are working at the Benji Ltd garment factory. It is easy to catch up the respondents (mothers) and they don't have much time to feed their babies. Because of that reason most of the mothers are using cereals for their babies. All together 3000 of workers are working at Benji Ltd and 2553 of them are females and rest of them are males. From 2553 females 1800 of females have the babies and according stratified sampling method 850 females' residence is belonging to Kuliyapitiya area. From these 850 females the researchers selected and issued the questionnaire among 182 respondents. After the careful investigation of responding patterns of the respondents, 120 respondents were selected for development of this research study.

2.2.2 Data Collection

For this study purpose, questionnaire is developed by including five-point Likert scale questions to measure the customer satisfaction among mothers about their baby cereal preference and mothers who are using Nestle cereals taken as respondents to this study. Secondary data were collected by using websites, books and journal articles. Secondary data were used to obtain the information and knowledge about the basic concepts, theories, models and previous literature related with customer satisfaction in case of selecting variables, conceptualization and the related aspects to conduct the research study.

2.2.3 Data Analysis

Data were analyzed through questionnaire issued to the customers of the Nestle cereal purchasers. This process of data processing and of converting raw data into meaningful statements is, called an analysis and interpretation of data. It is specially considered the correlations and coefficients analysis for examining the Hypotheses. Data analysis is more sensitive part of this research work.

The researcher used Statistical Package for Social Sciences (SPSS) version 20.0 software in order to explore the influence of quality, price, advertising, nutritional labeling, reference group and opinion leadership on customer satisfaction respectively for the purpose of obtaining findings.

2.2.3.1 Reliability analysis

Reliability analysis is used to measure stability and consistency as well as to understand whether the questions which are the researcher utilize in the questionnaire are reliable or not to assess the goodness of a measure. Cronbach's Alpha is the most common measure adopted by the researchers when having Likert scale questions in a questionnaire. According to Sekaran (2010), the Cronbach's alpha reliability is closer to 1.0 is better. In general, reliabilities less than 0.60 are considered to be good, those in the 0.70 range, acceptable, and those over 0.80 good. The reliability of the research data is illustrated in the Table No: 1.

Dimensions	Cronbach's Alpha
Quality	0.782
Advertisements	0.777
Price	0.782
Nutritional labelling	0.816
Reference group	0.798
Opinion leadership	0.810

Source: Survey data 2019
Table 1: Reliability analysis

According to above table, the Cronbach's Alpha value is over 0.7 and closer to 0.8 in four dimensions. Such as Quality, Advertisements, Price, and Reference group. Nutritional labeling and Opinion leadership having Cronbach's Alpha value 0.8. Therefore, the questionnaire of the present study is more reliable.

3 Results and Discussion

3.1 Correlation Analysis

Correlation coefficient is a measure of linear association between two variables. Values of correlation coefficient are between -1 and +1. A correlation coefficient of +1 indicate that two variables are perfectively related in a positive linear sense, correlation coefficient of -1 indicate that two variables are perfectively related in a negative linear sense, and a correlation coefficient of 0 indicate that there is no relationship between two variables. Present study identified that the positively significant relationship between independent variables and customer satisfaction. Price of the cereal have strongly positive correlated with the dependent variables (r=0.413. The details are illustrated in the Table No. 2.

	Quality	Advertisement	Price	Nutrition	Reference Group	Opinion Leadership
Customer Satisfaction	.306**	346**	413**	.374**	.364**	.275**
Sig. (2-tailed)	.001	.000	.000	.000	.000	.002

Source; Survey Data

Table No. 2: Correlation Analysis between Independent Variables and Dependent Variable

3.2 Regression Analysis

For testing the hypotheses, the regression analysis was done in this study. Regression analysis is used for measuring the influence of hypotheses by identifying the influence of independent variables on the customer satisfaction. The researcher has used the simple regression analysis that is used to analyses how far independent variables (Quality, Advertisements, Price, Nutritional Labelling, Reference group, Opinion Leadership) have an influence on customer satisfaction. Regression results of the study indicated in the Table numbers 3, 4 and 5. According to the model summary in the Table No. 3, the results indicated that R value is 0.514 which indicates a high degree of correlation. The adjusted R square is 0.225 which means that the

factors identified by the researcher was able to explain 22.5% of variance in customer satisfaction. Further, F-value in the Table 4 of the present study has positively significant (F= 8.037, P<0.01). Hence the Factors influencing on customer satisfaction of the Cereal products has positively significant by 51.4% (β=0.514, P<0.01).

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.514ᵃ	.264	.225	.39239

a. Predictors: (Constant), Quality, Advertisement, Price, Nutrition, Reference Group, Opinion Leader

Table No 3: Model Summary

Model	SS	df	MS	F	Sig
Regression	7.452	6	1.242	8.037	.000
Residual	79.641	515	.155		
Total	87.093	521			

a. Dependent Variable: CS

b. Predictors: (Constant), Quality, Advertisement, Price, Nutrition, Reference Group, Opinion Leader

Table No. 4: ANOVA

The Table No 5. Summarizes the results of regression in the independent and dependent variables. The results indicated that Quality, Price, Nutritional Labelling, and Reference Group have positive significant effect on customer satisfaction at significant level 0.01. (β=0.237, p<.01, β=0.287, p<.01, β=0.126, p<.01, and β=0.091, p<.01 respectively). The opinion leader has positive significant at level 0.05 with customer satisfaction (β=0.054, p<.05) and advertisement has positive effect on customer satisfaction and not significant.

	Unstandard. Coeff.		Stand. Coeff.		
Model	B	Std. Error	Beta	t	Sig
1 (Constant)	3.679	.304		12.107	.000
Quality	.237	.052	.234	4.556	.000
Advertisement	.128	.062	.123	.450	.653
Price	.287	.059	.279	5.477	.000
Nutrition	.126	.032	.170	3.900	.000
Reference Group	.091	.029	.132	3.099	.002
Opinion Leader	.054	.029	.082	1.891	.059

a. Dependent Variable: CS

Table No. 5: The regression Results of Influencing factors on Customer Satisfaction

The findings of the present study indicated that the developed hypotheses 1, 2, 3, 5, and 6 are supported and hypothesis 4 is not supported. It is explored that Quality, Price Nutritional labelling, Reference Groups, and Opinion Leadership are significantly influencing on the Customer Satisfaction of the Nestle Cereal Products. Within these factors, Price is most influencing factor of the Mothers in Benji Garments.

4 Conclusion

The main objective of this research study is evaluating the factors influencing on customer satisfaction of baby cereals of Nestle Lanka PLC in Kuliyapitiya area. Quality, advertisements, price, nutritional labelling, reference group and opinion leadership are considered to be the antecedents of creating high level of customer satisfaction. The derived hypotheses in the research model empirically proved and these factors have relationship and impact on customer satisfaction at good level (51.4%). Price has emerged as the major predictor in determining customer satisfaction.

As well as the researchers has found out in which way these factors cause customer satisfaction, especially in baby cereal products takes more and more attention from the mothers before purchasing it to their babies. According to the results obtained in this study, it can be concluded that the most of the mothers are price sensitive when they are selecting the cereal for their babies. Nutritional labelling take place more concentration because without nutritional effect mothers are not purchasing the cereals for their babies. Most of the mothers are well educated and they are highly considering about nutritional impact by seeing the label of the baby cereal. According to the results reference group take place the fourth position to influence on customer satisfaction. It is clear that most of the mothers are go for the acceptance and recommendations of others especially from their friends, peers and family members to justify their purchase and go for the previous satisfied customers. Then the advertisements create the level of satisfaction and persuade the respondents to purchase the cereals by seeing on the television ads. Then quality becomes the important aspect in food based products, especially for the baby foods. Opinion leadership plays the final role in creating the satisfaction of the respondents because most of the Professionals (doctors and midwives) are not recommending to the customers to provide such kind of readymade cereals and most of the time they are recommending the breast milk for the babies.

Further, the research findings also confirmed that, although the 24-item scale was a very useful tool as a concept, it needed to be adapted for specific purchase patterns. Finally, from this study, researcher can

come up with the conclusion as the factors quality, advertisements, price, nutritional labelling, reference group and opinion leadership can highly be influencing on customer satisfaction in the purchase of Nestle cereals by the mothers.

The present study only considered six influencing factors on the customer satisfaction of the Nestle Cereal Products, The mothers are purchasing other baby products for their babies need. It should be considered in the future studies.

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